

*Contract Document and Technical Specifications*

*for*

***The Village of Owego***  
***Downtown Revitalization Initiative Capital Projects***  
***Phase I***  
***Marvin Park Improvements***

May 2023

HUNT 2550-011



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SECTION 00 11 13  
ADVERTISEMENT FOR BIDS

NOTICE IS HEREBY GIVEN, that sealed bids, in DUPLICATE, are sought and requested by the **Village of Owego (hereinafter called "Owner")**, for the construction of the following Project:

**Owego DRI - Phase I: Marvin Park Improvements**

Bids are requested for the General Trades Work, in accordance with Drawings, Project Manual, and other Bidding and Contract Documents prepared by Hunt Engineers, Architects, Land Surveyors & Landscape Architect, DPC 100 Hunt Center, Airport Corporate Park, Horseheads, NY 14845.

NOTE: This multiple prime project was previously advertised and bid. Bids for Electrical and Plumbing contracts have been accepted. This rebid is for the General Trades contract only; all specifications and drawings are included for reference.

Sealed bids will be received by the Owner until **1 P.M.** local time on **Thursday, June 15, 2023** at the **Village of Owego Hall Office, 22 Elm Street Owego, NY 13827**, at which time and place all bids will be opened and publicly read aloud.

The Bidding Documents and Bid Forms may be examined at the following:

The Builders Exchange of the Southern Tier: [www.bxstier.com](http://www.bxstier.com)

East - 15 Belden Street, Binghamton NY 13903 West - 65 E. Main St., Falconer, NY 14733

Village of Owego, 22 Elm Street, Owego, NY 13827

Hunt Engineers, Architects, Land Surveyors & Landscape Architect, DPC Airport Corporate Park,  
100 Hunt Center, Horseheads, NY 14845-1019

**Bid Documents are also available for electronic viewing at [www.HUNT-EASplans.com](http://www.HUNT-EASplans.com);**  
including an up to date Plan Holders list.

Copies of said documents may be obtained from the Horseheads office of Dataflow, Inc., Airport Corporate Park, 100 Hunt Center, Horseheads, NY 14845, phone (607) 562-2196, fax (607) 562-3214, email "[Corning@GoDataFlow.com](mailto:Corning@GoDataFlow.com)" by bidders upon payment of a deposit of \$50.00 for each complete set and a separate, non-refundable \$25.00 shipping and handling payment for each set. Electronic (pdf) files are also available for a **non-refundable payment of \$25.00**. All checks for sets of Bidding and Contract Documents shall be made payable to the Village of Owego. **All checks for shipping and handling, and PDF sets, shall be made payable to Hunt-EAS.**

All Prime Contract Bidders who have paid the aforesaid deposit for an entire set of Bidding and Contract Documents and have submitted a bid with required bid security; **and return such sets to Dataflow Inc. Horseheads office in GOOD CONDITION within thirty (30) calendar days after the award of contract or rejection of bids, shall receive a refund of the full amount of such deposit. Any NON-BIDDER may be refunded his deposit only upon returning plans and specifications PRIOR to the bid opening. Postage and HANDLING are NOT REFUNDABLE.**

All questions prior to bid opening must be received by the close of business on Friday, June 2, 2023. Questions shall be directed to James C. Peckham, PE at Hunt Engineers, Architects, Land Surveyors & Landscape Architect, DPC at email [peckhamj@hunt-eas.com](mailto:peckhamj@hunt-eas.com). All bidders request for information shall use the form located in specification 00 12 00 - Request for Information. A digital copy of this form is available upon request.

As bid security, each Bid shall be accompanied by a certified check or Bid Bond made payable to Owner, in accordance with the amounts and terms described in the INSTRUCTIONS TO BIDDERS.

The Owner requires that all bids shall comply with the bidding requirements specified in the INSTRUCTIONS TO BIDDERS. The Owner may, at his discretion, waive informalities in bids, but is not obligated to do so, nor does this represent that he will do so. The Owner also reserves the right to reject any and all bids. Under no circumstances will the Owner waive any informality which, by such waiver, would give one Bidder a substantial advantage or benefit not enjoyed by all other Bidders. No Bidder may withdraw his Bid before forty-five (45) days after the actual date of the opening thereof, unless a mistake due to error is claimed by the Bidder in accordance with INSTRUCTIONS TO BIDDERS.

Attention of Bidders is particularly called to requirements as to conditions of employment to be observed and minimum wage rates to be paid under the Contract.

An Optional Pre-Bid conference for all Bidders will be held on Thursday, May 18, 2023 at 1 P.M. at Marvin Park, in Owego, NY for the purpose of reviewing the bidding procedures, the scope of work, and inspecting the proposed work areas.

### **Contract Requirements**

Attention of Bidders is particularly called to the requirement for ensuring that employees and applicants for employment are not discriminated against because of their age, race, creed, color, religion, sex, national origin, disability, or marital status.

### **Minority and Women Owned Business Participation Goals**

The following goals for MWBE participation on this project have been established at:

Minority Owned Business Enterprise (MBE) 15%

Women Owned Business Enterprise (WBE) 15%

(Municipality to calibrate in accordance with overall requirement for project of 30%)

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

The Village of Owego reserves the right to waive any irregularities or informalities in or to accept or reject any or all bids.

This Advertisement is issued by:

**Owner: The Village of Owego**

**By: Mike Baratta**

**Title: Mayor**

**May 11, 2023**



SECTION 00 12 00  
REQUEST FOR INFORMATION

DATE: \_\_\_\_\_.

CONTRACT: \_\_\_\_\_.

DRAWING: \_\_\_\_\_.

SPECIFICATION SECTION: \_\_\_\_\_.

REQUEST: INCLUDE ATTACHMENTS AS REQUIRED TO CLARIFY QUESTION:

\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_.

Requested by: \_\_\_\_\_.

Name / Company Name

Contact Information: Phone \_\_\_\_\_ E-mail: \_\_\_\_\_.

ANSWER:

\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_.  
\_\_\_\_\_.

By: \_\_\_\_\_ Date: \_\_\_\_\_ RFI #: \_\_\_\_\_.



# AIA<sup>®</sup> Document A701<sup>™</sup> – 2018

## Instructions to Bidders

for the following Project:

*(Name, location, and detailed description)*

Owego DRI - Phase I: Marvin Park Improvements

### THE OWNER:

*(Name, legal status, address, and other information)*

The Village of Owego

22 Elm Street

Owego, NY 13827

Telephone Number: 607-687-1710

### THE ARCHITECT:

*(Name, legal status, address, and other information)*

Hunt Engineers, Architects, Land Surveyors & Landscape Architect DPC

100 Hunt Center

Horseheads, NY 14845

Telephone Number: 607-358-1000

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

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612<sup>™</sup>-2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

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## ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

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

## ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

## ARTICLE 3 BIDDING DOCUMENTS

### § 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

*(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)*

Bidding Documents are available in paper copy or electronic format, as outlined in the Advertisement for Bids.

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper



documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

**§ 3.1.3** Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

**§ 3.1.4** Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

**§ 3.1.5** The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

### **§ 3.2 Modification or Interpretation of Bidding Documents**

**§ 3.2.1** The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

**§ 3.2.2** Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.  
*(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)*

Requests shall be on form provided in the Bidding Documents, and submitted electronically, as outlined in the Advertisement for Bids.

**§ 3.2.3** Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

### **§ 3.3 Substitutions**

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

#### **§ 3.3.2 Substitution Process**

**§ 3.3.2.1** Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

**§ 3.3.2.2** Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

**§ 3.3.2.3** If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

**§ 3.3.3** The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

**§ 3.3.4** If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

**§ 3.3.5** No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

### § 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

*(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)*

Addenda, where practical, will be transmitted electronically regardless of how Bidding Documents were received. In all other instances, Addenda will be issued in paper copy.

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

### § 3.5 Or Equal Clause

§ 3.5.1 The use of manufacturer's brand names, catalog numbers, and similar proprietary identifying data in the contract documents are not intended to eliminate from consideration products that are equivalent in quality, appearance and function to those specified. Where, in the specifications, certain kinds, types, brands, or manufacturers of materials are named, they shall be regarded as the required standard of quality. Where two or more are named, these are presumed to be equal, and the contractor may select one of those items. Further, the contractor may be requested to submit information describing in specific detail, wherein the bid material differs from the quality and performance required by the base specifications, and such other information as may be required by the Architect. The risk of acceptance of bid equivalents is the responsibility of the contractor.

§ 3.5.2 If the contractor desires to use any kind, type, brand, or manufacturer of material other than those named in the Specification, he shall indicate in writing on the form included in Specification Section 00 44 00 Equivalent Listing, prior to award of contract, that kind, type, brand, or manufacture is included in the base and/or alternate bids for the specified item(s).

## ARTICLE 4 BIDDING PROCEDURES

### § 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

#### § 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

*(Insert the form and amount of bid security.)*

Bid security shall be in the amount of 5% of the bid amount, cash will not be accepted as bid security. Bid security shall be in one of the following forms:

- a. Bid Bond from a company listed on Treasury Circular 570.
- b. Certified Check.
- c. Bank Check.

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning 45 days after the opening of Bids, withdraw its Bid and request the return of its bid security.

#### § 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

*(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)*

Bids shall be submitted in paper copy as outlined in the Advertisement for Bids, and in accordance with Article 4 of these Instructions.

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

#### § 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

**§ 4.4.2** Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

**§ 4.4.3** After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:  
(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

**Notwithstanding any other provisions or regulations, the bid security shall be returned to the Bidder, at the address listed on the Bid Form as soon as is reasonable and practical.**

**§ 4.4.4** The stipulated time period after the receipt of bids during which bids may not be withdrawn is 45 calendar days. The stipulated time period within which alternates may not be withdrawn by the successful bidder is 120 days after acceptance of the bid.

## **ARTICLE 5 CONSIDERATION OF BIDS**

### **§ 5.1 Opening of Bids**

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

### **§ 5.2 Rejection of Bids**

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

### **§ 5.3 Acceptance of Bid (Award)**

**§ 5.3.1** It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

**§ 5.3.2** Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

## **ARTICLE 6 POST-BID INFORMATION**

### **§ 6.1 Contractor's Qualification Statement**

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

**§ 6.1.1 A copy of Contractor's Qualification Statement - AIA Document A305 is included for reference.**

### **§ 6.2 Owner's Financial Capability**

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

### **§ 6.3 Submittals**

**§ 6.3.1** After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and

- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.
- .4 a Schedule of Values broken down by Specification Section for all portions of the work, unless otherwise noted in Section 01 20 00.**

**§ 6.3.2** The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

**§ 6.3.3** Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

**§ 6.3.4** Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

## **ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND**

### **§ 7.1 Bond Requirements**

**§ 7.1.1** If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

**§ 7.1.2** If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

**§ 7.1.3** The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located. The surety company shall be listed in the latest issue of the U.S. Treasury Circular 570.

**§ 7.1.4** Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

*(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)*

### **§ 7.2 Time of Delivery and Form of Bonds**

**§ 7.2.1** The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

**§ 7.2.2** Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

**§ 7.2.3** The bonds shall be dated on or after the date of the Contract.

**§ 7.2.4** The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

## **ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS**

**§ 8.1** Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.  
(Insert the complete AIA Document number, including year, and Document title.)

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.  
(Insert the complete AIA Document number, including year, and Document title.)

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.  
(Insert the complete AIA Document number, including year, and Document title.)

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:  
(Insert the date of the E203-2013.)

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda:

Number	Date	Pages

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

☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:  
(Insert the date of the E204-2017.)

☐ The Sustainability Plan:

Title	Date	Pages

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents listed below:



*(List here any additional documents that are intended to form part of the Proposed Contract Documents.)*







SECTION 00 41 13

BID FORM  
(SUBMIT IN DUPLICATE)

Hunt Engineers, Architects, Land Surveyors & Landscape Architect, DPC  
Airport Corporate Park, 100 HUNT Center Horseheads, NY 14845

BID SUBMITTED BY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

FAX NUMBER: \_\_\_\_\_

FEDERAL EMPLOYER IDENTIFICATION NUMBER: \_\_\_\_\_

PROJECT NAME: Owego DRI - Phase I: Marvin Park Improvements

HUNT PROJECT NUMBER: 2550-011

DOCUMENT DATE: February 2023

OWNER: Village of Owego

The bidder (identified above) hereby certifies that he has examined and fully understands the requirements and intent of the BIDDING AND CONTRACT DOCUMENTS, including Drawings, Project Manual, and Addenda; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on or before, the dates specified in the Contract Documents for the BASE BID sum of:

CONTRACT: \_\_\_\_\_

(Refer to Section 01 10 00 Summary)

\_\_\_\_\_  
(AMOUNT IN WORDS)

\_\_\_\_\_  
(AMOUNT IN FIGURES)

SHOW AMOUNT OF BASE BID IN BOTH WORDS AND FIGURES; IN CASE OF DISCREPANCY BETWEEN WORDS AND FIGURES SHOWN, THE AMOUNT SHOWN IN WORDS WILL GOVERN.

**ADDENDA**

THE FOLLOWING ADDENDA HAVE BEEN RECEIVED. THE MODIFICATIONS TO THE BID DOCUMENTS NOTED BELOW HAVE BEEN CONSIDERED AND ALL COSTS ARE INCLUDED IN THE BID AMOUNT.

LIST OF ADDENDA RECEIVED

No.	Date	No.	Date
_____	_____	_____	_____
No.	Date	No.	Date
_____	_____	_____	_____
No.	Date	No.	Date
_____	_____	_____	_____

### ALLOWANCES

The bidder acknowledges that all Contingency Allowances described in Section 01 21 00 - Allowances that are assigned to this work contract ARE INCLUDED in the Bid Amount.

### ALTERNATES

Indicate in the spaces provided below the amount to be added to the BASE BID if the following ALTERNATES as described in SECTION 01 23 00 - Alternates of the Project Manual are accepted by the Owner.

Include in the amount of the ALTERNATES, all labor, materials, overhead and profit, modification of work specified in Contract Documents, and additional work required under your scope of work that may be required by acceptance of the ALTERNATE.

Include a bid amount for all ALTERNATES with work applicable under your scope of work.

Refer to INSTRUCTIONS TO BIDDERS and SECTION 01 23 00 - Alternates for additional information regarding ALTERNATES.

#### LIST OF ALTERNATES:

ALTERNATE ALT #1: Pickleball Courts

Select One: Add/Deduct

---

(Amount in Words)

---

(Amount in Figures)

ALTERNATE ALT #2: Fencing Alternative

Select One: Add/Deduct

---

(Amount in Words)

---

(Amount in Figures)

### UNIT PRICES

The following are UNIT PRICES for specific portions of the work listed. Include in the amount of the UNIT PRICES, all labor, material, products, tools, equipment, plant and facilities, transportation, services and incidentals, erection, application or installation of the item of work; overhead and profit.

The amount indicated on the BID FORM is for contract purposes only if additional or lesser amount of work is required under a specific UNIT PRICE.

Estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, the final payment for all Unit Price Work will be based on actual quantities, determined in the Contract Documents.

Include a price for all UNIT PRICES for work under your scope of work. Refer to SECTION 01 22 00 - Unit Prices of the Project Manual for additional information regarding UNIT PRICES.

#### LIST OF UNIT PRICES:

UNIT PRICE NO. 1: Engineered Fiber Surface

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 2: Playsurface Boarder

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 3: Concrete Sidewalk and Pads

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 4: Cold Milling 1.5" Depth

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 5: Standards Duty Asphalt Overlay 1.5"

ADD/DEDUCT

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 6: Tack Coat

ADD/DEDUCT

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 7: Binder Coarse Repair 3.5"

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 8: Black Vinyl Coated Chain Link Fence 4'

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 9: 6" Concrete Cast-in-Place

---

(Amount in Words)

---

(Amount in Figures)

UNIT PRICE NO. 10: Granular Fill Sub-base 6" Min

---

(Amount in Words)

---

(Amount in Figures)

EXECUTION OF CONTRACT

If written notice of the acceptance of this BID is mailed, telegraphed, or otherwise delivered to the undersigned within (45) days after the date of opening of the Bids, the undersigned will, within ten (10) days after the date of such delivery, execute and deliver a contract in the form as required by the Architect.

The BID may be withdrawn at any time prior to the scheduled time for the opening of Bids, or any authorized postponement thereof.

SIGNATURE\_\_\_\_\_

NAME OF BIDDER (Corporate Name)\_\_\_\_\_

( )

( ) SIGNATURE OF CORPORATE OFFICER\_\_\_\_\_

( )

( )

( )

( )

( ) DATE\_\_\_\_\_

Signature: \_\_\_\_\_

Name of Bidder: \_\_\_\_\_

END OF SECTION



# AIA<sup>®</sup> Document A310<sup>™</sup> – 2010

## Bid Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

Village of Owego  
22 Elm Street  
Owego, NY 13827

**BOND AMOUNT: \$****PROJECT:**

*(Name, location or address, and Project number, if any)*

Owego DRI - Phase I: Marvin Park Improvements

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so

**ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this    day of    ,

\_\_\_\_\_  
(Principal)

\_\_\_\_\_  
(Seal)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Surety)

\_\_\_\_\_  
(Seal)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Title)

Init.

/



# Additions and Deletions Report for AIA<sup>®</sup> Document A310<sup>™</sup> – 2010

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 14:00:28 ET on 01/26/2023.

## PAGE 1

Village of Owego  
22 Elm Street  
Owego, NY 13827

...

Owego DRI - Phase I: Marvin Park Improvements

## PAGE 2

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~~(Contractor as Principal)~~(Principal) (Seal)

## ***Certification of Document's Authenticity***

***AIA® Document D401™ – 2003***

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 14:00:28 ET on 01/26/2023 under Order No. 2114339120 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A310™ - 2010, Bid Bond, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

---

*(Signed)*

---

*(Title)*

---

*(Dated)*

SECTION 00 43 36  
PROPOSED SUBCONTRACTORS FORM

PARTICULARS

- 1.1 HEREWITH IS THE LIST OF SUBCONTRACTORS REFERENCED IN THE BID SUBMITTED BY:
- 1.2 (BIDDER) \_\_\_\_\_
- 1.3 TO (OWNER ): VILLAGE OF OWEGO
- 1.4 DATED \_\_\_\_\_ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.
- 1.5 THE FOLLOWING WORK WILL BE PERFORMED (OR PROVIDED) BY SUBCONTRACTORS  
AND COORDINATED BY US:

LIST OF SUBCONTRACTORS

- 2.1 WORK SUBJECT SUBCONTRACTOR NAME

---

---

END OF SECTION



SECTION 00 44 00  
EQUIVALENT LISTING

PRIME CONTRACT: \_\_\_\_\_

SUBMITTED BY 3 LOW BIDDERS WITHIN 72 HOURS AFTER BID OPENING

In accordance with Article 3 of Instructions to Bidders, list proposed equivalents and corresponding specified products below. Complete and submit additional copies of this form as necessary for additional products.

Attach additional sheet identifying any aspect of the Contract Documents that cannot be complied with by the manufacturer or supplier of the proposed equivalent product.

Specified Product	Equivalent Product
-------------------	--------------------

Technical Section:_____	Manufacturer:_____
-------------------------	--------------------

Specified Product:_____	Designation:_____
-------------------------	-------------------

Technical Section:_____	Manufacturer:_____
-------------------------	--------------------

Specified Product:_____	Designation:_____
-------------------------	-------------------

Technical Section:_____	Manufacturer:_____
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Specified Product:_____	Designation:_____
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Technical Section:_____	Manufacturer:_____
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Specified Product:_____	Designation:_____
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Technical Section:_____	Manufacturer:_____
-------------------------	--------------------

Specified Section:_____	Designation:_____
-------------------------	-------------------

Technical Section:_____	Manufacturer:_____
-------------------------	--------------------

END OF SECTION





# AIA<sup>®</sup> Document A305<sup>™</sup> – 2020 Exhibit A

## General Information

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

### § A.1 ORGANIZATION

#### § A.1.1 Name and Location

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

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

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

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

#### § A.1.2 Legal Status

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

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

#### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

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

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

**§ A.1.3 Other Information**

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

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

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

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

**§ A.2 EXPERIENCE**

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

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

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

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

**§ A.3 CAPABILITIES**

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

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



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

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

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

#### **§ A.4 REFERENCES**

**§ A.4.1** Identify three client references:

*(Insert name, organization, and contact information)*

**§ A.4.2** Identify three architect references:

*(Insert name, organization, and contact information)*

**§ A.4.3** Identify one bank reference:

*(Insert name, organization, and contact information)*

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

*(Insert name, organization, and contact information)*

## **Additions and Deletions Report for** **AIA<sup>®</sup> Document A305™ – 2020 Exhibit A**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 13:04:58 ET on 01/26/2023.

*There are no differences.*



# AIA<sup>®</sup> Document A305<sup>™</sup> – 2020 Exhibit B

## Financial and Performance Information

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

### § B.1 FINANCIAL

#### § B.1.1 Federal tax identification number:

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

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

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

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

### § B.2 DISPUTES AND DISCIPLINARY ACTIONS

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

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

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

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

.1 \_\_\_\_\_ failed to complete work awarded to it?

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

### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

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

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

**§ B.2.3** In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management; or any of the individuals listed in Exhibit A Section 1.2:

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

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

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

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

## **Additions and Deletions Report for** **AIA<sup>®</sup> Document A305<sup>™</sup> – 2020 Exhibit B**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 13:05:56 ET on 01/26/2023.

*There are no differences.*





# AIA<sup>®</sup> Document A305<sup>™</sup> – 2020 Exhibit C

## Project Specific Information

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

### PROJECT:

(Name and location or address.)

### CONTRACTOR'S PROJECT OFFICE:

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

### TYPE OF WORK SOUGHT

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

### CONFLICT OF INTEREST

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

### § C.1 PERFORMANCE OF THE WORK

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

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

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

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

### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

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

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

## § C.2 EXPERIENCE RELATED TO THE PROJECT

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

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

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

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

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

## § C.3 SAFETY PROGRAM AND RECORD

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

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

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

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

## § C.4 INSURANCE

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

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



§ C.4.3 Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, or AIA Document A132-2019, Exhibit A, as applicable, Insurance A.3.2.2.2? If so, identify.

**§ C.5 SURETY**

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

§ C.5.2 Surety company name:

§ C.5.3 Surety agent name and contact information:

§ C.5.4 Total bonding capacity:

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

## **Additions and Deletions Report for** **AIA<sup>®</sup> Document A305<sup>™</sup> – 2020 Exhibit C**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

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### **PAGE 3**

**§ C.4.3** Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, or AIA Document A132-2019, Exhibit A, as applicable, Insurance A.3.2.2.2? If so, identify.



# AIA<sup>®</sup> Document A305<sup>™</sup> – 2020 Exhibit D

## Contractor's Past Project Experience

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





# AIA<sup>®</sup> Document A305<sup>™</sup> – 2020 Exhibit E

## Contractor's Past Project Experience, Continued

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



SECTION 00 45 19  
NON-COLLUSION AFFIDAVIT  
(MUST BE SUBMITTED WITH BID)

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of their knowledge and belief:

- A. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or any competitor;
- B. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or competitor;
- C. No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition;
- D. That the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of Section 201-g of the Labor Law;
- E. The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing on its behalf;
- F. That attached hereto (if a corporate bidder) is a certified copy of a resolution authorizing the execution of this certification by the signature of this bid or proposal in behalf of the corporate bidder.

A bid shall not be considered for award nor shall any award be made where A, B, C, and D above have not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where A, B, and C above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department, agency, or official thereof to which the bid is made, or his designee, determines that such disclosure was not made for the purpose of restricting competition. The fact that a bidder (a) has published price lists, rates, or tariffs covering items being procured, (b) has informed proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of Subparagraph B, above.

CONTINUED ON NEXT PAGE

Any bid hereafter made to any political subdivision of the state or any public department, agency or official thereof by a corporate bidder for work or services performed to be performed or goods sold to or to be sold, where competitive bidding is required by the statute, rule, regulation, or local law, and where such bid contains the certification referred to herein, shall be deemed to have been authorized by the Board of Directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certification as to non-collusion as the act and deed of the corporation.

INDIVIDUAL\_\_\_\_\_

CORPORATION\_\_\_\_\_

Dated:\_\_\_\_\_

By:\_\_\_\_\_

(Signature of Officer)

END OF SECTION



# MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES – EQUAL EMPLOYMENT OPPORTUNITY POLICY STATEMENT

## M/WBE AND EEO POLICY STATEMENT

I, \_\_\_\_\_ (full name), the \_\_\_\_\_ (title) agree to adopt the following policies with respect to the project being developed or services rendered for \_\_\_\_\_ (awardee organization name - LPA)

### MWBE

This organization will and will cause its contractors and subcontractors to take good faith actions to achieve the M/WBE contract participations goals set by the State for that area in which the State-funded project is located, by taking the following steps:

- (1) Actively and affirmatively solicit bids for contracts and subcontracts from qualified State certified MBEs or WBEs, including solicitations to M/WBE contractor associations.
- (2) Request a list of State-certified M/WBEs from Agency(ies) and solicit bids from them directly.
- (3) Ensure that plans, specifications, request for proposals and other documents used to secure bids will be made available in sufficient time for review by prospective M/WBEs.
- (4) Where feasible, divide the work into smaller portions to enhanced participations by M/WBEs and encourage the formation of joint venture and other partnerships among M/WBE contractors to enhance their participation.
- (5) Document and maintain records of bid solicitation, including those to M/WBEs and the results thereof. Contractor will also maintain records of actions that its subcontractors have taken toward meeting M/WBE contract participation goals.
- (6) Ensure that progress payments to M/WBEs are made on a timely basis so that undue financial hardship is avoided, and that bonding and other credit requirements are waived or appropriate alternatives developed to encourage M/WBE participation.

### EEO

(a) This organization will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability or marital status, will undertake or continue existing programs of affirmative action to ensure that minority group members are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts.

(b) This organization shall state in all solicitation or advertisements for employees that in the performance of the State contract all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex disability or marital status.

(c) At the request of the contracting agency, this organization shall request each employment agency, labor union, or authorized representative for a statement that it will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of this organization's obligations herein.

(d) Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

(e) This organization will include the provisions of sections (a) through (d) of this agreement in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the State contract.

Agreed to this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

By \_\_\_\_\_

Print: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_ is designated as the Minority Business Enterprise Liaison

He/she is responsible for administering the Minority and Women-Owned Business Enterprises-Equal Employment Opportunity (M/WBE-EEO) program.

**M/WBE Contract Goals**

  30%   Minority and Women's Business Enterprise Participation

  15%   Minority Business Enterprise Participation

  15%   Women's Business Enterprise Participation

SECTION 00 45 43  
CORPORATE RESOLUTION

Resolve that \_\_\_\_\_  
Name of Individual

Be authorized to sign and submit the bid or proposal of:

\_\_\_\_\_  
Name of Corporation

For the following project: Owego DRI - Phase I: Marvin Park Improvements

CONTRACT FOR:

\_\_\_\_\_  
List Contract Type

The foregoing is a true and correct copy of the resolution by:

\_\_\_\_\_  
Name of Corporation

At a meeting of it's Board of Directors held on: \_\_\_\_\_  
Date

\_\_\_\_\_  
Secretary

Seal of the Corporation



SECTION 00 45 46.01  
IRAN DIVESTMENT ACT CERTIFICATION

INTRODUCTION:

As a result of the Iran Divestment Act of 2012 (Act), Chapter 1 of the 2012 Laws of New York, a new provision has been added to the State Finance Law (SFL), § 165-a, effective April 12, 2012. Under the Act, the Commissioner of the Office of General Services (OGS) will be developing a list (prohibited entities list) of "persons" who are engaged in "investment activities in Iran" (both are defined terms in the law). Pursuant to SFL § 165-a(3)(b), the initial list is expected to be issued no later than 120 days after the Act's effective date, at which time it will be posted on the OGS website.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to Paragraph (b) of Subdivision (3) of Section 165a of the State Financial Law.

SIGNATURE:\_\_\_\_\_.

PRINT NAME:\_\_\_\_\_.

TITLE:\_\_\_\_\_.

COMPANY NAME:\_\_\_\_\_.

DATE:\_\_\_\_\_.

END OF SECTION



SECTION 00 45 46.02  
FEDERAL AND STATE CERTIFICATION

INTRODUCTION:

Pursuant to Section 103, Subdivision 1-c of the New York General Municipal Law in the conduct of public bidding, the law requires the officer, board or agency of any political subdivision or of any district therein, to consider whether the putative low bidder or any substantially owned affiliated entity of the putative low bidder has been found to be in violation of any of three federal laws, specifically, the Davis-Bacon Act, the federal prevailing wage statute, the Copeland Act and the Contract Hours and Safety Standards Act which covers hours of work and safety standards in federal public contracting. If the putative low bidder is not in compliance with the named federal laws, then the Owner may not award the contract.

I, \_\_\_\_\_ the \_\_\_\_\_ of \_\_\_\_\_  
(Name) (Title) (Company)

swear or affirm that the following is true:

1. The company, its principals or entities related to the company named above, is not now, nor ever has been, debarred from contracting with the United States Government or any State government.
2. The company is not now under investigation by any agency of the Federal Government or the government of any State for any actions by the company, its principals or any related entity, for any alleged malfeasance or misfeasance of any kind or nature which could lead to a debarment from governmental contracting or criminal prosecution, as well as render any contracts signed in reliance on this certification voidable by the party relying on this certification.
3. I have full legal authority under my company's organizational documents or bylaws to make this certification on the company's behalf.
4. I understand that submission of a false statement on this document will subject me to criminal prosecution.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Signature

END OF SECTION





SECTION 00 45 46.03  
WAIVER OF IMMUNITY

The Contractor and/or Vendor and/or Supplier hereby agrees to the provisions of Sections 103-a of the New York State General Municipal Law which requires that upon the refusal of a person, when called before a Grand Jury, head of a State Department, temporary State Commission or other State Agency, head of a City Department, or other City Agency, which is empowered to compel the attendance of witnesses and examine them under oath, to testify concerning any transaction or contract had with the State, any Political Subdivision thereof, a Public Authority or with any Public Department, Agency or Official of the State or of any Political sub-division thereof or of a Public Authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction:

- a. such person, and any firm, partnership or corporation of which he is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any municipal corporation or any public department, agency or official thereof, for goods, work, or services, for a period of five years after such refusal and
- b. any contract made with any municipal corporation or any public department, agency or official thereof, since the effective date of this law by such person, and by any firm, partnership or corporation of which he is a member, partner, director, or officer may be cancelled or terminated by the municipal corporation or fire district without incurring any penalty or damages on account of such cancellation or termination, but any monies owing by the municipal corporation or fire district for goods delivered or work done prior to the cancellation or termination shall be paid.

Date:\_\_\_\_\_.

\_\_\_\_\_  
(Signature)

END OF SECTION



# AIA® Document A101® – 2017

## **Standard Form of Agreement Between Owner and Contractor** where the basis of payment is a Stipulated Sum

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

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

The Village of Owego  
22 Elm Street Owego, NY 13827  
Telephone Number: 607-687-1710

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

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

Owego DRI - Phase I: Marvin Park Improvements

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

Hunt Engineers, Architects, Land Surveyors & Landscape Architect DPC  
Hunt Engineers, Architects, Land Surveyors & Landscape Architect, DPC  
100 Hunt Center Horseheads, NY 14845  
Telephone Number: 607-358-1000

The Owner and Contractor agree as follows.

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

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

**ELECTRONIC COPYING** of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

## TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

## EXHIBIT A INSURANCE AND BONDS

### ARTICLE 1 THE CONTRACT DOCUMENTS

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

### ARTICLE 2 THE WORK OF THIS CONTRACT

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

### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

*(Check one of the following boxes.)*

☒ The date of this Agreement.

☐ A date set forth in a notice to proceed issued by the Owner.

☐ Established as follows:

*(Insert a date or a means to determine the date of commencement of the Work.)*

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

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

#### § 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

*(Check one of the following boxes and complete the necessary information.)*

[ ☒ ] Not later than one hundred twenty days ( 120 ) calendar days from the date of commencement of the Work.

[ ☐ ] By the following date:

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

Portion of Work

Substantial Completion Date

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

#### ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be            (\$            ), subject to additions and deductions as provided in the Contract Documents.

#### § 4.2 Alternates

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

Item

Price

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

Item

Price

Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:  
(Identify each allowance.)

Item

Price

#### § 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item

Units and Limitations

Price per Unit (\$0.00)

#### § 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

#### § 4.6 Other:

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

## ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the fifth day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the fifth day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than sixty (60) days after the Architect receives the Application for Payment.

*(Federal, state or local laws may require payment within a certain period of time.)*

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

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

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

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

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201-2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201-2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

*(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)*

Five percent (5%)

**§ 5.1.7.1.1** The following items are not subject to retainage:

*(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)*

**§ 5.1.7.2** Reduction or limitation of retainage, if any, shall be as follows:

*(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)*

**§ 5.1.7.3** Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

*(Insert any other conditions for release of retainage upon Substantial Completion.)*

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

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

## **§ 5.2 Final Payment**

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

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

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

## **§ 5.3 Interest**

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

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

%

## **ARTICLE 6 DISPUTE RESOLUTION**

### **§ 6.1 Initial Decision Maker**

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

*(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)*

## § 6.2 Binding Dispute Resolution

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

*(Check the appropriate box.)*

☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2017

☒ Litigation in a court of competent jurisdiction

☐ Other *(Specify)*

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

## ARTICLE 7 TERMINATION OR SUSPENSION

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

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

*(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)*

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

## ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner's representative:

*(Name, address, email address, and other information)*

§ 8.3 The Contractor's representative:

*(Name, address, email address, and other information)*

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



## § 8.5 Insurance and Bonds

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

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

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

*(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*

§ 8.7 Other provisions:

## ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

*(Insert the date of the E203–2013 incorporated into this Agreement.)*

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

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

.8 Other Exhibits:

*(Check all boxes that apply and include appropriate information identifying the exhibit where required.)*

[ ] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:

(Insert the date of the E204-2017 incorporated into this Agreement.)

[ ] The Sustainability Plan:

Title	Date	Pages

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

**.9 Other documents, if any, listed below:**

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

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

\_\_\_\_\_  
**OWNER** (Signature)

Mike Baratta, Mayor

(Printed name and title)

\_\_\_\_\_  
**CONTRACTOR** (Signature)

(Printed name and title)



# AIA® Document A101® – 2017 Exhibit A

## Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the     day of     in the year  
(In words, indicate day, month and year.)

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

Owego DRI: Phase I – Marvin park Improvements

**THE OWNER:**  
(Name, legal status and address)

The Village of Owego  
22 Elm St  
Owego, NY 13827

**THE CONTRACTOR:**  
(Name, legal status and address)

### TABLE OF ARTICLES

- A.1     GENERAL**
- A.2     OWNER'S INSURANCE**
- A.3     CONTRACTOR'S INSURANCE AND BONDS**
- A.4     SPECIAL TERMS AND CONDITIONS**

#### ARTICLE A.1    GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

#### ARTICLE A.2    OWNER'S INSURANCE

##### § A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

##### § A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

#### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

This document is intended to be used in conjunction with AIA Document A201®–2017, General Conditions of the Contract for Construction. Article 11 of A201®–2017 contains additional insurance provisions.

### § A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 **Causes of Loss.** The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

*(Indicate below the cause of loss and any applicable sub-limit.)*

#### Causes of Loss

#### Sub-Limit

§ A.2.3.1.1.1 The Insurance required by Section A.2.3.1 is not intended to cover the Contractor or Subcontractor against any loss by fire, lightning, extended coverage, all-risk, theft or vandalism and malicious mischief of any tools, equipment, vehicles, shanties, tool houses, trailers or other temporary or permanent structures, wherever located, and owned or rented by the Contractor, Subcontractor, their Employees or Agents.

§ A.2.3.1.2 **Specific Required Coverages.** The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

*(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)*

#### Coverage

#### Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 **Deductibles and Self-Insured Retentions.** If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 **Occupancy or Use Prior to Substantial Completion.** The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

### § A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure

against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

**§ A.2.4 Optional Extended Property Insurance.**

The Owner shall purchase and maintain the insurance selected and described below.

*(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)*

- ☐ **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
- ☐ **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
- ☐ **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
- ☐ **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
- ☐ **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
- ☐ **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
- ☐ **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

### § A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

*(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)*

[ ] **§ A.2.5.1 Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information.  
*(Indicate applicable limits of coverage or other conditions in the fill point below.)*

[ ] **§ A.2.5.2 Other Insurance**  
*(List below any other insurance coverage to be provided by the Owner and any applicable limits.)*

Coverage

Limits

## ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

### § A.3.1 General

**§ A.3.1.1 Certificates of Insurance.** The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

**§ A.3.1.1.1** The submittal of the certificates of insurance shall include a disclosure of any prior and/or pending claims against the submitted policies, additionally, the Contractor shall immediately make known to the Owner, any subsequent claims against the aforementioned policies.

**§ A.3.1.2 Deductibles and Self-Insured Retentions.** The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

**§ A.3.1.3 Additional Insured Obligations.** To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

### § A.3.2 Contractor's Required Insurance Coverage

**§ A.3.2.1** The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, and one to which the Owner has no reasonable objection. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

*(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)*

### **§ A.3.2.2 Commercial General Liability**

**§ A.3.2.2.1** Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than one million dollars (\$ 1,000,000 ) each occurrence, two million dollars (\$ 2,000,000 ) general aggregate, and two million dollars (\$ 2,000,000 ) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

**§ A.3.2.2.2** The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

**§ A.3.2.3** Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, or by employees of the Contractor, with policy limits of not less than one million dollars (\$ 1,000,000 ) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

**§ A.3.2.4** The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

**§ A.3.2.5** Workers' Compensation and Disability Insurance at statutory limits.

**§ A.3.2.6** Employers' Liability with policy limits not less than one million dollars (\$ 1,000,000 ) each accident, one million dollars (\$ 100,000,000 ) each employee, and two million dollars (\$ 2,000,000 ) policy limit.

**§ A.3.2.7** Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than two million dollars (\$ 2,000,000 ) per claim and six million dollars (\$ 6,000,000 ) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than one million dollars (\$ 1,000,000 ) per claim and two million dollars (\$ 2,000,000 ) in the aggregate.

*(Paragraph deleted)*

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than ( \$ ) per claim and ( \$ ) in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than five million dollars (\$ 5,000,000 ) per claim.

### § A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

*(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)*

Umbrella Liability to provide bodily injury and property damage insurance limits in excess of those limits shown herein, with policy limits of not less than five million dollars (\$5,000,000) each occurrence and five million dollars (\$5,000,000) in the aggregate, with a retained limit of ten thousand dollars (\$10,000)

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

*(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)*

☐ § A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:  
*(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

☐ § A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than ( \$ ) per claim and ( \$ ) in the aggregate, for Work within fifty (50) feet of railroad property.

☒ § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than one million dollars (\$ 1,000,000 ) per claim and two million dollars (\$ 2,000,000 ) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of



asbestos-containing materials, if the work requires such activities.

☒ **§ A.3.3.2.4** Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

☒ **§ A.3.3.2.5** Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

☐ **§ A.3.3.2.6 Other Insurance**  
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

**Coverage**

**Limits**

**§ A.3.4 Performance Bond and Payment Bond**

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:  
(Specify type and penal sum of bonds.)

**Type**

Payment Bond

Performance Bond

**Penal Sum (\$0.00)**

CONTRACT SUM

CONTRACT SUM

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

**ARTICLE A.4 SPECIAL TERMS AND CONDITIONS**

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

# Additions and Deletions Report for AIA® Document A101® – 2017 Exhibit A

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 11:35:41 ET on 04/13/2023.

## PAGE 1

Owego DRI: Phase I – Marvin park Improvements

...

The Village of Owego  
22 Elm St  
Owego, NY 13827

## PAGE 2

§ A.2.3.1.1.1 The Insurance required by Section A.2.3.1 is not intended to cover the Contractor or Subcontractor against any loss by fire, lightning, extended coverage, all-risk, theft or vandalism and malicious mischief of any tools, equipment, vehicles, shanties, tool houses, trailers or other temporary or permanent structures, wherever located, and owned or rented by the Contractor, Subcontractor, their Employees or Agents.

## PAGE 4

§ A.3.1.1.1 The submittal of the certificates of insurance shall include a disclosure of any prior and/or pending claims against the submitted policies, additionally, the Contractor shall immediately make known to the Owner, any subsequent claims against the aforementioned policies.

...

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, and one to which the Owner has no reasonable objection. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

## PAGE 5

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than one million dollars (\$ 1,000,000 ) each occurrence, two million dollars (\$ 2,000,000 ) general aggregate, and two million dollars (\$ 2,000,000 ) aggregate for products-completed operations hazard, providing coverage for claims including

...

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, or by employees of the Contractor, with policy limits of not less than one million dollars (\$ 1,000,000 ) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

...

§ A.3.2.5 Workers' Compensation and Disability Insurance at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than one million dollars (\$ 1,000,000) each accident, one million dollars (\$ 100,000,000) each employee, and two million dollars (\$ 2,000,000) policy limit.

PAGE 6

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than two million dollars (\$ 2,000,000) per claim and six million dollars (\$ 6,000,000) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than one million dollars (\$ 1,000,000) per claim and two million dollars (\$ 2,000,000) in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than (\$ ) per claim and (\$ ) in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than (\$ ) per claim and (\$ ) in the aggregate, five million dollars (\$ 5,000,000) per claim.

...

Umbrella Liability to provide bodily injury and property damage insurance limits in excess of those limits shown herein, with policy limits of not less than five million dollars (\$5,000,000) each occurrence and five million dollars (\$5,000,000) in the aggregate, with a retained limit of ten thousand dollars (\$10,000)

...

☒ § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than one million dollars (\$ 1,000,000) per claim and two million dollars (\$ 2,000,000) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing ~~materials.~~ materials, if the work requires such activities.

☒ § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

☒ § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

PAGE 7

Payment Bond

CONTRACT SUM

Performance Bond

CONTRACT SUM





# AIA<sup>®</sup> Document A312<sup>™</sup> – 2010

## Payment Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

Village of Owego

22 Elm Street

Owego, NY 13827

**CONSTRUCTION CONTRACT**

Date:

Amount: \$

Description:

*(Name and location)*

Owego DRI - Phase I: Marvin Park Improvements

HUNT #2550-011

**ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

**BOND**

Date:

*(Not earlier than Construction Contract Date)*

Amount: \$

Modifications to this Bond: | None | See Section 18

**CONTRACTOR AS PRINCIPAL**Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

Name and  
Title:*(Any additional signatures appear on the last page of this Payment Bond.)**(FOR INFORMATION ONLY — Name, address and telephone)***AGENT or BROKER:****SURETY**Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

Name and  
Title:**OWNER'S REPRESENTATIVE:***(Architect, Engineer or other party:)*

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

**§ 10** The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

**§ 11** The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

**§ 12** No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

**§ 13** Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

**§ 14** When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

**§ 15** Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

## **§ 16 Definitions**

**§ 16.1 Claim.** A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

**§ 16.2 Claimant.** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

**§ 16.3 Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.



**§ 16.4 Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

**§ 16.5 Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

**§ 17** If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

**§ 18** Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_  
Signature: \_\_\_\_\_  
(Corporate Seal)

Name and Title: \_\_\_\_\_  
Address: \_\_\_\_\_

**SURETY**

Company: \_\_\_\_\_  
Signature: \_\_\_\_\_  
(Corporate Seal)

Name and Title: \_\_\_\_\_  
Address: \_\_\_\_\_

# **Additions and Deletions Report for**

## **AIA<sup>®</sup> Document A312<sup>™</sup> – 2010**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 14:30:37 ET on 01/26/2023.

### **PAGE 1**

Village of Owego  
22 Elm Street  
Owego, NY 13827

...

Owego DRI - Phase I: Marvin Park Improvements  
HUNT #2550-011

## **Certification of Document's Authenticity**

**AIA® Document D401™ – 2003**

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 14:30:37 ET on 01/26/2023 under Order No. 2114339120 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A312™ - 2010, Payment Bond, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Dated)





# AIA<sup>®</sup> Document A312<sup>™</sup> – 2010

## Performance Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

Village of Owego

22 Elm Street

Owego, NY 13827

**CONSTRUCTION CONTRACT**

Date:

Amount: \$

Description:

*(Name and location)*

**ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

**BOND**

Date:

*(Not earlier than Construction Contract Date)*

Amount: \$

Modifications to this Bond: | None | See Section 16

**CONTRACTOR AS PRINCIPAL**Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

**SURETY**Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

Name and \_\_\_\_\_

Title:

Name and \_\_\_\_\_

Title:

*(Any additional signatures appear on the last page of this Performance Bond.)**(FOR INFORMATION ONLY — Name, address and telephone)***AGENT or BROKER:****OWNER'S REPRESENTATIVE:***(Architect, Engineer or other party:)*Hunt Engineers, Architects, Land  
Surveyors & Landscape Architect,  
DPC

Progress Plaza

1 Elizabeth Street, Suite 12

Towanda PA 18848

Init.

/

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**User Notes:**

(3B9ADA2B)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### § 14 Definitions

**§ 14.1 Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

**§ 14.2 Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

**§ 14.3 Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

**§ 14.4 Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

**§ 14.5 Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.



§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_ *(Corporate Seal)*

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_

**SURETY**

Company: \_\_\_\_\_ *(Corporate Seal)*

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_

Init.

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**User Notes:**

(3B9ADA2B)

# **Additions and Deletions Report for**

## **AIA<sup>®</sup> Document A312<sup>™</sup> – 2010**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 10:51:48 ET on 01/31/2023.

### **PAGE 1**

Village of Owego  
22 Elm Street  
Owego, NY 13827

### **PAGE 2**

Hunt Engineers, Architects, Land  
Surveyors & Landscape Architect,  
DPC

Progress Plaza

1 Elizabeth Street, Suite 12

Towanda PA 18848

## **Certification of Document's Authenticity**

**AIA® Document D401™ – 2003**

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 10:51:48 ET on 01/31/2023 under Order No. 2114339120 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A312™ - 2010, Performance Bond, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

---

*(Signed)*

---

*(Title)*

---

*(Dated)*



SECTION 00 65 19.16  
AFFIDAVIT OF RELEASE OF LIENS

TO ALL WHOM IT MAY CONCERN:

WHEREAS, the undersigned has been employed by \_\_\_\_\_

\_\_\_\_\_

to furnish labor and materials for \_\_\_\_\_

\_\_\_\_\_ work

under a contract \_\_\_\_\_

for the improvement of the property described as \_\_\_\_\_

\_\_\_\_\_

in the \_\_\_\_\_ of \_\_\_\_\_

County of \_\_\_\_\_, State of \_\_\_\_\_

of which \_\_\_\_\_ is the Owner.

NOW, THEREFORE, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_,

The undersigned, as the Contractor for the above-named Contract hereby certifies that to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services, who have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

(If none, write "NONE". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception).

ATTACHMENTS:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens for Subcontractors and material and equipment suppliers.

\_\_\_\_\_(SEAL)  
CONTRACTOR (Name of sole ownership, corporation or partnership)

\_\_\_\_\_(SEAL)  
(Signature of Authorized Representative)

TITLE: \_\_\_\_\_

(Affix corporate  
seal here)



SECTION 00 65 19.19  
CONSENT OF SURETY FOR FINAL PAYMENT

Location \_\_\_\_\_

Project No \_\_\_\_\_ Contract No \_\_\_\_\_

Type of Contract \_\_\_\_\_

Amount of Contract \_\_\_\_\_

In accordance with the provisions of the above-named contract between the Owner and the Contractor, the following named surety:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

on the Payment Bond of the following named Contractor:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner as set forth in said Surety company's bond:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this \_\_\_\_\_  
day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(Name of Surety Company)

\_\_\_\_\_  
(Sign. of Authorized Representative)

(Affix corporate seal here)





SECTION 00 65 19.26.  
FINAL SETTLEMENT CERTIFICATE

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by (A) \_\_\_\_\_  
to furnish labor and materials for (B) \_\_\_\_\_ work,  
under contract (C) \_\_\_\_\_  
for the improvement of the premises described as (D) \_\_\_\_\_  
in the (City/Village/Town) of \_\_\_\_\_ County of \_\_\_\_\_,  
State of \_\_\_\_\_ of which \_\_\_\_\_ is the Owner.  
NOW THEREFORE, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
for and in consideration of the sum of (E) \_\_\_\_\_

Dollars paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any lien rights to, or claim of lien with respect to and on said above-described premises, and the improvements thereon, and on the moneys or other considerations due or to become due from the owner, or account of labor, services, material, fixtures, apparatus or machinery heretofore or which may hereafter be furnished by the undersigned to or for the above-described premises by virtue of said contract.

(F) \_\_\_\_\_ (SEAL)  
(Name of sole ownership, corporation or partnership)

(Affix corporate Seal here) \_\_\_\_\_ (SEAL)

\_\_\_\_\_  
(Signature of Authorized Representative)

TITLE: \_\_\_\_\_

INSTRUCTIONS FOR FINAL SETTLEMENT

Person or firm with whom you agreed to furnish either labor, services, materials, or any combination thereof.

Fill in nature and extent of work; strike the word labor or the word materials if not in your contract.

If you have more than one contract on the same premises, describe the contract by number (if available), date, and extent of work.

Furnish an accurate enough description of the improvement and location of the premises so that it can be distinguished from any other property.

Amount shown should be the amount actually received and equal to total amount of contract as adjusted.

If waiver is for a corporation, corporate name should be used, corporate seal affixed, and title of officer signing waiver should be set forth; if waiver is for a partnership, the partnership name should be used and partner should sign and designate himself as partner.



# AIA® Document A201® – 2017

## General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

2550-011 - Owego (V) Downtown Revitalization Initiative Capital Projects

### THE OWNER:

(Name, legal status and address)

Village of Owego  
22 Elm Street  
Owego, NY 13827

### THE ARCHITECT:

(Name, legal status and address)

Hunt Engineers, Architects, Land Surveyors & Landscape Architect DPC  
Airport Corporate Park  
100 Hunt Center  
Horseheads, NY 14845

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Init.

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**User Notes:**

(1683312210)

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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

#### **§ 1.1.2 The Contract**

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

#### **§ 1.1.3 The Work**

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

#### **§ 1.1.4 The Project**

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

#### **§ 1.1.5 The Drawings**

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

#### **§ 1.1.6 The Specifications**

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

#### **§ 1.1.7 Instruments of Service**

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

#### **§ 1.1.8 Initial Decision Maker**

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

### **§ 1.2 Correlation and Intent of the Contract Documents**

**§ 1.2.1** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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

**§ 1.2.2** Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

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

### **§ 1.3 Capitalization**

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

### **§ 1.4 Interpretation**

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

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

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

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

### **§ 1.6 Notice**

**§ 1.6.1** Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

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

### **§ 1.7 Digital Data Use and Transmission**

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

### **§ 1.8 Building Information Models Use and Reliance**

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document



G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

**§ 2.1.1** The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

**§ 2.1.2** The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

### **§ 2.2 Evidence of the Owner's Financial Arrangements**

**§ 2.2.1** Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

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

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

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

### **§ 2.3 Information and Services Required of the Owner**

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

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

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

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

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

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

#### § 2.4 Owner's Right to Stop the Work

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

#### § 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

### ARTICLE 3 CONTRACTOR

#### § 3.1 General

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

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

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

#### § 3.2 Review of Contract Documents and Field Conditions by Contractor

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

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

**§ 3.2.3** The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

**§ 3.2.4** If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

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

**§ 3.3.3** The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

### **§ 3.4 Labor and Materials**

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

**§ 3.4.2** Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.



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

### § 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

### § 3.6 Taxes

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

### § 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

### § 3.7.4 Concealed or Unknown Conditions

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

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

### § 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

### § 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

### § 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

### § 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

### **§ 3.12 Shop Drawings, Product Data and Samples**

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

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

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

**§ 3.12.4** Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

**§ 3.12.5** The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

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

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

**§ 3.12.8** The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

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

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

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

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

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

### **§ 3.13 Use of Site**

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

### **§ 3.14 Cutting and Patching**

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

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

### **§ 3.15 Cleaning Up**

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

**§ 3.15.2** If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

### **§ 3.16 Access to Work**

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

### **§ 3.17 Royalties, Patents and Copyrights**

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



### § 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## ARTICLE 4 ARCHITECT

### § 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

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

### § 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

### § 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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

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

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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

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

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

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

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

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

## ARTICLE 5 SUBCONTRACTORS

### § 5.1 Definitions

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

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

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

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

### § 5.3 Subcontractual Relations

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

### § 5.4 Contingent Assignment of Subcontracts

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

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

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

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

## **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

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

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

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

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

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

### **§ 6.2 Mutual Responsibility**

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

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

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

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



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

### § 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

## ARTICLE 7 CHANGES IN THE WORK

### § 7.1 General

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

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

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

### § 7.2 Change Orders

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

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

### § 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

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

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

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

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

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

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

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

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

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

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

#### § 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

### ARTICLE 8 TIME

#### § 8.1 Definitions

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

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

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

## § 8.2 Progress and Completion

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

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

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

## § 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

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

## ARTICLE 9 PAYMENTS AND COMPLETION

### § 9.1 Contract Sum

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

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

### § 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

### § 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

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

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

#### § 9.4 Certificates for Payment

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

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

#### § 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;



- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

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

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

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

## § 9.6 Progress Payments

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

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

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

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

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

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

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

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

## § 9.7 Failure of Payment

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

## § 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

## § 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

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

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

#### § 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

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

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

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

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

### ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

#### § 10.1 Safety Precautions and Programs

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

#### § 10.2 Safety of Persons and Property

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

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

**§ 10.2.2** The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

**§ 10.2.3** The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

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

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

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

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

**§ 10.2.8 Injury or Damage to Person or Property**

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

**§ 10.3 Hazardous Materials and Substances**

**§ 10.3.1** The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

**§ 10.3.2** Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will



promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

**§ 10.3.3** To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

**§ 10.3.4** The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

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

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

#### **§ 10.4 Emergencies**

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

### **ARTICLE 11 INSURANCE AND BONDS**

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

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

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

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

**§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act

or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

## **§ 11.2 Owner's Insurance**

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

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

**§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

## **§ 11.3 Waivers of Subrogation**

**§ 11.3.1** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

## **§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance**

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The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

#### **§11.5 Adjustment and Settlement of Insured Loss**

**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

**§ 11.5.2** Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

### **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

#### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

**§ 12.1.2** If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

#### **§ 12.2 Correction of Work**

##### **§ 12.2.1 Before Substantial Completion**

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

##### **§ 12.2.2 After Substantial Completion**

**§ 12.2.2.1** In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

### § 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## ARTICLE 13 MISCELLANEOUS PROVISIONS

### § 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

### § 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

### § 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

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

### § 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and



approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

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

### § 13.5 Interest

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

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

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

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

**§ 14.1.4** If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

#### **§ 14.2 Termination by the Owner for Cause**

**§ 14.2.1** The Owner may terminate the Contract if the Contractor

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

**§ 14.2.2** When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

**§ 14.2.3** When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

**§ 14.2.4** If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

#### **§ 14.3 Suspension by the Owner for Convenience**

**§ 14.3.1** The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

**§ 14.3.2** The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

#### **§ 14.4 Termination by the Owner for Convenience**

**§ 14.4.1** The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

**§ 14.4.2** Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

## **ARTICLE 15 CLAIMS AND DISPUTES**

### **§ 15.1 Claims**

#### **§ 15.1.1 Definition**

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

#### **§ 15.1.2 Time Limits on Claims**

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

#### **§ 15.1.3 Notice of Claims**

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

#### **§ 15.1.4 Continuing Contract Performance**

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

#### **§ 15.1.5 Claims for Additional Cost**

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

#### **§ 15.1.6 Claims for Additional Time**

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

### § 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

### § 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.



§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

### § 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

### § 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

#### **§ 15.4.4 Consolidation or Joinder**

**§ 15.4.4.1** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

**§ 15.4.4.2** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

**§ 15.4.4.3** The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

# **Additions and Deletions Report for**

## **AIA® Document A201® – 2017**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 14:37:51 ET on 02/01/2023.

### **PAGE 1**

#### 2550-011 - Owego (V) Downtown Revitalization Initiative Capital Projects

...

Village of Owego  
22 Elm Street  
Owego, NY 13827

...

Hunt Engineers, Architects, Land Surveyors & Landscape Architect DPC  
Airport Corporate Park  
100 Hunt Center  
Horseheads, NY 14845

## ***Certification of Document's Authenticity***

***AIA® Document D401™ – 2003***

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 14:37:51 ET on 02/01/2023 under Order No. 2114339120 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2017, General Conditions of the Contract for Construction, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Dated)*

SECTION 00 73 36  
NON-DISCRIMINATION  
&  
EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

By submission of this bid, during the performance of this contract, the contractor hereby agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment, nor subject any individual to harassment, because of race, creed, color, sex (including gender identity or expression), national origin, sexual orientation, military status, age, disability, predisposing genetic characteristics, marital status or domestic violence victim status or because the individual has opposed any practices forbidden under the Human Rights Law or has filed a complaint, testified, or assisted in any proceeding under the Human Rights Law.
2. The contractor will comply with Section 310-312 of the Executive Law and 5 NYCRR Part 143 regarding Equal Employment Opportunities for Minority Group Members and Women.
3. Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development's Division of Minority and Women's Business Development pertaining hereto.
4. The contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Division of Human Rights setting forth the substance of the provisions of the State's laws against discrimination as the State Commissioner of Human Rights shall determine.
5. The contractor will state, in all solicitations, or advertisements for employees placed by or on behalf of the contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, sex (including gender identity or expression), national origin, sexual orientation, military status, age, disability, predisposing genetic characteristics, marital status or domestic violence victim status.
6. The contractor will comply with the provisions of Sections 220-299 of the Executive Law and the Civil Rights Law, will furnish all information and reports deemed necessary by the State Commissioner of Human Rights under these non-discrimination clauses and such sections of the Executive law, and will permit access to his books, records and accounts by the State Commissioner of Human Rights, the Attorney General and the Industrial Commissioner for purposes of investigation to ascertain compliance with these non-discrimination clauses and such sections of the Executive Law and Civil Rights Law.
7. This contract may be forthwith canceled, terminated or suspended, in whole or in part, by the contracting agency upon the basis of a finding made by the State Commissioner of Human Rights that the contractor has not complied with these non-discrimination clauses, and the contractor may be declared ineligible for future contracts made by or on behalf of the State or a public authority or agency of the State, until he satisfied the State Commissioner of Human Rights that he has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such finding shall be made by the State Commissioner of Human Rights after conciliation efforts by the State Division of Human Rights have failed to achieve compliance with these non-discrimination clauses and after verified complaint has been filed with the State Division of Human Rights, notice thereof has been given to the contractor and an opportunity has

EEO & NON DISCRIMINATION CERTIFICATION

been afforded him to be heard publicly before the State Commissioner of Human Rights or his designee. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions and remedies otherwise provided by law.

8. The contractor will include the provisions of subparagraphs (listed above) in every subcontract or purchase order in such a manner that such provisions will be binding upon each subcontractor or vendor as to operations to be performed within the State of New York. The contractor will take such action in enforcing such provisions of such subcontract or purchase order as the contracting agency may direct, including sanctions or remedies for non-compliance. If the contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor shall promptly so notify the Attorney General, requesting him to intervene and protect the interest of the State of New York.

"General Decision Number: NY20230045 01/27/2023

Superseded General Decision Number: NY20220045

State: New York

Construction Types: Building, Heavy and Highway

County: Tioga County in New York.

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories) HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none"><li>. Executive Order 14026 generally applies to the contract.</li><li>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</li></ul>
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none"><li>. Executive Order 13658 generally applies to the contract.</li><li>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</li></ul>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number      Publication Date

0	01/06/2023
1	01/13/2023
2	01/27/2023

ASBE0030-001 05/01/2022

	Rates	Fringes
Asbestos/Insulator Worker includes application of all materials, protective coverings, coatings and finishings to all types of mechanical systems. Also the application of firestopping material to openings and penetrations in walls, floors, ceilings, curtain walls and all lead abatement.....	\$ 37.00	24.29
HAZARDOUS MATERIAL HANDLER SCOPE OF WORK: DUTIES LIMITED TO preparation, wetting, stripping, removal, scrapping, vacuuming, bagging, and disposing of all insulation materials, whether they contain asbestos or not from mechanical system.....	\$ 37.00	24.29

BOIL0197-001 01/01/2021

	Rates	Fringes
BOILERMAKER.....	\$ 38.59	26.00

BRNY0003-014 07/01/2022

CORNING CHAPTER

TIOGA COUNTY (Townships of Barton, Spencer and part of Nichols and Tioga)

	Rates	Fringes
BRICKLAYER BUILDING CONSTRUCTION Bricklayers, Cement Masons, Plasterers, Stone Masons, Tile Setters, Terrazzo Workers, Marble Masons, Pointers, Caulkers and Cleaners.....	\$ 31.21	21.79
Bricklayers, Cement Masons, Plasterers, Stone Masons, Tile Setters, Terrazzo Workers, Marble Masons, Pointers, Caulkers and Cleaners.....	\$ 34.29	22.91



Layer, Terrazzo Worker.....	\$ 30.20	20.45
HEAVY & HIGHWAY CONSTRUCTION		
Cement Masons.....	\$ 34.88	23.10

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BRNY0003-015 07/01/2022

HEAVY & HIGHWAY CONSTRUCTION

BINGHAMTON CHAPTER

TIOGA COUNTY (Townships of Berkshire, Newark Valley, Owego,  
Richford, Parts of Candor, Nichols and Tioga)

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 34.88	23.10

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BRNY0008-003 07/01/2022

	Rates	Fringes
BRICKLAYER		
BUILDING CONSTRUCTION		
Bricklayers, Cement		
Masons, Plasterers, Stone		
Masons, Tile Setters,		
Terrazzo Workers, Marble		
Masons, Pointers,		
Caulkers, Tuckers.....	\$ 31.29	22.86
BUILDING CONSTRUCTION		
Marble, Tile and Terrazzo		
Finishers.....	\$ 26.69	16.57
CEMENT MASON/CONCRETE FINISHER		
HEAVY & HIGHWAY		
CONSTRUCTION.....	\$ 34.88	23.10

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CARP0277-011 07/01/2022

	Rates	Fringes
Carpenters:		
BUILDING CONSTRUCTION:		
Carpenters.....	\$ 28.05	20.06
Millwrights.....	\$ 27.10	18.96
HEAVY & HIGHWAY		
CONSTRUCTION		
Carpenters.....	\$ 34.13	25.30

FOOTNOTES:

a. Paid Holidays: Independence Day and Labor Day, provided  
the employee works his scheduled day before and his  
scheduled day after the holiday and is on the payroll in  
the payroll week in which the holiday falls.

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ELEC0139-008 06/06/2022

BARTON AND NICHOLS TOWNSHIPS

	Rates	Fringes
ELECTRICIAN.....	\$ 39.00	29.07

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ELEC0241-001 06/01/2019

CANDOR AND SPENCER TOWNSHIPS

	Rates	Fringes
ELECTRICIAN.....	\$ 34.25	27.73

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ELEC0325-004 06/01/2022

BERKSHIRE, NEWARK VALLEY, OWEGO, RICHFORD AND TIOGA TOWNSHIPS

	Rates	Fringes
CABLE SPLICER.....	\$ 43.54	30.09
ELECTRICIAN.....	\$ 37.29	29.90

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ELEC1249-003 05/04/2020

	Rates	Fringes
ELECTRICIAN (LINE CONSTRUCTION: LIGHTING AND TRAFFIC SIGNAL Including any and all Fiber Optic Cable necessary for Traffic Signal Systems, Traffic Monitoring systems and Road Weather information systems)		
Flagman.....	\$ 27.72	6.75%+33.90
Groundman (Truck Driver)....	\$ 36.96	6.75%+33.90
Groundman Truck Driver (tractor trailer unit).....	\$ 39.27	6.75%+33.90
Lineman & Technician.....	\$ 46.20	6.75%+33.90
Mechanic.....	\$ 36.96	6.75%+33.90

FOOTNOTE:

a. New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, plus President's Day, Good Friday, Decoration Day, Election Day for the President of the United States and Election Day for the Governor of the State of New York, provided the employee works the day before or the day after the holiday.

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ELEC1249-004 05/03/2021

	Rates	Fringes
ELECTRICIAN (Line Construction) Overhead and underground distribution and maintenance work and all overhead and underground transmission line work including any and all fiber optic ground wire, fiber optic shield wire or any other like product by any other name manufactured for the dual purpose of ground fault		

protection and fiber optic capabilities :		
Flagman.....	\$ 32.82	7%+34.40
Groundman digging machine operator.....	\$ 49.23	7%+34.40
Groundman truck driver (tractor trailer unit).....	\$ 46.50	7%+34.40
Groundman Truck driver.....	\$ 43.76	7%+34.40
Lineman and Technician.....	\$ 54.70	7%+35.40
Mechanic.....	\$ 43.76	7%+34.40
Substation:		
Cable Splicer.....	\$ 60.17	7%+35.40
Flagman.....	\$ 32.82	7%+34.40
Ground man truck driver....	\$ 43.76	7%+34.40
Groundman digging machine operator.....	\$ 49.23	7%+34.40
Groundman truck driver (tractor trailer unit).....	\$ 46.50	7%+34.40
Lineman & Technician.....	\$ 54.70	7%+35.40
Mechanic.....	\$ 43.76	7%+34.40
Switching structures; railroad catenary installation and maintenance, third rail type underground fluid or gas filled transmission conduit and cable installations (including any and all fiber optic ground product by any other name manufactured for the dual purpose of ground fault protection and fiber optic capabilities), pipetype cable installation and maintenance jobs or projects, and maintenance bonding of rails; Pipetype cable installation		
Cable Splicer.....	\$ 61.62	7%+35.40
Flagman.....	\$ 33.61	7%+34.40
Groundman Digging Machine Operator.....	\$ 50.42	7%+34.40
Groundman Truck Driver (tractor-trailer unit).....	\$ 47.62	7%+34.40
Groundman Truck Driver.....	\$ 44.82	7%+34.40
Lineman & Technician.....	\$ 56.02	7%+35.40
Mechanic.....	\$ 44.82	7%+34.40

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, Good Friday, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works two days before or two days after the holiday.

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ELEC1249-008 01/01/2022

Rates	Fringes
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ELECTRICIAN (Line

Construction)

TELEPHONE, CATV  
FIBEROPTICS CABLE AND  
EQUIPMENT

Cable splicer.....	\$ 36.28	3%+5.14
Groundman.....	\$ 18.25	3%+5.14
Installer Repairman- Teledata Lineman/Technician- Equipment Operator.....	\$ 34.43	3%+5.14
Tree Trimmer.....	\$ 28.25	3%+10.23

a. New Year's Day, President's Day, Good Friday, Decoration  
Day, Independence Day, Labor Day, Veteran's Day,  
Thanksgiving Day, Day after Thanksgiving, Christmas Day.

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ELEV0062-002 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 53.69	37.335+a+b

FOOTNOTE:

- a. Vacation: 6%/under 5 years based on regular hourly rate for  
all hours worked. 8%/over 5 years based on regular hourly  
rate for all hours worked.  
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence  
Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday  
after Thanksgiving Day; and Christmas Day.

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ENGI0158-007 07/01/2018

	Rates	Fringes
Power equipment operators: (BUILDING:)		
GROUP A(1).....	\$ 43.79	25.70+a
GROUP A.....	\$ 43.30	25.70+a
GROUP B.....	\$ 42.28	25.70+a
GROUP C.....	\$ 39.38	25.70+a

Hazardous work- Anytime Operating Engineers are involved with  
Level C or above, \$3.00 per hour over regular rate.

FOOTNOTE:

- a. Paid Holidays: New Year's Day, Memorial Day,  
Independence Day, Labor Day, Thanksgiving Day, Christmas  
Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS (Building)

GROUP A(1): Crane, hydraulic cranes, tower crane,  
locomotive crane, piledriver, cableway, derricks, whirllies,  
dragline, boom trucks over 5 tons

GROUP A: Shovel, all excavators (including rubber tire, full  
swing), gradalls, power road grader all CMI equipment,  
front-end rubber tire loader, tractor-mounted drill (quarry  
master), mucking machine, concrete central mix plant,  
concrete pump, belcrete system, automated asphalt concrete  
plant, tractor road paver, boom trucks 5 tons and under,  
Maintenance Engineer, self contained crawler

drill-hydraulic rock drill.

GROUP B: Backhoes (rubber tired backhoe/loader combination), bulldozer, pushcat, tractor, traxcavator, scraper, LeTourneau grader, form fine grader, road roller, blacktop roller, blacktop spreader, power brooms, sweepers, trenching machine, Barber Green loader, side booms, hydro hammer, concrete spreader, concrete finishing machine, one drum hoist, power hoisting (single drum), hoist two drum or more, three drum engine, power hoisting (two drum and over), two drum and swinging engine, three drum swinging engine, hod hoist, A-L frame winches, core and well drillers (one drum), post hole digger, model CHB VibroTamp or similar machine, batch bin and plant operator, dinkey locomotive, skid steer loader, track excavator 5/8 cu. yd. or smaller.

GROUP C: Fork lift, high lift, lull, oiler, fireman and heavy-duty greaser, boilers and steam generators, pump, vibrator, motor mixer, air compressor, dust collector, selding machine, well point, mechanical heater, generators, temporary light plants, concrete pumps, electric submersible pump 4" and over, murphy type diesel generator, conveyor, elevators, concrete mixer and beltcrete power pack (belcrete system seeding and mulching machines pumps.

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ENGI0158-030 07/01/2022

#### HEAVY & HIGHWAY

	Rates	Fringes
Power equipment operators:		
GROUP 1.....	\$ 49.42	29.55
GROUP 2.....	\$ 48.51	29.55
GROUP 3.....	\$ 45.94	29.55
GROUP 4.....	\$ 53.42	29.55
GROUP 5.....	\$ 52.42	29.55
GROUP 6.....	\$ 51.42	29.55
GROUP 7.....	\$ 51.03	29.55

#### POWER EQUIPMENT OPERATOR CLASSIFICATIONS (HEAVY & HIGHWAY):

GROUP 1: Asphalt Curb Machine, Self Propelled, Slipform, Automated Concrete Spreader (CMI Type), Automatic Fine Grader, Backhoe (Except Tractor Mounted, Rubber Tired), Backhoe Excavator Full Swing (CAT 212 or similar type), Back Filling Machine, Belt Placer (CMI Type), Blacktop Plant (Automated), Boom truck , Cableway, Caisson Auger, Central Mix Concrete Plant (Automated), Concrete Curb Machine, Self Propelled, Slipform, Concrete Pump, Crane, Cherry Picker, Derricks (steel erection), Dragline, Overhead Crane (Gantry or Straddle type), Pile Driver, Truck Crane, Directional Drilling Machine, Dredge, Dual Drum Paver, Excavator (All Purpose Hydraulically Operated) (Gradall or Similar), Front End Loader ( 4 cu. yd. and Over), Head Tower (Sauerman or Equal), Hoist (Two or Three Drum), Holland Loader, Maintenance Engineer, Mine Hoist, Mucking Machine or Mole Pavement Breaker(SP) Wertgen; PB-4 and similar type, Power Grader, Profiler (over 105 H.P.) Quad 9, Quarry Master (or equivalent), Scraper, Fireman, Form Tamper, Grout Pump, Gunitite Machine, Hammers (Hydraulic self-propelled), Hydra-Spiker, ride-on, Hydraulic Pump (jacking system), Hydro-Blaster (Water), Mulching Machine,

Oiler, Parapet Concrete or Pavement, Shovel, Side Boom, Slip Form Paver, Tractor Drawn, BeltType Loader, Truck or Trailer Mounted Log , Chipper (Self Feeder), Tug Operator (Manned Rented Equipment Excluded), Tunnel Shovel

GROUP 2: Asphalt Paver, Backhoe (Tractor Mounted, Rubber Tired), Bituminous Recycler Machine, Bituminous Spreader and Mixer, Blacktop Plant (NonAutomated), Blast or Rotary Drill (Truck or Tractor Mounted), Boring Machine, Cage Hoist, Central Mix Plant (NonAutomated) and All Concrete Batching Plants, Cherry Picker (5 tons capacity and under), Concrete Paver (Over 16S), Crawler Drill, Self-contained, Crusher, Diesel Power Unit, Drill Rigs, Tractor Mounted, Front End Loader (Under 4 cu. yd.), Greaseman/Lubrication Engineer, HiPressure Boiler (15 lbs. and over), Hoist (One Drum), Hydro-Axe, Kolman Plant Loader and Similar Type Loaders, L.C.M. Work Boat Operator, Locomotive Mixer (for stabilized base selfpropelled), Monorail Machine, Plant Engineer, Profiler (105 H.P. and under), Grinder, Post Hole Digger and Post Driver, Power Broom (towed), Power Heaterman, Power Sweeper, Revinus Widener, Roller (Grade and Fill), Scarifier, ride-on, Shell Winder, Skid steer loader (Bobcat or similar), Span-Saw, ride-on, Steam Cleaner, Pug Mill, Pump Crete Ready Mix Concrete Plant Refrigeration Equipment (for soil stabilization)Road Widener, Roller (all above subgrade), Sea Mule, Self-contained Ride-on Rock Drill, Excluding Air-Track Type Drill, Skidder, Tractor with Dozer and/or Pusher, Trencher. Tugger Hoist, Vermeer saw (ride on, any size or type), Winch, Winch Cat

GROUP 3: A Frame Winch Hoist on Truck , Articulated Heavy Hauler, Aggregate Plant, Asphalt or Concrete Grooving, Machine (ride on), Ballast Regulator, Ride-on Boiler (used in conjunction with production), Bituminous Heater, self-propelled, Boat (powered), Cement and Bin Operator, Compressors, Dust Collectors, Fork Lift, Generators, Pumps, Welding Machines, Light Plants, Heaters (hands-off equipment), Concrete Pavement Spreader and Finisher, Concrete Paver or Mixer (16S and under), Concrete Saw (self-propelled), Conveyor, Deck Hand, Directional Drill Machine Locator, Drill, (Core), Drill, (Well,) Farm Tractor with accessories, Fine Grade Machine, Tamper, ride-on, Tie Extractor, ride-on, Tie Handler, ride-on, Tie Insertter, ride-on, Tie Spacer, ride-on, Tire Repair, Track Liner, ride-on, Tractor, Tractor (with towed accessories), Vibratory Compactor, Vibro Tamp, Well Point

GROUP 4: Tower Cranes

GROUP 5: Cranes 50 tons and over

GROUP 6: Cranes 49 tons and below

GROUP 7: Master Mechanic

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day

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IRON0060-006 07/01/2022

Rates

Fringes

IRONWORKER

Structural, Ornamental,  
Reinforcing, Pre-cast  
Concrete Erector,  
Machinery Mover & Rigger,  
Fence Erector, Stone  
Derrickman, Welder,  
Sheeter, Sheeter Bucker-up..\$ 31.25 30.53

-----  
LAB00785-011 07/01/2022

TOWNSHIPS OF RICHFORD, BERKSHIRE, NEWARK VALLEY, OWEGO, TIOGA,  
BARTON AND NICHOLS

Rates Fringes

Laborers:

BUILDING

GROUP 1.....	\$ 24.75	20.20
GROUP 2.....	\$ 26.25	20.20
GROUP 3.....	\$ 26.25	20.20

HEAVY AND HIGHWAY

GROUP 1.....	\$ 33.00	22.51
GROUP 2.....	\$ 33.00	22.51
GROUP 3.....	\$ 33.20	22.51
GROUP 4.....	\$ 33.40	22.51
GROUP 5.....	\$ 36.00	22.51

LABORER CLASSIFICATIONS (BUILDING CONSTRUCTION)

GROUP 1: Basic laborer

GROUP 2: Masonary forklifts, bob cats, rock drilling  
equipment, blasters

GROUP 3: Asbestos abatement and Hazardous waste removal

For HEAVY & HIGHWAY CONSTRUCTION

FOOTNOTE

a. PAID HOLIDAYS: Memorial Day, Independence Day, Labor  
Day, Thanksgiving Day, Christmas Day and New Year's Day.

HEAVY & HIGHWAY CLASSIFICATIONS

GROUP 1: Common Laborers, Flaggers

GROUP 2: Bull float, Chain saw, Concrete aggregate bin,  
Concrete bootman, Gin buggy, Hand or machine vibrator,  
Jackhammer, Mason tender, Mortor mixer, Pavement breaker,  
Handlers of all steel mesh, Small generators for laborers'  
tools, Installation of bridge drainage pipe, Pipelayers,  
Vibrator type rollers, Tamper, Drill doctor tail or screw  
operator on asphalt paver, Water pump operator (1 1/2' and  
single diaphragm), nozzle (asphalt gunnite, seeding and  
sandblasting), laborers on chain link fence erection, rock  
splitter and power unit, pusher type concrete saw and all  
operator (1 1/2' and single diaphragm), Nozzler (asphalt  
gunnite, seeding and sandblasting), laborers on chain link  
fence erection, other gas electric, oil and air tool  
operators, wrecking laborers

GROUP 3: All rock or drilling machine operators (except quarry master and similar type), acetylene torch operators and asphalt paver, powerman

GROUP 4: Blasters, form setters, stone or granite curb setters

GROUP 5: Hazardous waste removal

-----  
LAB00785-019 07/01/2022

REMAINDER OF COUNTY:

	Rates	Fringes
LABORER		
HEAVY & HIGHWAY:		
GROUP 1.....	\$ 33.00	22.51+a
GROUP 2.....	\$ 33.00	22.51+a
GROUP 3.....	\$ 33.20	22.51+a
GROUP 4.....	\$ 33.40	22.51+a
GROUP 5.....	\$ 36.00	22.51+a

For HEAVY & HIGHWAY CONSTRUCTION:

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day, provided the employee works the working day before and the working day after the holiday.

GROUP 1: Laborers; Flaggers; Outboard and hand boats

GROUP 2: Bull float; Chain Saw; Concrete Aggregate Bin; Concrete Bootman; Gin Buggy; Hand or Machine Vibrator; Jackhammer; Mason Tender; Mortar Mixer; Pavement Breaker; Handlers of all Steel Mesh; Small generators for Laborers' Tools; Installation of Bridge Drainage Pipe; Pipelayers; Vibrator type Rollers; Tampers; Drill Doctor; Tail or Screw Operator on Asphalt Paver; Water Pump Operator (1-1/2" and single diaphragm); Nozzle (asphalt, gunnite, seeding and sandblasting); Laborers on Chain Link Fence Erection; Rock Splitter and Power Unit; Pusher Type Concrete Saw and all other Gas, Electric, Oil and Air Tool Operators; Wrecking Laborers

GROUP 3: All Rock or Drill Machine Operators (except quarry master and similar type); Acetylene Torch Operator; Asphalt Raker; Powderman

GROUP 4: Blasters; Form Setters; Stone or Granite Curb Setters

GROUP 5: Hazardous Waste Removal

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PAIN0004-032 05/01/2022

	Rates	Fringes
Painters:		
Bridges.....	\$ 41.06	29.59



Epoxy-Brush & Roller.....	\$ 28.74	21.99
Painters and Tapers.....	\$ 27.64	21.99
Spray Epoxy.....	\$ 29.14	21.99
Spray Work/Steeple Jack (over 100 ft).....	\$ 28.64	21.99
Structural Steel (buildings) Spray Work.....	\$ 28.24	21.99
Swing Scaffold, Boatswain Chair, Spray, Sandblasting, Steam Cleaning, Acid and High Pressure Water, Paperhangers, Vinyl Hangers, Power Grinders w/respirator.....	\$ 28.24	21.99

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PAIN0677-003 05/01/2022

	Rates	Fringes
GLAZIER.....	\$ 26.05	23.39

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PLUM0112-007 05/01/2022

TOWNSHIPS OF NEWARK VALLEY AND OWEGO

	Rates	Fringes
PLUMBER (Including Steamfitting) Southern Zone.....	\$ 38.23	30.89

-----  
PLUM0267-005 05/01/2019

THE TOWNS OF BARTON, BERKSHIRE, CANDOR, NICHOLS, RICHFORD,  
SPENCER AND TIOGA

	Rates	Fringes
Plumber, Pipefitter, Steamfitter (Including HVAC Work).....	\$ 35.51	24.57

-----  
ROOF0203-001 06/01/2021

	Rates	Fringes
ROOFER.....	\$ 28.05	17.79

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\* SFNY0669-001 01/01/2023

	Rates	Fringes
SPRINKLER FITTER.....	\$ 40.81	26.47

-----  
SHEE0112-004 05/01/2022

	Rates	Fringes
Sheet metal worker.....	\$ 34.44	20.98

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TEAM0529-001 05/01/2019

	Rates	Fringes
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TRUCK DRIVER

GROUP 1.....	\$ 22.66	13.46+a
GROUP 2.....	\$ 23.73	13.46+a
GROUP 3.....	\$ 23.22	13.46+a

FOOTNOTES:

a. PAID HOLIDAYS: New Year's day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, provided the employee works the working day before and the working day after the holiday.

TRUCK DRIVERS CLASSIFICATIONS:

GROUP 1: Flat Bed Truck (Single Axle); Dump Trucks (Under 10 yds Single Axle); Stake Body Truck (Single Axle); Dumpster (Single Axle)

GROUP 2: Dump Truck (Over 10 yds); Transit Mix (Under 5 yds); Transit Mix (Over 5 yds); Flat or Stake Body (Tandem); A-Frame/Winch Trucks; Dry Batch Truck; Truck Mounted Sweeper and Vac Trucks; Dumpster (Tandem)

GROUP 3: Euclid-Type; Off Highway Equipment-Back or Double Bottom Dump Trucks (Over 20 Tons); Straddle Trucks; Pusher; Articulate Dumped Trucks; Low Boy Trailers; Semi Trailers; Asphalt Distributors; Fuel Truck

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification

and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

SECTION 00 73 53  
ANTI-POLLUTION MEASURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Regulatory requirements

PART 2 PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 REGULATORY REQUIREMENTS

- A. Compliance with Clean Air and Water Acts  
(Applicable to federally assisted construction contracts and related subcontracts exceeding \$100,000)
1. During the performance of this contract, the contractor and all Subcontractors must comply with the requirements of the Clean Air Act, as amended, 42 USC 1857 et seq., the Federal Water Pollution Control Act, as amended, 33 USC 1251 et seq., and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended.
  2. In addition to the foregoing requirements, all nonexempt contractors and Subcontractors must furnish the Client, the following:
    - a. A stipulation by the contractor or Subcontractors, that any facility to be utilized in the performance of any non-exempt contract or subcontract, is not listed on the List of Violating Facilities issued by the Environmental Protective Agency (EPA), pursuant to 40 CFR 15.20.
    - b. Agreement by the contractor to comply with all requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857c-8) and Section 308 of the Federal Water Pollution Control Act, as amended, (33 USC 1318) relating to inspection, monitoring, entry, reports and information, as well as other requirements specified in said Section 114 and Section 308, and all regulations and guidelines issued thereunder.
  3. A stipulation that as a condition for the award of the contract, prompt notice will be given of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized, or to be utilized for the contract, is under consideration to be listed on the EPA List of Violating Facilities.
  4. Agreement by the contractor that he will include, or cause to be included, the criteria and requirements in paragraph (1) through (4) of this section in every nonexempt subcontract and requiring that the contractor will take such action as the government may direct as a means of enforcing such provisions.

END OF SECTION



**AIA**<sup>®</sup>**Document G715™ – 2017****Supplemental Attachment**for ACORD Certificate of Insurance 25

**PROJECT:** *(name and address)*  
 2550-011 - Owego (V) Downtown  
 Revitalization Initiative Capital  
 Projects

**CONTRACT INFORMATION:**  
 Contract For: General Construction

**CERTIFICATE INFORMATION:**  
 Producer:

Date:

Insured:  
 Date:

**OWNER:** *(name and address)*  
 Village of Owego

22 Elm Street  
 Owego, NY 13827

**ARCHITECT:** *(name and address)*  
 Hunt Engineers, Architects, Land  
 Surveyors & Landscape Architect DPC  
 Airport Corporate Park  
 100 Hunt Center  
 Horseheads, NY 14845

**CONTRACTOR:** *(name and address)*

**A. General Liability**

**Yes No N/A**

1. Does this policy include coverage for:

- |          |  |                          |                          |                          |
|----------|--|--------------------------|--------------------------|--------------------------|
| <b>a</b> | Damages because of bodily injury, sickness, or disease, including occupational sickness or disease, and death of any person? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>b</b> | Personal injury and advertising injury?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>c</b> | Damages because of physical damage to or destruction of tangible property, including the loss of use of such property?       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>d</b> | Bodily injury or property damage arising out of completed operations?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>e</b> | The Contractor's indemnity obligations included in the Contract Documents?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

2. Does this policy contain an exclusion or restriction of coverage for:

- |          |   |                          |                          |                          |
|----------|---|--------------------------|--------------------------|--------------------------|
| <b>a</b> | Claims by one insured against another insured, where the exclusion or restrictions is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim?            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>b</b> | Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>c</b> | Claims for bodily injury other than to employees of the insured?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>d</b> | Claims for the Contractor's indemnity obligations included in the Contract Documents arising out of injury to employees of the insured?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>e</b> | Claims for loss excluded under a prior work endorsement or other similar exclusionary language?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>f</b> | Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>g</b> | Claims related to residential, multi-family, or other habitational projects?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>h</b> | Claims related to roofing?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>i</b> | Claims related to exterior insulation finish systems, synthetic stucco, or similar exterior coatings or surfaces?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>j</b> | Claims related to earth subsistence or movement?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>k</b> | Claims related to explosion, collapse, and underground hazards?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**B. Other Insurance Coverage**

**Yes No N/A**

1. Indicate whether the Contractor has the following insurance coverages and, if so, indicate the coverage limits for each.

- |          |                                  |                          |                          |                          |
|----------|----------------------------------|--------------------------|--------------------------|--------------------------|
| <b>a</b> | Professional liability insurance | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|          | Coverage limits:                 |                          |                          |                          |

- b** Pollution liability insurance ☐ ☐ ☐  
Coverage limits:
- c** Insurance for maritime liability risks associated with the operation of a vessel ☐ ☐ ☐  
Coverage limits:
- d** Insurance for the use or operation of manned or unmanned aircraft ☐ ☐ ☐  
Coverage limits:
- e** Property insurance ☐ ☐ ☐  
Coverage limits:
- f** Railroad protective liability insurance ☐ ☐ ☐  
Coverage limits:
- g** Asbestos abatement liability insurance ☐ ☐ ☐  
Coverage limits:
- h** Insurance for physical damage to property while it is in storage and in transit ☐ ☐ ☐  
to the construction site  
Coverage limits:
- i** Other: ☐ ☐ ☐

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*(Authorized Representative)*

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*(Date of Issue)*



SECTION 01 10 00  
SUMMARY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project Identification
- B. Work covered by Contract Documents
- C. Work Sequence
- D. Contractor use of Premises
- E. Occupancy Requirements

1.2 RELATED REQUIREMENTS

- A. Section 01 50 00 - Temporary Facilities and Controls

1.3 PROJECT

- A. Project Name: Owego DRI - Phase I: Marvin Park Improvements  
Contract Documents, dated February 2023 were prepared for the Project by Hunt Engineers, Architects, Land Surveyors & Landscape Architect, DPC, Airport Corporate Park, 100 Hunt Center, Horseheads, NY 14845-1019.
- B. Owner's Name: Village of Owego.  
178 Main Street  
Owego, NY 13827  
Phone: 607-687-1710  
Fax: 607-687-1787
- C. Architect/Engineer's Name: Hunt Engineers, Architects, Land Surveyors & Landscape Architect, DPC.  
Airport Corporate Park  
100 Hunt Center  
Horseheads, NY 14845-1019  
Phone: 607-358-1000  
Fax: 607-358-1800  
Contact: James C. Peckham, PE
- D. The Project consists of installation of recreation amenities and improvements at Owego's largest open space, Marvin Park, these will include, but are not limited to the enhancement of the park entrance and fenceings, installation of playground equipment, resurfacing of the existing tennis and basketball courts, replacement of the existing skatepark, rebuilding the restroom, and additional security measures. All of which will make the site more usable to the community..

1.4 CONTRACT DESCRIPTION

- A. The project will be constructed under a multiple Prime Contract Agreement.
  - 1. Prime Contracts are separate contracts between the Owner and independent contractors, representing significant construction activities. One set of Contract Documents are issued covering the multiple Prime Contracts. Each Prime Contract is performed

concurrently, and closely coordinated, with construction activities performed on the Project under other Prime Contracts.

- B. Prime Contracts for this Project include:
  - 1. Contract No.1: General Trades
  - 2. Contract No.2: Plumbing
  - 3. Contract No.3: Electrical & HVAC
- C. Definition of Extent of Prime Contract Work: The Contract Documents indicate the extent of each Prime Contract. Except where the Contract Drawings contain a more specific description, general names, and terminology on the Drawing and in the Specification, Sections determine which Prime Contract includes a specific element of the Project.

#### 1.5 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.
  - 1. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions of the building.
  - 2. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building. However, the Owner will not clean up behind contractors; responsibility for any debris caused by contractor operations remains with the Prime Contractor.
- D. The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided that such occupancy does not interfere with completion of the work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total work. Cooperate fully with the Owner or its representatives and Architect/Engineer during construction operations to minimize conflicts and facilitate owner's usage.

#### 1.6 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings. Do not disturb portions of the site beyond the areas in which the work is indicated.
- B. Arrange use of site and premises to allow:
  - 1. Owner occupancy.
  - 2. Work by Others.
  - 3. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Owner:
  - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
  - 3. Do not use driveways, entrances or sidewalks for parking or storage of materials.
  - 4. Keep temporary driveways and entrances serving the premises clear and available to the Owner, Architect, and emergency vehicles at all times.
- D. Existing building spaces may not be used for storage.
- E. Any work that requires disruption to the occupants, entry/exits, utilities, etc shall be coordinated with and approved by the Owner.

- F. Utility Outages and Shutdown:
  - 1. Limit disruption of utility services to hours the site is unoccupied.
  - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
  - 3. Prevent accidental disruption of utility services to other facilities.
- G. Construction Staging Area:
  - 1. Contractors will be instructed to use designated staging/parking areas before start of construction.
  - 2. All staging of equipment, trailers, storage containers, etc to be coordinated through the Owner and cannot interfere with any other Contractor's work.
  - 3. Activity in the staging area shall be conducted in a manner that causes minimal disruption of the Owner's activities.

## 1.7 WORK SEQUENCE

- A. All Work will be conducted in a "single" phase to provide the least possible interference to the activities of the Owner's personnel and to permit the facilities to be partially utilized during implementation of the work.
  - 1. The Contractor is expressly forewarned that impacts to the construction schedule during any phase or portion of the project will not be permitted.
- B. Schedule: Refer to the milestone / phasing schedule included in Section 01 32 16 - Construction Progress Schedule.
- C. Should overtime or second shift work be required by a Contractor to ensure the completion within the specified (phased) schedule, all costs for this work is the responsibility of the Contractor. The Owner shall have the authority to direct the contractors and subcontractors to work overtime including weekends to maintain the schedule at no additional cost to the Owner. Contractors warrant that the work shall be physically complete, including punch list, startup, and commissioning, within the early start and late finish schedule milestones.
- D. Each Contractor shall provide multiple crews to maintain project schedule. Each crew is to be furnished with its own supervision, cranes, scaffold and other means necessary to maintain the Project Schedule.
- E. The intention of the work is to follow a logical sequence; however, the Contractor may be required by the Owner to temporarily omit or leave out any section of his work, or perform his work out of sequence. All such out of sequence work and returning to these areas shall be at no additional cost to the Owner.
- F. Each Contractor is responsible for supervision of their Sub-Contractors at all times.

## 1.8 REQUIREMENTS OF ALL 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. Unless otherwise indicated, the Work described in this section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
  - 2. Local custom and trade-union jurisdictional settlements do not control the scope of the Work of each contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, affected contractors shall negotiate a reasonable settlement to avoid or minimize interruption and delays.
  - 3. Trenches, at the interior of building footprints, whether existing or planned, for the Work of each contract shall be provided by each Contractor for its own Work.
    - a. For trenches at existing interior concrete slabs on grade:

- 1) The Contractor requiring the trench shall mark out location of required trench.
  - 2) The General Trades contractor shall saw cut and remove the concrete.
  - 3) The Contractor requiring the trench shall excavate; install the work; backfill and compact up to the subbase level.
  - 4) The General Trades contractor shall install the base material and replace the concrete slab as detailed on the Drawings.
  - 5) The General Trades Contractor shall patch floor finishes to match or as detailed or scheduled on Drawings.
  - 6) All Contractors shall refer to Contract Documents for applicable specification sections and details.
4. Cutting and patching for the Work of each contract shall be provided by each contractor for its own Work, except as outlined for trenches above.
  5. Within ten (10) working days after preliminary horizontal bar-chart-type construction schedule submittal has been received from General Trades Contractor, submit a matching preliminary horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction.
- B. One set of documents is issued covering all Prime Contracts. EACH PRIME CONTRACTOR shall be responsible for all work shown on all drawings and sections for complete understanding and knowledge of the work. All Prime Contractors are responsible for all work under their contract no matter what drawing, specification or related specification in which that work appears, including drawings of other trade disciplines.
- C. The Following Drawings and Specifications are specifically included and defined as integral to EACH Prime Contract:
1. Drawings:
    - a. G1.1 - Symbols and Abbreviations.
    - b. CO Series - Code Compliance Plans.
  2. Specifications:
    - a. Division 00 - Procurement and Contracting Requirements
      - 1) All Specification Sections within this Division are owned by ALL contracts.
    - b. Division 01 - General Requirements:
      - 1) All Specification Sections within this Division are owned by ALL contracts.
    - c. Division 02 - Existing Conditions:
      - 1) Specification Section 02 41 00 – Selective Structural Demolition
    - d. Division 07 - Thermal and Moisture Protection
      - 1) Specification Section 07 92 00 - Joint Protection:
        - (a) All contractors to provide joint protection of their own trade's work.
    - e. Division 09 - Finishes
      - 1) All contractors to refer to Room Finish Schedule and all Finish Keys within drawings in coordination with all finishes for each trade.
- D. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the Work.
- E. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Section 01 50 00 - Temporary Facilities and Controls, each contractor is responsible for the following:
1. The Contractor shall assist the Architect and Owner in identifying a plan detailing how exiting required by the applicable building code will be maintained, and a plan detailing how adequate ventilation will be maintained during construction.
  2. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, and costs and use charges associated with each facility.
  3. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
  4. Temporary enclosures for its own construction activities.

5. Hoisting requirements for its own construction activities, including hoisting material or equipment into spaces below grade, and hoisting requirements outside building enclosure.
  6. Progress cleaning of its own areas on a daily basis.
  7. Secure lockup of its own tools, materials, and equipment.
  8. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
  9. Responding to the most current guidelines outlined by the Centers for Disease Control and Prevention (CDC) and the Occupational Safety and Health Administration (OSHA) Protecting Workers: Guidance on Mitigating and Preventing the Spread of COVID-19 in the Workplace, shall:
    - a. Develop an Infectious Disease Preparedness Plan.
    - b. Prepare and Implement Basic Infection Prevention Measures and Training.
    - c. Implement Workplace Controls.
- F. The Electrical contractor shall furnish, maintain, and remove all power necessary for temporary lighting/power, heating, cooling, and dehumidification. Electrical Contractor will provide temporary power and lighting to all trades with no maximum amperage. All power connections will be relocated as deemed necessary by the Architect/Engineer at no additional cost to the owner.
- G. The Electrical Contractor is responsible for coordinating with NYSEG on the install of both the temporary and permanent electrical systems.

#### 1.9 BID CONTRACT NO. 1 - GENERAL CONSTRUCTION

- A. The General Trades Contractor shall be responsible for all work shown on Architectural (A)| Landscape (L)| Structural (S)|Skatepark (SP) and Work Zone Traffic Control (WZTC) Drawings unless noted otherwise and any site work shown on all other drawings and further defined below:
1. Provide the complete work of Division 02 - Existing Conditions unless noted otherwise.
  2. Division 03 - Concrete
    - a. Specification Section 03 30 00 - Cast-In-Place Concrete including but not limited to:
      - 1) Provide equipment pads for all trades (all primes to lay out own concrete pads for GC installation).
      - 2) Provide cutting/patching for all trenches within the building (layout of trenches by each Prime Contractor).
      - 3) Interior slabs and all building foundations.
    - b. Provide the complete work of Specification Section 03 54 00 - Cast Underlayment.
    - c. Provide the complete work of Specification Section 03 60 00 - Grouting.
  3. Provide the complete work of Division 04 - Masonry.
  4. Provide the complete work of Division 05 - Metals.
  5. Provide the complete work of Division 06 - Wood, Plastic and Composites.
    - a. Provide ALL wood blocking on this project
    - b. Coordinate wood blocking with all other Primes and any Owner furnished equipment to ensure all wood blocking is in place prior to wall enclosure. Cutting and patching after wall enclosure will be at the cost of the General Contractor.
  6. Provide the complete work of Division 07 - Thermal and Moisture Protection.
  7. Provide the complete work of Division 08 - Openings as noted:
    - a. Install Access Doors and Panels furnished by other contractors.
    - b. Section 08 71 00 - Door Hardware
      - 1) Power, Access Control, and Fire Alarm wiring and final connections provided by Electrical Contractor.
  8. Provide the complete work of Division 09 - Finishes, unless noted otherwise.
  9. Provide the complete work of Division 10 - Specialties with the following exceptions:
    - a. Section 10 28 00 - Toilet, Bath, and Laundry Accessories

- 1) Power and final connections to be provided by Electrical Contractor for all electrically operated accessories.
  10. Provide the complete work of Division 13 - Special Construction
    - a. Section 13 00 00 - Skatepark
      - 1) Possible Subcontractors for Special Constuction if Desired
        - (a) Gridline Skateparks Inc  
4619 14th Ave SW  
Seattle, WA 98106
        - (b) Pillar Design Studios LLC  
1960 W Hawk Ct  
Chandler, AZ 85286
  11. Provide the complete work of Division 31 - Earthwork as noted:
  12. Provide the complete work of Division 32 - Exterior Improvements
  13. Provide the complete work of Division 33 - Utilities
- 1.10 CONTRACTOR TO PROVIDE ALL WALL AND FLOOR OPENINGS FOR MECHANICAL WORK. CONTRACTOR TO PROVIDE STRUCTURAL SUPPORT AND/OR LINTELS FOR ALL OPENINGS.
- A. Contractor to provide all roof openings for other trades work. Contractor to provide structural upport (wood or steel) at all openings. Contractor to install roof curbs furnished by Mechanical contractors and provide roof flashings to maintain current roof warranties.
  - B. Contractor to infill existing walls to match existing that are scheduled to remain where mechanical louvers or equipment is removed. Contractor to install louvers furnished by Electrical Contractor at new openings and provide lintels, backer rods, and sealants.
  - C. Furnish and install all labor, material, supervision, equipment, scaffolding, layout, engineering, deliveries, trucking, hoisting, rigging, shop drawings, submittals, and all other items related and required to complete all General Trades Work in accordance with the Contract Documents and all applicable codes having jurisdiction.
  - D. The Contractor represents they have expertise in the performance of Work for this trade and assures all items to be complete, functional and installed in accordance with the best practices consistent with premium quality material and workmanship.
- 1.11 BID CONTRACT NO. 2 - PLUMBING
- A. The Plumbing Contractor shall be responsible for all work shown on the Plumbing (P) Drawings and any plumbing work shown on all other drawings and specifications and further defined below:
    1. Division 02 - Existing Conditions:
      - a. Specification Section 02 41 00 – Selective Structural Demolition:
        - 1) Plumbing Contractor to be responsible for all demolition of items shown on plumbing drawings as well as all plumbing connections to equipment or devices to be demolished by other contractors.
    2. Provide the complete work of Division 22 - Plumbing.
  - B. Furnish and install all labor, material, supervision, equipment, scaffolding, layout, engineering, deliveries, trucking, hoisting, rigging, shop drawings, submittals, and all other items related and required to complete all Plumbing Work in accordance with the Contract Documents and all applicable codes having jurisdiction.
  - C. The Contractor represents they have expertise in the performance of Work for this trade and assures all items to be complete, functional and installed in accordance with the best practices consistent with premium quality material and workmanship.

#### 1.12 BID CONTRACT NO. 3 - ELECTRICAL & HVAC

- A. The Electrical Contractor shall be responsible for all work shown on Electrical (E) and Technology (T) Drawings unless noted otherwise, and any electrical work shown on all other drawings and further defined below:
  - 1. Division 02 - Existing Conditions:
    - a. Specification section 02 41 00 - Selective Structural Demolition:
      - 1) Electrical contractor to be responsible for all demolition of items shown on electrical drawings as well as all electrical feeds and mechanical connections to equipment or devices to be demolished by other contractors.
  - 2. Division 08 - Openings:
    - a. Specification Section 08 71 00 - Door Hardware including but not limited to:
      - 1) Fire Alarm connection at all electrically operated hardware.
      - 2) Provide power to all electrically operated hardware.
  - 3. Provide the complete work of Division 23 - Heating, Ventilating and Air-Conditioning (HVAC).
  - 4. Provide complete the work of Division 26 - Electrical
  - 5. Provide the complete work of Division 28 - Electronic Safety and Security
- B. Contractor to furnish all roof curbs and louvers for the General Trades Contractor to install.
- C. Furnish and install all labor, material, supervision, equipment, scaffolding, layout, engineering, deliveries, trucking, hoisting, rigging, shop drawings, submittals, and all other items related and required to complete all Electrical and Mechanical Work in accordance with the Contract Documents and all applicable codes having jurisdiction.
- D. The Contractor represents they have expertise in the performance of Work for this trade and assures all items to be complete, functional and installed in accordance with the best practices consistent with premium quality material and workmanship.

#### 1.13 ADDITIONAL NOTES TO CONTRACT DOCUMENTS

- A. The following notes are integral to each Contract:
  - 1. All bidders are forewarned to review all information of the Contract Documents.
  - 2. Review Section 01 21 00 for Allowances that may be included in Contractors scope of work.
  - 3. Review Section 01 22 00 for Unit Prices that may be included in Contractors scope of work.
  - 4. Review Section 01 23 00 for Alternate bid pricing required in Contractors scope of work.
  - 5. Review Section 01 50 00 for work requirements of temporary construction activities in Contractor's scope of work.
  - 6. The contractor is responsible for the layout and survey of their own work or work requirements.
  - 7. The contractor is required to construct the project per the phasing and staging plan. Specific areas of the site and building must be completed for the intended use by the Owner, at the Milestone dates so listed. The contractor shall cooperate fully with the intentions of the plan. Contractor is forewarned that any delay caused indirectly or directly by the acts, omissions, and/or failure to perform by a contractor will result in the Owner, or its agents, accomplishing the work by any means possible. The contractor causing the delay will be responsible for any and all costs associated with such issues, including Owner costs, Architect/Engineer costs, inspections, etc.
  - 8. The contractor shall provide any and all temporary shoring, bracing, supports or protection systems necessary to expedite the work requirements including the maintenance of worker safety.

9. The contractor is responsible for the safety of their own workers, subcontractors, work area, and other personnel on site. Each and every contractor is responsible for maintaining a safe work site and utilizing best safety procedures.
10. In case of discrepancy between the Drawings and Specifications, interpretation shall be given preference in the following order, with later dates taking precedence over earlier dates:
  - a. Addenda
  - b. Amendments to the Drawings and Specifications
  - c. Drawings and Specifications
  - d. Schedules, Piping & Wiring Diagrams take precedence over other data shown on the drawings.
  - e. Notes take precedence over other data shown on the drawings, except Schedules, Piping & Wiring Diagrams.
11. If discrepancies are found between the plans and specifications, include the more costly detail to the bid price.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.1 COORDINATION

- A. Each Prime Contractor shall coordinate scheduling and installation of work with the work of other Contractors, sub-contractors and other trades. Each Prime Contractor is also required to coordinate all work of their Contract with Owner-supplied materials, direct contacts and normal building operations.
- B. Each Prime Contractor shall supply and coordinate exact locations of embedded items in concrete or masonry work with the General Contractor. Each Prime Contractor shall monitor such items throughout concrete/masonry activities to ensure proper placement.
- C. MECHANICAL, ELECTRICAL, AND PLUMBING Prime Contractors shall be responsible for providing any rough opening or masonry opening dimensions to the General Trades Contractor. FOR ALL NEW WORK. MECHANICAL, ELECTRICAL, AND PLUMBING Prime Contractors shall be responsible for any rework or additional work required due to their failure to provide this information prior to the schedule start of wall construction.
- D. Each Contractor shall coordinate all device and rough-in locations required with the casework shop drawings.
- E. Each Contractor shall take special care in verifying that his equipment matches the characteristic of the power being supplied. The Electrical Contractor shall coordinate electrical power requirements with Each Contractor for all equipment requiring power

END OF SECTION



SECTION 01 20 00  
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Schedule of Values.
- B. Applications for payments.
- C. Change procedures.

1.2 RELATED REQUIREMENTS

- A. Section 00 52 14 - Standard Form of Agreement: Contract Sum, retainages, payment period, monetary values of unit prices.
- B. Section 00 72 14 - General Conditions of the Contract for Construction: Additional requirements for progress payments, final payment, changes in the Work.
- C. Section 01 21 00 - Allowances: Payment procedures relating to allowances.
- D. Section 01 22 00 - Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.
- E. Section 01 30 00 - Administrative Requirements: General submittal procedures.
- F. Section 01 60 00 - Product Requirements: Substitution limitations and procedures.
- G. Section 01 70 00 - Execution and Closeout Requirements: Project record documents.

1.3 SCHEDULE OF VALUES

- A. Submit completed schedule on Form: AIA G703 - Continuation Sheet for G702.
- B. Submit Schedule of Values electronically within 15 days after date of Owner-Contractor Agreement established in Notice to Proceed.
- C. Include separately for each line item, the amount for materials, and the amount for labor
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization and bonds and insurance.
- E. Provide 1% of contract value for execution of closeout documents.
- F. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- G. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- H. Revise schedule to list approved Change Orders, with each Application For Payment.

1.4 APPLICATIONS FOR PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.

- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Content and Format: Use data from approved Schedule of Values for listing items in Application for Payment.
- D. Submit electronically each Application for Payment.
- E. Include the following with the application:
  - 1. Transmittal letter as specified for submittals in Section 01 30 00.
  - 2. Construction progress schedule, revised and current as specified in Section 01 32 16.
- F. Substantiating Data: When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Include with Application for Payment:
  - 1. Partial release of liens from major subcontractors and vendors.
  - 2. Project record documents as specified in Section 01 78 00, for review by Owner which will be returned to the Contractor.
  - 3. Affidavits attesting to off-site stored products.
  - 4. Certified payrolls.
  - 5. Updated project schedule and timelines.

#### 1.5 CHANGE PROCEDURES

- A. Change Order Forms: AIA G701 Change Order.
- B. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- C. For minor changes not involving an adjustment to the Contract Sum/Price or Contract Time, Architect will issue supplemental instructions on AIA Form G710 directly to Contractor.
- D. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
  - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum/Price or Contract Time.
  - 2. Promptly execute the change.
- E. The Architect/Engineer may issue a Proposal Request that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change. Contractor shall prepare and submit a estimated price quotation within 15 days.
- F. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.
- G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
  - 1. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's price quotation.
  - 2. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit prices. For unit costs or quantities of units of work which are not pre-determined, execute Work under Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
  - 3. Construction Change Directive: Architect/Engineer may issue directive, on AIA Form G713 Construction Change Directive signed by Owner, instructing contractor to proceed

- with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.
4. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Architect/Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
    - a. Maintain daily detailed records of work completed on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work. Daily Time and Material tickets must be validated and signed by the Owner's Representative to be acceptable for issuance of the change order.
  - H. Substantiation of Costs: Provide full information for change in cost or time with sufficient data to allow evaluation of quotation..
  - I. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
  - J. Correlation of Contractor Submittals:
    1. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.
    2. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
    3. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION



SECTION 01 21 00  
ALLOWANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contingency allowance.
- B. Payment and modification procedures relating to allowances.

1.2 RELATED REQUIREMENTS

- A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.3 CONTINGENCY ALLOWANCE

- A. A Field Change Contingency Allowance of \$50,000 for the General Trades Contractor has been established for the project.
- B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- C. Funds will be drawn from the Contingency Allowance only by Change Order.
- D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION



SECTION 01 22 00  
UNIT PRICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- C. Defect assessment and non-payment for rejected work.

1.2 RELATED REQUIREMENTS

- A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.3 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.4 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.
  - 1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at unit sum/priced contracted.
  - 2. When actual Work requires 25 percent or greater change in quantity than those quantities indicated, Owner or Contractor may claim for Contract Price adjustment.

1.5 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect/ Engineer.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Measurement Devices:
  - 1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
  - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
  - 3. Metering Devices: Inspected, tested and certified by the applicable state department within the past year.
- E. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

- F. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- G. Measurement by Area: Measured by square dimension using mean length and width or radius.
- H. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- I. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

#### 1.6 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect/ Engineer, multiplied by the unit price.
- B. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of item of the Work; overhead and profit.
- C. Payment will not be made for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products not completely unloaded from the transporting vehicle.
  - 4. Products placed beyond the lines and levels of the required Work.
  - 5. Products remaining on hand after completion of the Work.
  - 6. Loading, hauling, and disposing of rejected Products.

#### 1.7 DEFECT ASSESSMENT

- A. Replace Work, or portions of the Work, not complying with specified requirements.
- B. If, in the opinion of Architect/ Engineer, it is not practical to remove and replace the Work, the Architect/ Engineer will direct one of the following remedies:
  - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Architect/ Engineer and Owner.
  - 2. The defective Work will be partially repaired to the instructions of the Architect/ Engineer and Owner, and the unit price will be adjusted to a new unit price at the discretion of Architect/ Engineer and Owner.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of Architect/ Engineer to assess the defect and identify payment adjustment is final.

#### 1.8 SCHEDULE OF UNIT PRICES

Unit Price No. 1 : Engineered Fiber Surface

Description: Addition or deletion of engineered fiber surface as detailed and specified in the contract documents.

Unit of Measurement: Cubic Yard.

Unit Price No. 2 : Playsurface Border

Description: Addition or deletion of play surface border as detailed and specified in the contract documents.

Unit of Measurement: Linear Foot.

Unit Price No. 3 : Concrete Sidewalks and Pads



Description: Addition or deletion of soncrete sidewalks and pads as detailed and specified in the contract documents.

Unit of Measurement: Cubic Yard.

Unit Price No.4 : Cold Milling 1.5" Depth

Description: Addition or deletion of cold milling at a 1.5" depth as detailed and specified in the contract documents.

Unit of Measurement: Square Yard

Unit Price No. 5 : Standard Duty Asphalt Overlay 1.5" Depth

Description: Addition or deletion of standard duty asphamt at a 1.5" depth as detailed and specified in the contract documents.

Unit of Measurement: Tons

Unit Price No. 6 : Tack Coat

Description: Addition or deletion of tack coat as detailed and specified in the contract documents.

Unit of Measurement: Gallons

Unit Price No. 7 : Binder Coarse Repair 3.5" Depth

Description: Addition or deletion of binder coarse repair at 3.5" depth as detailed and specified in the contract documents.

Unit of Measurement: Tons

Unit Price No. 8 : Black Vinyl Coated Chain Link Fence 4'

Description: Addition or deletion of 4' black vinal coated chain link fence as detailed and specified in the contract documents.

Unit of Measurement: Linear Foot

Unit Price No. 9 : 6" Concrete Cast-in-Place

Description: Addition or deletion of cast-in-place concrete at 6" depth as detailed and specified in the contract documents.

Unit of Measurement: Linear Foot

Unit Price No. 10 : Granular Fill Sub-Base 6" Min

Description: Addition or deletion of granular fill sub base, 6" minimmm depth as detailed and specified in the contract documents.

Unit of Measurement: Cubic Yard

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION



SECTION 01 23 00  
ALTERNATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Description of Alternates.
- B. Procedures for pricing Alternates.

1.2 RELATED REQUIREMENTS

- A. Document 00 21 14 - Instructions to Bidders: Instructions for preparation of pricing for Alternates.
- B. Document 00 52 14 - Standard Form of Agreement: Incorporating monetary value of accepted Alternates.

1.3 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to, or required for a complete installation whether or not mentioned as part of the Alternate.
  - 2. Include, as part of each alternate, all related construction coordination, modifications or adjustments.
- C. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- D. Execute accepted alternates under the same conditions as other Work of this Contract
- E. Schedule: A "Schedule of Alternates" is included at the end of this Section.
- F. The successful Bidder agrees to hold all Alternate Bids firm and unchanged for a period not to exceed 120 calendar days following the closing date for bidding.

1.4 SCHEDULE OF ALTERNATES

- A. Alternate 1: Pickleball Courts: Contractor to provide alternative cost adjustments to include pickleball courts (in addition to basketball courts) with associated equipment and surfacing as indicated Contract Documents (specifically see drawing L2.3 Notes A1 to A3)
- B. Alternate 2: Alternate Fencing: Contractor to provide alternative cost adjustment to provide Ameristar Montage Commercial Metal Fence in place of Black Vinyl Coated Chain link fencing as indicated in Contract Documents (specifically drawing L2.5).

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 25 00  
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.2 RELATED REQUIREMENTS

- A. Section 00 21 14 - A701 - Instructions to Bidders: Restrictions on timing of substitutions
- B. Section 01 21 00 - Allowances, for cash allowances affecting this section.
- C. Section 01 22 00 - Unit Prices, for additional unit price requirements.
- D. Section 01 23 00 - Alternates, for product alternatives affecting this section.
- E. Section 01 30 00 - Administrative Requirements: Submittal procedures, coordination.
- F. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.
- G. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Restrictions on emissions of indoor substitute products.

1.3 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
  - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
    - a. Unavailability.
    - b. Regulatory changes.
  - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
    - a. Substitution requests offering advantages solely to the Contractor will not be considered.

1.4 REFERENCE STANDARDS

- A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.
- B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.1 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
  - 2. Agrees to provide the same warranty for the substitution as for the specified product.
  - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
  - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
  - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
  - 6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- B. A Substitution Request for specified installer constitutes a representation that the submitter:
  - 1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
  - 1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.
- E. Limit each request to a single proposed substitution item.

### 3.2 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
  - 1. Instructions to Bidders specifies time restrictions and the documents required for submitting substitution requests during the bidding period.
- B. Submittal Form (before award of contract):
  - 1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

### 3.3 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
  - 1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request (After Bidding/Negotiating). See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Architect will consider requests for substitutions only within 30 days after date of Agreement.

- C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
- D. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
  - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
  - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
  - 3. Bear the costs engendered by proposed substitution of:
    - a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
- E. Substitutions will not be considered under one or more of the following circumstances:
  - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
  - 2. Without a separate written request.

#### 3.4 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.
  - 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

#### 3.5 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

#### 3.6 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

END OF SECTION





SECTION 01 30 00  
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Delegated Design
- C. Preconstruction meeting.
- D. Progress meetings.
- E. Superintendent's meetings.
- F. Preinstallation meetings.
- G. Progress photographs.
- H. Submittals for review, information, and project closeout.
- I. Number of copies of submittals.
- J. Requests for Interpretation (RFI) procedures.
- K. Submittal procedures.
- L. Electronic submittal procedure.

1.2 RELATED REQUIREMENTS

- A. Section 01 32 16 - Construction Progress Schedule: Form, content, and administration of schedules.
- B. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.
- C. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.3 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. Coordination Document: The HVAC/Mechanical, Plumbing and Electrical Trades Contractors shall execute a coordination document identifying primary utilities in shared spaces. Circulation of the coordination document will be in the order contract trades are listed above.

Conflicts in utility coordination are to be brought to the attention of the Architect/Engineer. Copies of the final coordination document will be distributed to each trade.

- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements. Install utilities parallel with structure and as inconspicuous as possible in exposed spaces.
- F. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

#### 1.4 DELEGATED DESIGN

- A. All work requiring the services of a Delegated Design Professional shall be conducted by a Licensed Professional Engineer, licensed in the State of New York.
- B. All items submitted by the Delegated Design Professional shall be signed and sealed by the Licensed Professional Engineer. These submittals shall include, but are not limited to:
  - 1. Shop Drawings and details.
  - 2. Design calculations, including loading, stresses, and connections.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

#### 3.1 PRECONSTRUCTION MEETING

- A. Architect will schedule a meeting after Notice of Award.
- B. Attendance Required:
  - 1. Owner.
  - 2. Architect.
  - 3. Contractor.
- C. Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Distribution of Contract Documents.
  - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  - 5. Submission of Contractor's Infectious Disease Preparedness Plan and Basic Infection Prevention Measures.
  - 6. Submission of initial Submittal schedule.
  - 7. Designation of personnel representing the parties to Contract and Architect.
  - 8. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  - 9. Scheduling.
- D. Architect will record minutes and distribute copies two days after meeting to participants, with copies to participants, and those affected by decisions made.

### 3.2 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
  - 1. Contractor.
  - 2. Owner.
  - 3. Architect.
  - 4. Special consultants.
  - 5. Contractor's superintendent.
  - 6. Major subcontractors.
- D. Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of work progress.
  - 3. Field observations, problems, and decisions.
  - 4. Identification of problems that impede, or will impede, planned progress.
  - 5. Review of submittals schedule and status of submittals.
  - 6. Maintenance of progress schedule.
  - 7. Corrective measures to regain projected schedules.
  - 8. Planned progress during succeeding work period.
  - 9. Coordination of projected progress.
  - 10. Maintenance of quality and work standards.
  - 11. Effect of proposed changes on progress schedule and coordination.
  - 12. Other business relating to work.
- E. Architect/Engineer will record minutes and distribute copies within two days after meeting to participants, with copies to participants, and those affected by decisions made.

### 3.3 PREINSTALLATION MEETING

- A. When required in individual specification sections, convene preinstallation meeting at Project site prior to commencing work of specific section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Architect seven days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of installation, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Record minutes and distribute copies after meeting to participants, with copies to Architect, Owner, and those affected by decisions made.

### 3.4 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

### 3.5 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Photography Type: Digital; electronic files.
- C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.
- D. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
  1. Delivery Medium: Via email.
  2. File Naming: Include project identification, date and time of view, and view identification.
  3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

### 3.6 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
  1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
  2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
  1. Prepare a separate RFI for each specific item.
    - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
    - b. Do not forward requests which solely require internal coordination between subcontractors.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
  1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
  1. Official Project name and number, and any additional required identifiers established in Contract Documents.
- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
- H. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
- I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.

### 3.7 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
  - 1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
  - 2. Coordinate with Contractor's construction schedule and schedule of values.
  - 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
  - 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
  - 5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
    - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

### 3.8 COORDINATION MEETINGS

- A. The Construction Manager will conduct Project Coordination Meetings weekly or on an "as-needed" basis. Project Coordination Meetings are in addition to specific meetings held for other purposes, such as regular Project Meetings and special Pre-Installation Meetings.
- B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.
- C. The Construction Manager will record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

### 3.9 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
  - 1. Product data.
  - 2. Shop drawings.
  - 3. Samples for selection.
  - 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below

### 3.10 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
  - 1. Design data.
  - 2. Certificates.
  - 3. Test reports.
  - 4. Inspection reports.
  - 5. Manufacturer's instructions.
  - 6. Manufacturer's field reports.
  - 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner.
- C. SUBMITTALS FOR PROJECT CLOSEOUT
  - 1. Submit Correction Punch List for Substantial Completion.
  - 2. Submit Final Correction Punch List for Substantial Completion.
  - 3. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
    - a. Project record documents.
    - b. Operation and maintenance data.
    - c. Warranties.
    - d. Bonds.
    - e. Other types as indicated.
  - 4. Submit for Owner's benefit during and after project completion.

### 3.11 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Documents for Project Closeout: Make one reproduction of submittal originally reviewed.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
  - 1. After review, produce duplicates.
  - 2. Retained samples will not be returned to Contractor unless specifically so stated.

### 3.12 SUBMITTAL PROCEDURES

- A. General Requirements:
  - 1. Use a single transmittal for related items.

### 3.13 SUBMITTAL

- A. General:
  - 1. Transmit each submittal with form provided by Architect via Newforma Info Exchange.
  - 2. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
  - 3. Identify Project, Contractor, Subcontractor, or Supplier; pertinent drawing and detail number, and specification number, as appropriate on each copy.
  - 4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

5. Deliver submittals, containing samples, to Architect at Airport Corporate Park, 100 Hunt Center, Horseheads, NY 14845-1019. All other submittals to be submitted through Newforma Exchange as specified below.
  6. Schedule submittals to expedite the Project, and coordinate submission of related items.
  7. For each submittal for review, allow fifteen (15) days excluding delivery time to and from the Contractor.
  8. Identify variations from Contract Documents and Product or System limitations that may be detrimental to successful performance of the completed Work.
  9. When revised for resubmission, identify all changes made since previous submission.
  10. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
  11. Submittals not requested, or incomplete, will not be recognized or processed.
- B. Proposed Product List:
1. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
  2. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- C. Product Data: Submit to for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
1. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
  2. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
  3. After review distribute in accordance with Submittal Procedures article above and provide copies for record documents described in Section 01 70 00.
- D. Shop Drawings: Submit for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
  2. Do not reproduce the Contract Documents to create shop drawings.
  3. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
  4. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
  5. After review distribute in accordance with Submittal Procedures article above and provide copies for record documents described in Section 01 70 00.
- E. Samples: Submit for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
1. Samples For Selection as Specified in Product Sections:
    - a. Submit to Architect for aesthetic, color, or finish selection.
    - b. Submit samples of finishes from full range of manufacturers' standard colors, in custom colors selected, textures, and patterns for Architect's selection.
  2. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  3. Include identification on each sample, with full Project information.
  4. Submit number of samples specified in individual specification sections; Architect will retain one sample.
  5. Reviewed samples which may be used in the Work are indicated in individual specification sections.
  6. Samples will not be used for testing purposes unless specifically stated in specification section.
  7. After review distribute in accordance with Submittal Procedures article above and provide copies for record documents described in Section 01 70 00.

- F. Design Data
  - 1. Submit for Architect's knowledge as contract administrator or for Owner.
  - 2. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- G. Test Reports
  - 1. Submit for Architect's knowledge as contract administrator or for Owner.
  - 2. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- H. Certificates
  - 1. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect, in quantities specified for Product Data.
  - 2. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  - 3. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.
- I. Manufacturer's Instructions
  - 1. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing.
  - 2. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- J. Manufacturer's Field Reports
  - 1. Submit reports for Architect's benefit as contract administrator or for Owner.
  - 2. Submit report in duplicate within 30 days of observation for information.
  - 3. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- K. Erection Drawings
  - 1. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
  - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

### 3.14 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
  - 1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Architect's and consultants' actions on items submitted for review:
  - 1. Authorizing purchasing, fabrication, delivery, and installation:
    - a. "Approved", or language with same legal meaning.
    - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
      - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
    - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.



2. Not Authorizing fabrication, delivery, and installation:
  - a. "Revise and Resubmit".
    - 1) Resubmit revised item, with review notations acknowledged and incorporated.
  - b. "Rejected".
    - 1) Submit item complying with requirements of Contract Documents.
- E. Architect's and consultants' actions on items submitted for information:
  1. Items for which no action was taken:
    - a. "Received" - to notify the Contractor that the submittal has been received for record only.
  2. Items for which action was taken:
    - a. "Reviewed" - no further action is required from Contractor.

### 3.15 ELECTRONIC SUBMITTAL PROCEDURES - NEWFORMA

- A. Using the PDF cover sheet provided by the Architect, fill out the information required for the submittal. Each submittal must be provided with the submittal cover sheet.
- B. Combine PDF cover sheet with product submittal. Cover sheets are to precede the product submittal information.
- C. If shop drawings are over 11" x 17" in size, hard copies are to be provided.
- D. Electronic submittals shall be up-loaded to the Project Team through Newforma Info Exchange. Directions to access Newforma will be provided by the Architect.
- E. Notification will be automatically be generated by Newforma to the Project Team when a new submittal has been created.

### 3.16 ARCHITECT'S/ENGINEER'S SUBMITTAL ACTION

- A. Except for submittals for the record or information, where action and return is required, the Architect or his consultant will review each submittal, mark to indicate action taken, and return.
  1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:
  1. Final Unrestricted Release: When the Architect marks a submittal "Reviewed" the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
  2. Final-But-Restricted Release: When the Architect marks a submittal "Reviewed 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.
  3. Returned for Re-submittal: When the Architect marks a submittal "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 "Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
  4. Rejected: When the Architect marks a submittal "Rejected," do not proceed with any Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Prepare a new submittal conforming to the product characteristics specified by the contract documents; resubmit without delay. Repeat if necessary to obtain different action mark.
  5. Submit Specified Item: When submittal is marked "Submit Specified Item", the Contractor shall immediately resubmit the specified item.

- C. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned marked "Action Not Required".

END OF SECTION

SECTION 01 32 16  
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.2 RELATED SECTIONS

- A. Section 01 10 00 - Summary: Work sequence.

1.3 SUBMITTALS

- A. Within 10 days after date established in Notice to Proceed, submit preliminary schedule .
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Submit updated schedule with each Application for Payment.
- D. Submit in PDF format.
- E. Submit under transmittal letter form specified in Section 01 30 00 - Administrative Requirements.

1.4 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Scale and Spacing: To allow for notations and revisions.

PART 2 SCHEDULE

2.1 GENERAL

- A. A milestone/ phasing construction schedule including start and completion dates and layout in zones with key dates, has been prepared. The milestone schedule has been included as part of the bidding documents within this section.
- B. A copy of the Owner's calendar is attached for Contractor's reference.
- C. Schedule of Completion: All work of this project shall be substantially completed by the date indicated on the milestone/ phasing schedule, unless noted otherwise.
- D. All schedules and calendars shall be used as tools in developing the project schedule.
- E. Upon Notice to Proceed the overall Project CPM Schedule will be prepared by the **General Trades Contractor** as outlined in this section.
- F. Start and end dates must be met.

## PART 3 EXECUTION

### 3.1 GENERAL

- A. The CPM Schedule network plan including any appropriate milestone dates and the computer produced reports shall be part of the Owner/Contractor agreement as stipulated herein.
- B. All Prime Contractors shall provide all information required by the Architect/Engineer to the General Contractor for development of a network plan and schedule for this in accordance with the requirements of this section of the General Requirements.
- C. The purpose of the plan and schedule will be to assure adequate planning, coordination and execution of the work of the various Prime Contractors, and to assist the Architect/Engineer in monitoring the progress of the work and evaluating proposed changes to the contract and schedule.
- D. The project management tool commonly called the Critical Path Method (CPM) will be employed for the planning, scheduling and report of all work to be performed under the contract. The precedence diagramming method shall be utilized in preparing the CPM Schedule network diagrams.
- E. There are other contracts and work which will run concurrently with this Contract, and may run subsequently to the work of this Contract. The project network diagram and schedule will reflect the major interfaces between the work of this Contract and the concurrent and succeeding work of the other contracts.
- F. The Architect/Engineer may modify the network diagram to provide interface points for other contracts for this Project.
- G. Activity time delays shall not automatically mean that an extension of the Contract Completion Date is warranted or due the Contractor. A Contract Modification or delay may not affect existing critical activities or cause noncritical activities to become critical. A Contract Modification or delay may result in only absorbing part of the available total float that may exist within an activity chain on the Network, thereby not causing any effect of any interim milestone date or the Contract Completion Date.
- H. Total float is defined as the amount of time between the early start date and late start date, or the early finish date and the late finish date, for each and every activity in the schedule. Float is for the exclusive use or benefit of the Owner. Extensions of time to milestone dates for the Contract Completion Date under the Contract will be granted only to the extent that is equitable time adjustments to the activity or activities affected by the Contract Modification or delay exceeds the total float of the affected or subsequent paths and extends any interim milestone date or the Contract Completion Date.

### 3.2 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.
- B. To the extent necessary for the General Trades Contractor to reflect in a computerized CPM Schedule network diagram each Prime Contractor's proposed plan for completion of their work, all Prime Contractors shall be prepared to meet with and assist the General Contractor, and furnish information subsequent to award of the contract.
- C. Within (3) calendar days following the Contract Issuance, the Architect/Engineer will meet with the Prime Contractors and conduct a review of the Prebid Milestone/phasing to assure their understanding of said project schedule requirements and contractual milestone dates.

- D. Within four (4) calendar days after the meeting to review the Milestone/Phasing Schedule, all Prime Contractors will provide their proposed plans of operation to the General Contractor. The Contractor's plan of operations shall consist of, but not limited to, the following:
  - 1. List of proposed Construction Activities.
  - 2. List of proposed Durations of Construction Activities (in workdays).
  - 3. List of Dependency Relationships of Construction Activities.
  - 4. List of proposed Durations for major procurement items (in workdays).
  - 5. Proposed Sequencing of Construction Activities.
- E. The Architect/Engineer, the General Trades Contractor and each Prime Contractor will meet and jointly review the CPM project schedule, based on the General Contractor's proposed plan and sequences of operation. Any areas of such plans which, in the opinion of the Architect/Engineer, will conflict with timely completion of the project will be subject to revision by the General Contractor unless adequate justification for these plans, durations and logic (as determined by Architect/Engineer) is provided by the Prime Contractor within (10) calendar days of the Architect/Engineer's notice to the Prime Contractor of the Architect/Engineer's intent to revise the schedule. At these meetings, the General Contractor and the Prime Contractors, with the aid of the Architect/Engineer, will manually construct a precedence diagram describing the activities to be accomplished, their dependency relationships and their durations. The General Contractor will then, using the manual precedence diagram, prepare a computer produced schedule showing starting and completion dates for each activity.
- F. In preparing the manual precedence diagram, each Prime Contractor will be responsible for assuring that any/all subcontractor work, as well as their own work, is included and that the diagram shows a coordinated plan of work.
- G. The manually prepared precedence diagram, when fully developed, will show the sequence and interdependence of activities required for complete performance of all the work under all of the Prime Contracts. In developing the precedence diagram, the work will be divided into activities with a maximum duration of twenty (20) working days each, unless otherwise directed by the Architect/Engineer, except for non-construction activities such as procurement of materials, delivery of equipment, and concrete curing.
- H. Proposed durations assigned to each activity shall reflect each Prime Contractor's best estimate of time required to complete activity considering the scope and resources planned for activity.
- I. Failure by the General Contractor, and of the Prime Contractors or Architect/Engineer to include the element of work required for performance of the contract shall not excuse the Prime Contractors from completing all their work within the Contract Completion Date. If the Architect/Engineer questions any of the Prime Contractor's proposed durations, the Prime Contractor shall within ten (10) calendar days provide estimates of their labor and intended crew and/or equipment sizes required for the activity which support the proposed duration to the satisfaction of the Architect/Engineer.
- J. Seasonal weather conditions will be considered in the planning and scheduling of all work influenced by high or low ambient temperatures to insure the completion of all contract work within the allotted contract time milestone completion dates.

### 3.3 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.

- D. Provide sub-schedules to define critical portions of the entire schedule.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- G. Provide legend for symbols and abbreviations used.

### 3.4 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

### 3.5 REVIEW AND EVALUATION OF SCHEDULE

- A. Within seven (7) calendar days after receipt of the computer produced CPM Schedule and reports provided by the General Contractor, each Prime Contractor shall meet with the Architect/Engineer, if required, for joint review, correction, or adjustment of the proposed plan and schedule; After these joint meetings, the computer produced CPM Schedule and report will be revised in accordance with agreements reached during the joint reviews. Final review and acceptance by the Owner will take place after all Prime Contractors have approved the revised CPM Schedule.
- B. Upon establishment of an agreed upon schedule, each Prime Contractor will sign the CPM Schedule network drawings and computer produced reports, which will then indicate the acceptance and approval of the project schedule, sequence of activities and times for completion. Acceptance of the approved project schedule by all Prime Contractors and the Architect/Engineer will be a condition precedent to the making of any partial payments under the Contract.
- C. Participate in joint review and evaluation of schedule with Architect at each submittal.
- D. Evaluate project status to determine work behind schedule and work ahead of schedule.
- E. After review, revise as necessary as result of review, and resubmit within 10 days.

### 3.6 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.
- G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.
- H. The Approved Project Schedule will be updated by the General Contractor and reviewed by the Architect/Engineer on a monthly basis for the purpose of recording and monitoring the

progress of work. The Prime Contractors shall meet with the Architect/Engineer each month to review actual progress made to date, dates of activities started and completed, and the percentage of work completed to date on each activity started but not completed.

- I. Upon completion of the joint reviews, the General Contractor will revise the network to reflect progress to date plus any approved revisions to the network, and carry out a computer calculation to determine status which will be provided to each Prime Contractor.
- J. Based on the result of the monthly progress update, when the schedule no longer represents the actual prosecution and progress of the work, a revision to the schedule logic sequence and the precedence diagram may be required by the Architect/Engineer or requested by the Prime Contractors.
- K. A Prime Contractor may also request revisions to the logic sequence and precedence diagram in the event their planning for the project is revised. If a Prime Contractor desires to make changes in the Approved Project Schedule to reflect revisions in their method of operating and scheduling, they shall notify the Architect/Engineer in writing stating the reasons for the proposed revision.
- L. If a revision to the schedule logic sequence is contemplated, a Prime Contractor or the Architect/Engineer shall so advise the other in writing at least two (2) weeks prior to the next Schedule Update meeting, describing the revision and setting forth the reasons therefore.
- M. All reasonable requests by the Prime Contractors for revisions will be implemented by the Architect/Engineer if not reasonably objected to by any of the other Prime Contractors.
- N. Architect/Engineer directed revisions to the schedule will not be implemented without written notice to the Prime Contractors, who shall respond within ten (10) days, either agreeing with the Architect/Engineer's proposed revision or setting forth justification why it should not be accomplished. If the Prime Contractor's justification for not accomplishing the change is reasonable, such change will not be implemented.
- O. Updating the schedule to reflect actual progress made up to the date of an update shall not be considered revisions to logic sequence and schedule; in case of disagreements concerning actual progress to date, the Architect/Engineer's determination shall govern.
- P. If a Prime Contractor does not record any exceptions to the published Project Schedule update within ten (10) calendar days of its receipt, they will be deemed to have accepted and approved it.

### 3.7 RESPONSIBILITY FOR COMPLETION

- A. Each Prime Contractor shall furnish sufficient forces, plant and equipment, and shall work such hours including night shift and overtime operations, as necessary to ensure the prosecution of the work in accordance with the current monthly update of the Project Schedule. If, in the opinion of the Architect/Engineer, a Prime Contractor falls behind in meeting the schedule as presented in the current monthly update, the Contractor shall take such steps as may be necessary to improve their progress, and the Architect/Engineer may require them to increase the hours of work, the number of shifts, overtime operations and/or the amount of construction plant and equipment without additional cost to the Owner or Architect/Engineer. All additional expenses incurred by the Owner and Architect/Engineer due to such work will be deducted from the amount due the Prime Contractor. The provisions of this section shall not be construed as prohibiting work on Saturdays, Sundays and holidays if the Prime Contractor so elects and if approved by the Architect/Engineer.
- B. Failure of a Prime Contractor to comply with the requirements of this subsection shall be a basis for determination by the Owner that the Prime Contractor is not prosecuting the work with such diligence as will ensure completion within the time stipulated. Upon such determination, the Owner may terminate the Prime Contractor's right to proceed with the work

or any separable part thereof, in accordance with the provisions of the General Conditions, or may take such other actions as may be deemed appropriate.

- C. It shall be the responsibility of all Prime Contractors to maintain their progress so as not to delay the progress of the project or the progress of other Prime Contractors. If a Prime Contractor delays the progress of the project or the progress of other Prime Contractors, it shall be the responsibility of Prime Contractor causing the delay to increase the number of shifts, days of work, and/or to the extent permitted by law, to institute or increase overtime operations all without additional cost to the Owner to regain the time lost and to maintain the over schedule. Each Prime Contractor is required by virtue of this Contract to cooperate in every way possible with all other Prime Contractors in order to maintain the scheduled completion date. No additional compensation will be considered for such cooperation.

### 3.8 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION



SECTION 01 33 29.07  
PROHIBITED CONTENT INSTALLER CERTIFICATION

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PROJECT NAME: OWEGO DRI - PHASE I: MARVIN PARK IMPROVEMENTS; NO.: 2550-011.

USE OF THIS FORM

- 1.1 BECAUSE INSTALLERS ARE ALLOWED AND DIRECTED TO CHOOSE ACCESSORY MATERIALS SUITABLE FOR THE APPLICABLE INSTALLATION, THERE IS A POSSIBILITY THAT SUCH ACCESSORY MATERIALS MIGHT CONTAIN VOC CONTENT IN EXCESS OF THAT PERMITTED, ESPECIALLY WHERE SUCH MATERIALS HAVE NOT BEEN EXPLICITLY SPECIFIED.
- 1.2 CONTRACTOR IS REQUIRED TO OBTAIN AND SUBMIT THIS FORM FROM EACH INSTALLER OF WORK ON THIS PROJECT.
- 1.3 FOR EACH PRODUCT CATEGORY LISTED, CIRCLE THE CORRECT WORDS IN BRACKETS: EITHER [HAS] OR [HAS NOT].
- 1.4 IF ANY OF THESE ACCESSORY MATERIALS HAS BEEN USED, ATTACH TO THIS FORM PRODUCT DATA AND SDS SHEET FOR EACH SUCH PRODUCT.
- 1.5 VOC CONTENT RESTRICTIONS ARE SPECIFIED IN SECTION 01 61 16.

PRODUCT CERTIFICATION

- 2.1 I CERTIFY THAT THE INSTALLATION WORK OF MY FIRM ON THIS PROJECT:
  - A. [HAS] [HAS NOT] required the use of ADHESIVES.
  - B. [HAS] [HAS NOT] required the use of JOINT SEALANTS.
  - C. [HAS] [HAS NOT] required the use of PAINTS OR COATINGS.
  - D. [HAS] [HAS NOT] required the use of COMPOSITE WOOD or AGRIFIBER PRODUCTS.

2.2 \_\_\_\_ LIST OF PRODUCTS OF THESE TYPES THAT WERE USED IS ATTACHED, WITH  
MANUFACTURER AND BRAND NAME.

2.3 \_\_\_\_ PRODUCT DATA AND SDS SHEETS FOR THESE PRODUCTS:

- A. \_\_\_\_ Are attached.
- B. \_\_\_\_ Were submitted as normal submittals.
- C. \_\_\_\_ Were submitted as sustainable design submittals using the Material Content Form.

CERTIFIED BY: (INSTALLER/MANUFACTURER/SUPPLIER FIRM)

3.1 FIRM NAME: \_\_\_\_\_

3.2 PRINT NAME: \_\_\_\_\_

3.3 SIGNATURE: \_\_\_\_\_

3.4 TITLE: \_\_\_\_\_ (OFFICER OF COMPANY)

3.5 DATE: \_\_\_\_\_

END OF SECTION

SECTION 01 40 00  
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. References and standards.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Mock-ups.
- F. Tolerances.
- G. Manufacturers' field services.
- H. Defect Assessment.
- I. Examination and Preparation

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- B. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.3 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.
- G. Definitions:
  - 1. General: Basic contract definitions are included in the Conditions of the Contract.
  - 2. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited.

3. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
4. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
5. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
6. "Furnish": The term "furnish" means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
7. "Install": The term "install" describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
8. "Product": The term "product" refers to materials, systems and equipment.
9. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
10. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
  - a. The term "experienced," when used with the term "installer," means having a minimum of 5 previous projects similar in size and scope to this project, being familiar with the special requirements indicated, and having complied with requirements of authorities having jurisdiction.
  - b. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trade persons of the corresponding generic name.
  - c. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
    - 1) This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.
11. "Project Site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
12. "Replace": Used herein as a term contraction and unless specifically noted means "remove existing and provide new".
13. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

H. Specification Format and Content Explanation:

1. Specification Format: These Specifications are organized into Divisions and Sections based on the CSI-04 -Division format and Master Format numbering system.
2. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

- a. Specifying Methods: The techniques or methods of specifying to record requirements varies throughout text and may include "prescriptive", "open generic-descriptive", "compliance with standards", "performance", "proprietary" or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
  - b. Abbreviated Language: Language used in Specifications and other Contract Documents are abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated, as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
  - c. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
    - 1) The words "shall be" are implied where a colon (:) is used within a sentence or phrase.
  - d. Overlapping and Conflicting Requirements: Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent is intended and will be enforced, unless specifically detailed language written into contract documents clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to the Architect for a decision before proceeding.
  - e. Minimum Quality/Quantity: In every instance, the quality level or quantity shown or specified is intended to be the minimum for the work to be performed or provided. Except as otherwise specifically indicated, the actual work may either comply exactly with the minimum (within specified tolerances), or may exceed that minimum (within reasonable limits). In complying with these requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of the requirements. Refer instances of uncertainty to the Architect for decisions before proceeding.
  - f. Specialists, Assignments: In certain instances, specification of text (requires or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the contractor has no choice or option. These requirements should not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; they are also not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party of entity involved in a specific unit of work is recognized as "expert" for the indicated construction process or operation. Nevertheless, the final responsibility for fulfillment of the entire set of requirements remains with the Contractor.
3. Conflict: If there be conflicting variance between the Drawings and the Specifications, the provisions of the Specifications shall control. In case of conflict on the drawings between larger and small scale details and plans, the larger scale plans and details shall control.
- I. Industry Standards:
    1. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
    2. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

3. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
  - a. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

#### 1.4 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform other specified testing and inspection.
- B. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

#### 3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

#### 3.2 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
- C. Integrated Exterior Mock-ups: Construct integrated exterior mock-up as indicated on drawings. Coordinate installation of exterior envelope materials and products as required in

individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.

- D. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- E. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- F. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
- G. Architect will use accepted mock-ups as a comparison standard for the remaining Work.
- H. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

### 3.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

### 3.4 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 15 days in advance of required observations.
  - 1. Observer subject to approval of Architect.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

### 3.5 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

### 3.6 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.

### 3.7 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.

- B. Seal cracks or openings of substrate prior to applying next material or substrate.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION



SECTION 01 41 00  
SPECIAL INSPECTIONS AND STRUCTURAL TESTING

PART 1 GENERAL

1.1 SUMMARY OF REFERENCE STANDARDS

- A. Regulatory requirements applicable to special inspections are the following:
  - 1. Special Inspections and Structural Testing shall be in accordance with Chapter 17 of the 2020 Building Code of New York State.
  - 2. Special Inspections and Structural Testing shall be in accordance with CASE National Practice Guideline for Special Inspections.
    - a. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.

1.2 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements.

1.3 GENERAL REQUIREMENTS

- A. The program of Special Inspection and Structural Testing is a Quality Assurance program intended to ensure that the work is performed in accordance with the Contract Documents.
- B. This specification section is intended to inform the Contractor of the Owner's quality assurance program and the extent of the Contractor's responsibilities. This specification section is also intended to notify the Special Inspector, Testing Laboratory, and other Agents of the Special Inspector of their requirements and responsibilities.
- C. The Special Inspector shall be the individual in charge of the Special Inspection program. The Special Inspector shall supervise and Review the work of the Testing and Inspection Agents for each testing or Inspection task. The Special Inspector shall be a licensed engineer in the state where the inspection and testing work is to be performed.
- D. A Special Inspections and Structural Testing pre-construction meeting shall be held by the Special Inspector. The meeting shall include any Inspection and Testing Agents, the Contractor, any applicable subcontractors and the Structural Engineer. The purpose of the meeting shall be to identify the specifics of the Special Inspection program, including, but not limited to the following:
  - 1. Identify the Special Inspector and Testing Agents
  - 2. Review the specification section and Statement of Special Inspections
  - 3. Determine the distribution list for inspection reports
  - 4. Provide contact information
  - 5. Determine which party shall schedule inspections and testing

1.4 SCHEDULE OF INSPECTIONS AND TESTS

- A. Required inspections and tests are described in the attached Schedule of Special Inspections and in the individual Specification Sections for the items to be inspected or tested.

1.5 QUALIFICATIONS

- A. The Special Inspector shall be a licensed Professional Engineer or Structural Engineer who is approved by the Structural Engineer of Record (SER) and Code Enforcement Officer.

- B. The Special Inspector shall verify the qualifications of each Inspection and Testing Agent comply with Section 1704.2.1 - Special inspector qualifications, and shall provide documentation of each Agent to the Code Enforcement Official, Owner and Structural Engineer.
- C. The Testing Laboratory shall maintain a full time licensed Professional Engineer or Structural Engineer on staff who shall certify all test reports. The Engineer shall be responsible for the training of the testing technicians and shall be in responsible charge of the field and laboratory testing operations.
- D. Special Inspections shall be performed by inspectors who are either licensed Professional Engineers (P.E.), Structural Engineers (S.E.), or Engineers-In-Training (EIT) with an education and background in structural engineering except as indicated below.
  - 1. Special Inspections of soils and foundations may be performed by inspectors with an education and background in geotechnical engineering in lieu of a background in structural engineering.
  - 2. Technicians performing sampling and testing of concrete shall be ACI certified Concrete Field Testing Technicians - Grade 1.
  - 3. Inspectors performing inspections of concrete work such as inspections of concrete placement, batching, reinforcing placement, curing and protection, may be ACI certified Concrete Construction Inspectors or ICBO certified Reinforced Concrete Special Inspector in lieu of being a licensed P.E., S.E., or EIT.
  - 4. Inspectors performing inspections of prestressed concrete work may be ICBO/BOCA/SBCCI certified Prestressed Concrete Special Inspector.
  - 5. Inspectors performing inspections of masonry may be ICBO certified Structural Masonry Special Inspector.
  - 6. Technicians performing visual inspection of welding shall be AWS Certified Welding Inspectors or ICBO certified Structural Steel and Welding Special Inspectors, technicians performing non-destructive testing such as ultrasonic testing, radiographic testing, magnetic particle testing, or dye-penetrant testing shall be certified as an ASNT-TC Level II or Level III technician.
  - 7. Inspectors performing inspections of spray fireproofing may be ICBO certified Spray-Applied Fireproofing Special Inspector.
  - 8. Technicians performing standard tests described by specific ASTM Standards shall have training in the performance of such tests and must be able to demonstrate either by oral or written examination competence for the test to be conducted. They shall be under the supervision of a licensed Professional Engineer and shall not be permitted to independently evaluate test results.

#### 1.6 SUBMITTALS

- A. The Special Inspector and Inspection and Testing Agents shall submit to the SER and Code Enforcement Officer for review a copy of their qualifications which shall include the names and qualifications of each of the individual inspectors and technicians who will be performing inspections or tests.
- B. The Special Inspector and Inspection and Testing Agents shall disclose any past or present business relationship or potential conflict of interest with the Contractor or any of the Subcontractors whose work will be inspected or tested.

#### 1.7 PAYMENT

- A. The Owner shall engage and pay for the services of the Special Inspector, Agents of the Special Inspector, and Testing Laboratory.

- B. If any materials which require Special Inspections are fabricated in a plant which is not located within 100 miles of the project, the Contractor shall be responsible for the travel expenses of the Special Inspector or Inspection and Testing Agents.
- C. The Contractor shall be responsible for the cost of any retesting or re-inspection of work which fails to comply with the requirements of the Contract Documents.

#### 1.8 CONTRACTOR RESPONSIBILITIES

- A. The Contractor shall cooperate with the Inspector and their Inspection and Testing Agents so that the Special Inspections and testing may be performed without hindrance.
- B. The Contractor shall review the Statement of Special Inspections and shall be responsible for coordinating and scheduling inspections and tests. The Contractor shall notify the Special Inspector or Testing Laboratory at least 24 hours in advance of a required inspection or test. Un-inspected work that required inspection may be rejected solely on that basis.
- C. The Contractor shall provide adequate OSHA-compliant access for the Special Inspector and their Inspection and Testing Agents for them to perform their work. This includes access to pipe scaffolds, swing-stage scaffolds, and any other methods of accessing the work areas that the Contractor or its agents to perform the work of the Contract.
- D. The Contractor shall provide incidental labor and facilities to provide access to the work to be inspected or tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.
- E. The Contractor shall keep at the project site the latest set of construction drawings, field sketches, approved shop drawings, and specifications for use by the Inspector and their Inspection and Testing Agents.
- F. The Special Inspection program shall in no way relieve the Contractor of their obligation to perform work in accordance with the requirements of the Contract Documents or from implementing an effective Quality Control program. All work that is to be subjected to Special Inspections shall first be reviewed by the Contractor's quality control personnel.
- G. The Contractor shall acknowledge each item listed as a discrepancy by the Special Inspection program in writing to the Owner, Architect and Engineer. The acknowledgement shall identify whether or not the discrepancy has been corrected, is in compliance with the contract documents, and is ready for re-inspection.
- H. The Contractor shall be solely responsible for construction site safety.

#### 1.9 LIMITS ON AUTHORITY

- A. The Special Inspector or Inspection and Testing Agents may not release, revoke, alter, or expand on the requirements of the Contract Documents.
- B. The Special Inspector or Inspection and Testing Agents will not have control over the Contractor's means and methods of construction.
- C. The Special Inspector or Inspection and Testing Agents shall not be responsible for construction site safety.
- D. The Special Inspector or Inspection and Testing Agents has no authority to stop the work.

#### 1.10 STATEMENT OF SPECIAL INSPECTIONS

- A. The Statement of Special Inspections will be prepared by the Structural Engineer of Record (SER). Refer to the attached forms.

- B. The Statement of Special Inspections shall be submitted with the application for Building Permit.

#### 1.11 RECORDS AND REPORTS

- A. The Special Inspector and Inspection and Testing Agents shall notify the Contractor of their presence on the job site at the start of any required inspection or test.
- B. Reports shall be submitted to the Special Inspector within three days of the inspection or test. Hand written reports may be submitted if final typed copies are not available.
- C. The Special Inspector and Inspection and Testing Agents shall prepare detailed reports of each inspection or test and submit the reports to the Structural Engineer of Record within seven days of the inspection or test. . Reports shall include:
  - 1. Date of test or inspection
  - 2. Name of inspector or technician
  - 3. Location of specific areas tested or inspected
  - 4. Description of test or inspection and results
  - 5. Identification of discrepancies
  - 6. Indication that the Contractor was made aware of discrepancies
  - 7. Applicable ASTM standard
  - 8. Weather conditions
  - 9. Signature of the Special Inspector overseeing the testing
- D. The Special Inspector shall submit interim reports to the Code Enforcement Officer at the end of each week which include all inspections and test reports received that week. Copies shall be sent to the SER, Architect, and Contractor.
- E. Any discrepancies from the Contract Documents found during a Special Inspection shall be immediately reported to the Contractor. If the discrepancies are not corrected, the Special Inspector shall notify the SER and Code Enforcement Officer. Reports shall document all discrepancies identified and the corrective action taken.
- F. The Inspection and Testing Agents shall immediately notify the Special Inspector and the SER by telephone or fax of any test results which fail to comply with the requirements of the Contract Documents.
- G. At the completion of the work requiring Special Inspections, each Inspection and Testing Agents shall provide a statement to the Special Inspector that all work was completed in substantial conformance with the Contract Documents and that all appropriate inspections and tests were performed.

#### 1.12 FINAL REPORT OF SPECIAL INSPECTIONS

- A. The Final Report of Special Inspections shall be completed by the Special Inspector and submitted to the SER and Code Enforcement Officer prior to the issuance of a Certificate of Use and Occupancy. Refer to the attached forms.
- B. The Final Report of Special Inspections will certify that all required inspections have been performed and will itemize any discrepancies that were not corrected or resolved.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 ATTACHMENTS - SEE STATEMENT OF SPECIAL INSPECTION IMMEDIATELY FOLLOWING  
THIS SECTION

END OF SECTION



NYS Special Inspections						page 1 of 5	
<b>STATEMENT OF SPECIAL INSPECTIONS AND TESTS</b> As required by the 2020 Building Code of New York State (BCNYS)							
BCNYS § 1704.3 requires the project Design Professional to complete the Statement of Special Inspections and Tests. BCNYS § 1704.2.3 requires the applicant to submit the completed statement of special inspections and tests with the contract documents per BCNYS § 106.1 for issuance of a building permit. The following statement of special inspections represents the minimum inspections expected for fulfillment of contractual obligations.							
Project Title: MARVIN PARK - PUBLIC TOILET HOUSE							
Project Owner: VILLAGE OF OWEGO							
Project Address: WEST MAIN STREET, OWEGO, NY 13827							
Architect/Engineer: HUNT Engineers, Architects, Land Surveyors & Landscape Architect, D.P.C.							
Name of Person Completing this Statement: NATHAN G. BINNS, PE					Phone: (607) 358-1000	Date: 12/14/2022	
Comments:							
<b>INSPECTION AND TESTING</b> (Continuous & Periodic is as Defined by the BCNYS)		<b>CONTINUOUS</b>	<b>PERIODIC</b>	<b>REFERENCE STANDARD</b>	<b>BCNYS REFERENCE</b>	<b>CHECK IF REQUIRED</b>	<b>IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY</b>
<b>A.</b>	<b>Structural Steel</b>						
1.	Material verification of high-strength bolts, nuts and washers.		X	Applicable ASTM Specifications. AISC 360, Section A3.3, N2	1705.2.1		
2.	Inspection of high-strength bolting.	X	X	AISC 360, Section N5.6	1705.2.1		
3.	Material verification of structural steel.		X	Applicable ASTM Specification. AISC 360 A3.1, N2	1705.2.1		
4.	Material verification of welding consumables.		X	Applicable AWS Specification. AISC 360 Section A3.5, N2	1705.2.1		
5.	Inspections of welding of structural steel.	X	X	AWS D1.1 AISC 360 N5.4 & 5.5	1705.2.1		
6.	Inspection of steel frame joint details at each connection.		X	AISC 360 N5.8	1705.2.1		
7.	Inspection of Galvanized Structural Steel Main Members		X	AISC 360 N5.7	1705.2.1		
<b>B.</b>	<b>Cold Formed Steel Deck</b>						
1.	Material Verification of Deck		X	SDI QA/QC SEC 6	1705.2.2		
2.	Inspection of Field Welding of Deck		X	SDI QA/QC SEC 6, AWS D1.3	1705.2.2		
3.	Inspection of Mechanical Fasteners.		X	SDI QA/QC SEC 6	1705.2.2		
4.	Inspection of location and installation compliance		X	SDI QA/QC SEC 6	1705.2.2		

NYS Special Inspections							page 2 of 5
INSPECTION AND TESTING (Continuous & Periodic is as Defined by the BCNYS)		CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
C.	Open Web Steel Joists & Joists Girders						
1.	End Condition - Welding or Bolted.		X	SJI 100, SJI 200	1705.2.3		
2.	Bridging - Horizontal or Diagonal.		X	SJI 100, SJI 200	1705.2.3		
D.	Concrete Construction						
1.	Inspection of reinforcing steel, including prestressing tendons, and verify placement.		X	ACI 318:CH20, 25.2, 25.3, 26.6.1-26.6.3	1705.3 1908.4	✓	
2.	Inspection of reinforcing steel welding.	X	X	AWS D1.4; ACI 318: 26.6.4	1705.3 1705.3.1	✓	
3.	Inspection of anchors cast in concrete.		X	ACI 318 17.8.2; AISC 360 N5.7	1705.3 1705.2.1	✓	
4.	Inspection of post installed mechanical and adhesive anchors.	X	X	ACI 318 17.8.2.4 ACI 318 17.8.2	1705.3	✓	
5.	Verify use of required design mix.		X	ACI 318: CH19, 26.4.3, 26.4.4	1705.3 1904.1 1904.2 1908.2 1908.3	✓	
6.	Sampling fresh concrete; slump, air content, temperature, strength test specimens.	X		ASTM C 172, C 31; ACI 318: 26.5, 26.12	1705.3 1908.10	✓	
7.	Inspection of concrete placement and shotcrete placement for proper application techniques.	X		ACI 318: 26.5	1705.3 1908.6 1908.7 1908.8	✓	
8.	Inspection for maintenance of specific curing temperature and techniques.		X	ACI 318: 26.5.3-26.5.5	1705.3 1908.9	✓	
9.	Inspection of prestressed concrete.	X		ACI 318: 26.10	1705.3		
10.	Inspection of the erection of precast concrete members.		X	ACI 318: 26.9	1705.3		
11.	Verification of in-situ concrete strength prior to removal of shores and forms from beams and slabs, and prior to stressing of tendons.		X	ACI 318: 26.11.2	1705.3	✓	
12.	Inspection of formwork for concrete member being formed.		X	ACI 318: 26.11.1.2 (b)	1705.3	✓	



Inspection Task			Frequency		BCNYS REFERENCE	CHECK IF REQUIRED	Reference Standard for Criteria	
			CONTINUOUS	PERIODIC			TMS 402	TMS 602
E.	Masonry Construction							
	B=	Level B inspection required for building Risk Categories I, II, & III			1705.4	✓	TMS 402	TMS 602
	C=	Level C inspection required for building Risk Category IV			1705.4		TMS 402	TMS 602
1.		Verify compliance with the approved submittals.		B & C	1705.4	✓		Art. 1.5
2.		Verify that the following are in compliance.						
	a.	Proportions of site-mixed mortar, grout, and prestressing grout for bonded tendons.		B & C	1705.4	✓		Art 2.1, 2.6 A, 2.6 B, 2.6 C, 2.4 G.1.b
	b.	Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages.		B & C	1705.4	✓	Sec. 6.1	Art. 2.4, 3.4
	c.	Placement of masonry units and construction of mortar joints.		B & C	1705.4	✓		Art. 3.3 B
	d.	Location and placement of reinforcement, connectors, and prestressing tendons and anchorages.	C	B	1705.4	✓	Sec. 6.1, 6.2.1, 6.2.6, 6.2.7	Art. 3.2 E, 3.4, 3.6 A
	e.	Grout space prior to grouting.	C	B	1705.4	✓		Art. 3.2 D, 3.2 F
	f.	Placement of grout and prestressing grout for bonded tendons.	B & C		1705.4	✓		Art. 3.5, 3.6 C
	g.	Size and location of structural elements.		B & C	1705.4	✓		Art. 3.3 F
	h.	Type, size, and location of anchors including other details of anchorage of masonry to structural members, frames, or other construction.	C	B	1705.4	✓	Sec. 1.2.1(e), 6.1.4.3, 6.2.1	
	i.	Welding of reinforcement.	B & C		1705.4		Sec. 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)	

Inspection Task			Frequency		BCNYS REFERENCE	CHECK IF REQUIRED	Reference Standard for Criteria	
			CONTINUOUS	PERIODIC			TMS 402/ACI 530/ASCE 5	TMS 602/ACI 530.1/ASCE 6
	j.	Preparation, construction, and protection of masonry during cold weather (below 40°F(4.4°C)) or hot weather (above 90°F (32.2°C)).		B & C	1705.4	✓		Art. 1.8 C, 1.8 D
	k.	Prestressing technique Application and measurement or prestressing force.	B & C	B	1705.4			Art. 3.6 B
	l.	Placement of AAC masonry units and construction of thin mortar joints.	B & C	B	1705.4			Art. 3.3 B9, 3.3 F.1.b
	m.	Properties of thin-bed mortar for AAC masonry.	B & C	B	1705.4			Art. 2.1 C.1
3.		Observe preparation of grout specimens, mortar specimens, and/or prisms.	C	B	1705.4	✓		Art. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, 1.4 B.4

NYS Special Inspections							page 5 of 5
INSPECTION AND TESTING (Continuous & Periodic is as Defined by the BCNYS)		CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
F.	Wood Construction						
1.	Fabrication process of prefabricated wood structural elements and assemblies.	X			1705.5 1704.2.5		
2.	High-load diaphragms designed in accordance with Section 2306.2.	X			1705.5.1 1704.2		
3.	Metal plate connected wood trusses spanning 60' or more	X			1705.5.2		
G.	Soils	X	X		1705.6	✓	
H.	Driven Deep Foundations	X			1705.7		
I.	Cast-in-Place Deep Foundations	X			1705.8		
J.	Helical Pile Foundations	X			1705.9		
K.	Fabricated Items	X			1705.10 1704.2.5		
L.	Sprayed Fire-Resistant Materials				1705.14 1705.14.2 1705.14.3 1705.14.4 1705.14.5 1705.14.6		
M.	Mastic and Intumescent Fire-Resistant Coatings			AWCI 12-B	1705.15		
N.	Exterior Insulation and Finish Systems (EIFS)				1705.16		
O.	Fire-Resistant Penetrations & Joints. Risk category III & IV				1705.17		
P.	Smoke Control				1705.18		
Q.	Special Inspections for Wind Resistance				1705.11 1704.2		
R.	Special Inspections for Seismic Resistance				1705.12 1704.2		
S.	Structural Testing for Seismic Resistance				1705.13 1704.2		
T.	In-Situ Load Tests				1708		
X.	Preconstruction Load Tests				1709		
Y.	Other -See spec 01 41 00						

# Final Report of Special Inspections

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Project: *MARVIN PARK - PUBLIC TOILET HOUSE*  
Location: *WEST MAIN STREET, OWEGO, NY 13827*  
Owner: *VILLAGE OF OWEGO*

Owner's Address: *178 MAIN STREET*  
*OWEGO, NY 13827*

Architect of Record: *HUNT Engineers, Architects, Land Surveyors & Landscape Architect, D.P.C.*  
*Jeff Robbins, AIA*

Structural Engineer of Record: *HUNT Engineers, Architects, Land Surveyors & Landscape Architect, D.P.C.*  
*Nathan Binns, PE*

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

*(Attach continuation sheets if required to complete the description of corrections.)*

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,  
Special Inspector

\_\_\_\_\_  
(Type or print name)

\_\_\_\_\_  
Signature Date



# Final Report of Special Inspections

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## Agent's Final Report

Project: *MARVIN PARK - PUBLIC TOILET HOUSE*

Agent:

Special Inspector:

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

*(Attach continuation sheets if required to complete the description of corrections.)*

Respectfully submitted,  
Agent of the Special Inspector

\_\_\_\_\_  
(Type or print name)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
*Licensed Professional Seal or  
Certification*



SECTION 01 41 13  
CODES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Building Code Standards

1.2 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements: References and Standards.

1.3 SUMMARY OF BUILDING CODE STANDARDS

- A. The design of this project conforms to all applicable provisions of, and Work shall be performed in accordance with the following:
  - 1. The New York State Uniform Fire Prevention and Building Code (the "Uniform Code"), comprised of the following Titles; including, but not limited to:
    - a. 2020 Building Code Of New York State (BCNYS).
    - b. 2020 Existing Building Code of New York State (EBCNYS).
    - c. 2020 Fire Code of New York State (FCNYS).
    - d. 2020 Fuel Gas Code of New York State (FGCNYS).
    - e. 2020 Mechanical Code of New York State (MCNYS).
    - f. 2020 Plumbing Code of New York State (PCNYS).
    - g. NFPA 70 - National Electric Code: Latest edition adopted by Authority Having Jurisdiction.
  - 2. The 2020 Energy Conservation Construction Code of New York State (ECCCNYS).
- B. Where any reference is made within the Contract Documents to "applicable code" regarding the Design, Product, or Work of this project, applicable code shall be the appropriate code, herein referenced, current at time of contract document issuance.
- C. Should any reference be made to previously adopted codes, standards, or regulations contrary to the foregoing, the most current version adopted, at time of document issuance, shall govern.
- D. In the event of conflicting provisions between two referenced codes, standards, or regulations, the more stringent shall prevail.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION





SECTION 01 50 00  
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This Section specifies requirements for temporary construction, utilities, facilities, and controls required to support the successful construction of the Project and maintain services until the permanent utilities, facilities, and controls are complete. They shall be installed, maintained, and removed as required to meet project conditions and contract requirements.
  - 1. General
    - a. Quality Assurance
    - b. Project Conditions
    - c. Installation
  - 2. Environmental
    - a. Environmental Protection, NPDES, and PPC
    - b. Excavation
    - c. Storm Sewers
    - d. Dewatering Facilities
  - 3. Materials & Equipment
    - a. Deliveries
    - b. Material Inventories
    - c. Materials
    - d. Equipment
  - 4. Utilities
    - a. Use charges.
    - b. Temporary electricity.
    - c. Temporary cooling.
    - d. Temporary telecommunications services.
  - 5. Facilities
    - a. Temporary sanitary facilities.
  - 6. Infectious Disease Prevention Measures.
  - 7. Construction Aids & Protection
    - a. Protection
    - b. Lifts and Hoists
  - 8. Temporary Controls: Barriers, enclosures, fencing, and Traffic Regulation .
  - 9. Enclosures
    - a. Barricades, Warning Signs, and Lights
    - b. Site Enclosure Fence
  - 10. Security requirements.
  - 11. Vehicular Considerations.
    - a. Access, Staging & Parking
    - b. Traffic Regulations
  - 12. Waste removal and progress cleaning.
  - 13. Project identification.
  - 14. Field offices.
  - 15. Operation, Termination & Removal
  - 16. Protection of Property

## 1.2 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary.

## 1.3 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.
- B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

## 1.4 GENERAL

- A. Quality Assurance
  - 1. Regulations: Comply with industry standards and applicable laws and regulations of Authorities having jurisdiction, including but not limited to:
    - a. New York State Uniform Fire Prevention and Building Code.
    - b. Health and safety regulations.
    - c. Utility company regulations.
    - d. Police, Fire Department and Rescue Squad rules.
    - e. Environmental protection regulations.
  - 2. Inspections: Arrange for Authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits. Submit copies to the Owner through the Architect/Engineer.
- B. Project Conditions
  - 1. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit to interfere with progress. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the site. Remove, relocate and replace temporary facilities and controls as required by the progress of the Work, or as requested by the Architect/Engineer. The above will be done at no cost to the Owner.
  - 2. No firearms, alcoholic beverages, tobacco products or controlled substances shall be allowed on the Project at any time per local, state and federal laws/regulations. Any violators will be immediately and permanently removed from the job site.
- C. Installation
  - 1. Use of qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
  - 2. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

## 1.5 ENVIRONMENTAL

- A. Environmental Protection, NPDES and PPC
  - 1. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner and Architect/Engineer, their employees and agents, from claims, losses, damage, and expenses including, but not limited to, attorney's fees arising out of performance of the Work as it relates to any type of pollution related situations. This would apply to bodily injury, sickness, disease or death, or to damages or destruction or contamination of tangible property arising out of the acts or omission of the Contractor or

- the joint negligent acts of the Owner and Architect/Engineer, or anyone for whose acts the Contractor may be liable.
2. The General Trades Contractor, prior to construction, must comply with the National Pollution Discharge Elimination System (NPDES) and submit and coordinate State and Local Preparedness, Prevention and Contingency Plans (PPC) with the Architect/Engineer before the start of work.
  3. Area must be provided and maintained by each Prime Contractor to provide protection for each individual worker, as well as the protection of property or real estate of the construction site and environment.
  4. Each Contractor shall provide protection, operate temporary facilities, and conduct construction in ways and methods that comply with all environmental regulations, and minimize the possibility that air, water, and soil become contaminated or polluted as a result of work or storage of supplies and materials, or equipment usage.
  5. Each Contractor will designate and train a responsible employee in environmental contamination procedures, including, but not limited to, emergency responses, material and waste inventories, spills and leak precautions and responses, inspections, housekeeping, security and external factors.
  6. Open burning shall not be permitted.
  7. The General Trades Contractor is responsible for dust control of the entire site as to eliminate the spread of dust to adjacent spaces within the building as well as to neighboring properties. A dust control plan shall be coordinated with the Architect/Engineer.
  8. The General Trades Contractor is responsible for adhering to the SWPPP requirements shown on the contract documents for the entirety of the project.
    - a. The General Trades Contractor shall employ methods required to comply with federal state and local Department of Environmental Protection requirements to control erosion from the Project site, including drainage control ditches, sediment basins, straw bale dikes, silt fencing and whatever procedure necessary to comply with requirements of the Department of Environmental Protection and any Authorities having jurisdiction.
    - b. The General Trades Contractor shall maintain these controls throughout the duration of the Project.
- B. Excavation
1. Material Protection: Any Contractor performing excavation shall protect all excavated materials from moisture, freezing and drying, so that the same materials excavated can be utilized for backfill.
  2. Shoring: The General Trades Contractor shall provide shoring for all excavations that require same per OSHA standards. Shoring must be coordinated by Each Contractor with the General Trades Contractor.
- C. Storm Sewers
1. If storm sewers are available; the General Trades Contractor shall provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available, or cannot be used, The General Trades Contractor shall provide drainage ditches, dry wells, stabilization ponds and similar facilities. If neither sewers nor drainage facilities can be lawfully used or discharge of effluent, provide containers to remove and dispose of effluent off site in lawful manner.
  2. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.
  3. Comply with the soil erosion and sedimentation control plan and Authorities having jurisdiction.
- D. Dewatering Facilities
1. For temporary drainage and dewatering facilities, and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable codes and Authorities having jurisdiction. Where feasible,

- utilize the same facilities. The General Trades Contractor shall be responsible to maintain the site, excavations and construction free of water, unless noted otherwise.
2. The General Trades Contractor shall be responsible to drain or pump water and remove debris from the site so as not to delay continuous work or progress of their work. This shall include operating pumps during second shift in order to facilitate next-day continuation of work.
  3. The Site Contractor shall excavate in a manner that prevents all surface water from flowing into the building area. The General Trades Contractor shall continue to drain site and remove debris until designed grades are obtained.
  4. Once building excavation grades are complete, The General Trades Contractor shall be responsible to remove all water and debris to install the building foundations.
  5. Upon completion of building foundations, The General Trades Contractor shall be responsible to remove water and debris required to complete his work.
  6. The Plumbing Contractor shall provide temporary storm water drainage from the building and The General Contractor shall control roof drainage from building and connect to storm water drainage system provided by plumber.

## 1.6 MATERIALS AND EQUIPMENT

### A. Deliveries

1. Contractors shall coordinate delivery and storage on the jobsite of all significant materials.
2. All Contractors are required to properly instruct material suppliers and vendors to address deliveries to them specifically by named responsible party at the jobsite and require advance notice.
3. All deliveries addressed to the project in general, the Owner or Architect/Engineer shall be refused and returned to the shipper.
4. The Owner will not be responsible for receipt, handling, or loss of any materials which are shipped to the Owner in error and received unknowing of relationship to the Project.
5. Contractors shall provide his superintendent with a telephone to enable locating the superintendent on and off site.

### B. Material Inventories

1. Contractors shall coordinate the delivery and storage on the jobsite of all significant materials.
2. Each Contractor shall be responsible for the proper location, security, and weather resistant storage as required of all materials. This includes placement of materials not to obstruct passage on site or within building structures or in any way which causes impediment or obstruction to the Work.
3. All material inventories must be stored by the Contractor to avoid excessive loads on building structure.
4. When required for the progress of the project, a Contractor shall remove or relocate material inventories.

### C. Materials

1. General: Only new, undamaged materials in serviceable condition may be used. Provide materials suitable for the use intended.
2. Lumber and Plywood: Comply with requirements in Section 06 10 00 - Rough Carpentry.
3. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride fire retardant tarpaulins. Each Contractor shall provide tarpaulins as required for their work.
4. Water: Each Contractor shall provide potable drinking water for their workers approved by local health authorities.

### D. Equipment

1. General: Only new equipment, or undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable or use intended.
2. Water Hoses: Each Contractor requiring water shall provide their own  $\frac{3}{4}$ " heavy-duty, abrasion-resistant, flexible rubber hoses, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at host discharge.
3. Electrical Power Cords: Each Contractor shall provide their own grounded extension cords (12 Gauge minimum); use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. All power cords are to be elevated, supported and hung from structure above wherever possible to avoid trip hazards.
4. Electrical Welding Outlets: These will not be provided. Each Contractor will be responsible for his own welding power.
5. First Aid Supplies: Comply with governing regulations.
6. Fire Extinguishers: The General Contractor shall provide hand-carried, portable UL-rated, class "ABC" fire extinguishers for the entire construction area, as defined by OSHA Standards. In other locations, provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers. Comply with NFPA10 classification, extinguishing agent and size required by locations and class of fire exposure. Each Contractor shall provide fire extinguishers for their own use.

## 1.7 UTILITIES

- A. Use Charges:
  1. Cost of temporary facilities including use charges are to paid by the Contractor requiring or providing the temporary facility unless noted otherwise.
  2. The Owner shall pay electrical consumption costs during construction for all usage except temporary heat.
  3. The Owner shall pay natural gas consumption costs during construction for all usage.
  4. The Owner shall pay water consumption costs during construction for all usage.
  5. If the permanent HVAC system is to be utilized for temporary heat, the Owner shall pay for fuel costs. If the permanent system is utilized, the Mechanical Contractor shall bear all costs associated with the maintenance of said system until final completion.
- B. Utilities and Systems:
  1. Contractors interrupting services due to their construction operations shall provide temporary utility lines, as required, to maintain services.
- C. Temporary Telecommunications Services
  1. It is the responsibility of Each Contractor to provide and maintain (including any cost) any data or phone line they deem necessary for their day to day operations.

## 1.8 INFECTIOUS DISEASE PREVENTION MEASURES

- A. General
  1. All Contractors shall adhere to the strictest, most current guidelines established in response to COVID-19, as set out by any one or more of the following:
    - a. Centers for Disease Control and Prevention (CDC).
    - b. Occupational Safety and Health Administration (OSHA).
    - c. Department of Health in the State of New York.
    - d. County and local Departments of Health.
    - e. Any other governing body authorized to establish guidelines.
  2. All Contractors shall be responsible for all costs associated with COVID-19 requirements, procedures, training, additional PPE, if required, and second shift differential if job site cannot operate safely and within current physical distancing parameters.

- a. No COVID-19 related costs will be approved by the Owner for base bid Contractor work or change order work.
    - b. If additional testing requirements are required by the authority having jurisdiction or the Owner, this shall be at no cost to the Owner.
  3. Limit site access to employees, required manufacturer's representatives, inspectors, product deliveries, and other essential personnel.
  4. Discourage visits by vendors, guests, or other non-essential personnel.
  5. The adherence to Infectious Disease Prevention protocols, by any person entering the Work area shall be the responsibility of the Contractor with whom the access is granted, or visit is intended for.
  6. All Contractors shall immediately notify Architect/Engineer and Owner, should their employee or other on-site individual under their supervision, receive a positive COVID-19 test.
    - a. The Contractor responsible for the individual testing positive, shall bear the cost of disinfecting the jobsite to meet current regulations and procedures to disinfect the area.
    - b. All other Contractors shall hold harmless the responsible Contractor for lost time and compensation for COVID-19 disinfecting delays.
- B. Training
  1. All Contractors shall provide employees guidance and training in implementing good hygiene and infection control practices, including but not limited to:
    - a. Promotion of frequent hand washing or in the absence of soap and running water, the use of alcohol based hand sanitizers of at least 60% alcohol.
    - b. Implement social distancing policies and practices where feasible.
    - c. Encouraging all personnel to wear cloth face coverings, where an appropriate social distance cannot be maintained. This shall not relieve any person from utilizing higher level, work appropriate Personal Protective Equipment (PPE) as required by other regulation or requirement.
    - d. Encouraging workers to stay home if they are sick.
    - e. Encouraging respiratory etiquette, including covering coughs and sneezes.
    - f. Discourage the sharing of tools or other personal items on the jobsite, however, if unavoidable, provide guidance for cleaning and disinfection of shared items.
  2. All Contractors shall provide on-site postings of these and the most current preventative measures and best habit reminders.
- C. Hygienic Practices and Control Measures
  1. All contractors shall be responsible for implementing hygienic practices and control measures to limit the spread of infectious disease, including but not limited to the following:
    - a. Routinely conducting a hazard assessment of the workplace and adapting to changing jobsite conditions.
    - b. Provide for daily sign in screening and temperature screenings if required with Owner representative.
    - c. Provide appropriate PPE to workers and those under your control, and training in its proper use and disposal.
    - d. Provide training on new policies and procedures related to illness, cleaning, and disinfection.
    - e. Communicate workplace policies clearly and frequently to all employees and on-site visitors, both verbally and by on-site postings.
    - f. Breaks shall be staggered and physical distancing requirements must be maintained during breaks and lunch.
    - g. Provide recommended and appropriate cleaning and disinfection products including but not limited to hand sanitizer, disinfection wipes or other EPA-approved products, and proper disposal containers.

- h. Perform routine cleaning of frequently touched surfaces such as handrails, doorknobs, tools and equipment, and disinfect with EPA-approved products.

#### 1.9 CONSTRUCTION AIDS & PROTECTION

##### A. Protection:

1. The General Trades Contractor shall provide handrails and barricades on all perimeters, stairs and landings according to OSHA regulations. Provide barricades at all elevator shafts.
2. Each Contractor shall install safety coverings, as needed to protect workers from hazards associated with any open holes or other openings, including but not limited to floors, walls and roofs. This work shall comply with all OSHA requirements and remain in place until permanent construction fills those openings.
3. All Contractors upon working in any of the areas named in the above paragraph shall remove the safety covering and handrail to perform their work. Upon completion of his work for the day, lunch, or breaks, or any time when the individual Contractor is not working in that opening, the safety covering and handrail must be replaced by The Contractor removing it. At the end of each day, the General Trades Contractor shall inspect the site and install all safety coverings and handrails. At the end of the Project, or in order to install permanent construction, each Contractor shall remove coverings and handrails.
4. Each Contractor requiring access to above grade work are responsible for providing ladders, scaffolding and appropriate methods to access their work. The Contractor desiring use of in-place above grade work platforms must arrange directly with the party that owns the equipment and make all rental and insurance arrangements directly with that party.
5. All work platforms, scaffolding, etc. on the Project shall be available for access by the Owner, Architect/Engineer, Authorities having jurisdiction, and Testing Agencies.

##### B. Lifts and Hoists

1. Lifting and hoisting of all materials and equipment will be the responsibility of Each Contractor.
2. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and shall be provided by the contractor requiring the tools and equipment.
3. Each Contractor shall be responsible to provide all site and subsurface modification preparation and replacement required to use his lifting and hoisting equipment.

#### 1.10 ENCLOSURES

##### A. Barriers

1. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public and to protect existing facilities and adjacent properties from damage from construction operations.
2. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
3. Provide protection for plants designated to remain. Replace damaged plants.
4. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

##### B. Site Enclosure Fencing

1. Construction: Commercial grade chain link fence with privacy screening.
  - a. Acceptable types of fencing include:
    - 1) Freestanding panels with appropriate base, sufficiently anchored to prevent unintentional movement or blow-over.
    - 2) Post-driven temporary supports, embedded sufficiently to support fencing and associated wind loads.
2. Provide 6 foot high fence around construction site; equip with vehicular gates with locks.

3. The General Trades Contractor shall perform all fencing and barrier work to limit access to the contract area immediately upon mobilizing for Work at the beginning of the Project.
  4. The General Trades Contractor shall maintain permanent and temporary fencing throughout the duration of the Project, particularly maintaining security function of gate devices.
  5. The General Trades Contractor shall remove and replace temporary fencing as required to accommodate the work of this project.
  6. The Architect/Engineer during the course of construction may require the fence to be relocated as needed and as indicated on site staging plan.
- C. Barricades, Warning Signs and Lights
1. The General Trades Contractor, at the interior and entrances of the building, and the General Trades Contractor on site and at the exterior of the building, shall comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against.
- D. Exterior Enclosures
1. Each contractor shall be responsible for proper enclosure of their own openings for protection of exterior construction in progress and completed from exposure, bad weather, other construction operations, and similar activities and to maintain the progress schedule.
  2. The General Trades Contractor shall provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
    - a. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
  3. Install tarpaulins securely with noncombustible wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.

#### 1.11 SECURITY

- A. Each contractor shall be responsible for coordinating their own forces and providing security and protection.
- B. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
1. The General Trades Contractor shall install substantial temporary enclosure of partially completed areas of construction. Provide and maintain locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security. This does not relieve Each Prime Contractor from responsibility for vandalism, theft, and similar violations of security to their own materials, equipment, tools and installations.
  2. The General Trades Contractor is responsible for maintaining a secure building and door locks at all times. The General Trades Contractor shall designate responsible individual or individuals that will tour the entire Project and close and secure all doors and windows and turn off non-emergency and non-security lighting at the end of each work day. The General Trades Contractor shall open all doors and turn on all lights prior to the start of each work day.
  3. Each Contractor is responsible for the secure storage for their own materials and equipment on and off the site.
  4. Each Contractor shall supply the Architect/Engineer with keys for any lock installed on the project.
- C. Coordinate with Owner's security program.
- D. Maintain program throughout construction period until Owner occupancy.



- E. Entry Control:
  - 1. Restrict entrance of persons and vehicles into Project site and existing facilities.
  - 2. Allow entrance only to authorized persons with proper identification.
  - 3. Maintain log of workers and visitors, make available to Owner on request.
  - 4. Owner will control entrance of persons and vehicles related to Owner's operations.

#### 1.12 VEHICULAR CONSIDERATIONS

- A. Access, Staging and Parking
  - 1. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
    - a. Maintain 20 feet wide driveways with turning space between and around combustible materials.
  - 2. Coordinate access and haul routes with governing authorities and Owner.
  - 3. Provide and maintain access to fire hydrants and control valves, free of obstructions.
  - 4. The General Trades Contractor shall provide means of dust/dirt/debris control from vehicles leaving the Construction Site and entering surrounding public streets.
  - 5. Existing on-site roads may be used for construction traffic.
  - 6. The General Trades Contractor shall construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.
  - 7. The General Trades Contractor shall extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
  - 8. The General Trades Contractor shall construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
  - 9. Maintenance:
    - a. All site areas shall be maintained by The General Trades Contractor including public roads immediately outside property.
    - b. Snow removal for all construction roads, access roads, staging areas, and parking will be provided by the General Trades Contractor. Each Contractor is responsible for all other snow removal as it pertains to their work.
    - c. The General Trades Contractor shall maintain traffic and parking areas in sound condition free of excavated material, construction equipment, product, mud, snow, and ice.
    - d. The General Trades Contractor shall maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.
  - 10. Use of site and premises for Contractor staging, access and employee parking shall be coordinated with the Architect/Engineer and approved by the Owner.
  - 11. The General Trades Contractor shall provide all work required to restore site, including but not limited to construction staging area, parking, and roads during the latter time of the Project in addition to all other patching required as a result of disturbances for work of the Project including underground electric, communication, network, etc.
  - 12. The General Trades Contractor shall provide temporary gravel parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking at location directed by Architect.
  - 13. Existing parking areas may be used for construction parking. Tracked vehicles not allowed on pavement.
  - 14. Permanent Pavements and Parking Facilities:
    - a. Prior to Substantial Completion, bases for permanent roads and parking areas may be used for construction traffic.
    - b. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.
    - c. Use of permanent parking structures is not permitted.
  - 15. Removal, Repair:

- a. The General Trades Contractor shall provide all work required to restore site, including but not limited to construction staging area, parking, and roads prior to Substantial Completion, in addition to all other patching required as a result of disturbances for work of the Project including underground electric, communication, network, etc.
- b. Remove temporary materials and construction when permanent paving is usable.
- c. Remove underground work and compacted materials to depth of 2 feet; fill and grade site as specified.
- d. Repair existing and permanent facilities damaged by use, to original and/or specified condition.

B. Traffic Regulation

1. Signs, Signals, and Devices:
  - a. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by Authority having jurisdiction.
  - b. Traffic Cones and Drums, Flares and Lights: As approved by Authority having jurisdiction.
  - c. Flag Person Equipment: As required by Authority having jurisdiction.
2. Flag Persons: Each Contractor shall provide trained and equipped flag persons to regulate traffic when their construction operations or traffic encroach on public traffic lanes.
3. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
4. Haul Routes:
  - a. Drawings indicate haul routes designated by Authorities having jurisdiction for use of Construction traffic.
  - b. Confine construction traffic to designated haul routes.
  - c. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.
5. Traffic Signs and Signals:
  - a. Provide signs at approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
  - b. Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
  - c. Relocate as Work progresses, to maintain effective traffic control.
6. Removal:
  - a. Remove equipment and devices when no longer required. Repair damage caused by installation.
  - b. Remove post settings to depth of 2 feet.

1.13 WASTE REMOVAL AND PROGRESS CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Each Contractor on the Project is responsible for general clean-up and trash removal resulting from the work or employees of that contract, on a daily basis. This requirement will be enforced and will result in cost assessment against the Contractor who fails to perform daily cleanup.
  1. Comply with requirements of NFPA 241 for removal of combustible waste material and debris.
  2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing spaces.
- C. Dumpsters

1. The General Trades Contractor shall provide dumpster(s) as required for the purpose of trash removal for all Contractors, unless noted otherwise.
  2. In every instance, the Prime contractor responsible for providing each dumpster shall be responsible for:
    - a. The cost of all disposal fees associated with each dumpster provided.
    - b. Flattening or crushing all trash as necessary when placed into the dumpster.
  3. Dumpsters shall be located at the site, accessible to building and roads.
  4. Hazardous materials shall not be placed in dumpsters, but shall be removed from the site by the Contractor's licensed subcontractor responsible for the material.
  5. Contractors may load legally acceptable construction debris to the designated dumpster (from this project only).
  6. Dumpsters shall remain on the project until project completion, or as directed by the Architect/Engineer.
- D. The Architect/Engineer shall coordinate the following:
1. The location and placement of all dumpsters.
  2. The organization of weekly project clean up with Each Contractor.
    - a. All Contractors on site shall provide labor to assist in this clean up.
- E. The General Trades Contractor will be responsible for weekly broom cleaning of all floor surfaces, for dust, dirt and general trash. He will deposit the same in the dumpster.
- F. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- G. Remove trash from site weekly or when dumpster is full.
- H. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the Authorities having jurisdiction.
- I. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

#### 1.14 PROJECT IDENTIFICATION

- A. Temporary Signs: The General Trades Contractor shall prepare signs to provide directional information to construction personnel and visitors as required by the Architect/Engineer.
- B. General Trades Contractor shall provide project identification sign of design and construction indicated on Drawings. For Guidelines and Template see Section 01 58 13 Temporary Project Signage :
- C. Erect on site at location indicated.
- D. No other signs are allowed without Owner permission except those required by law.

#### 1.15 FIELD OFFICES

- A. Contractor's Field Office
  1. Each Prime Contractor shall provide and maintain such offices, storage and fabrication shed, and other temporary buildings or trailers on the project site as required for his own use. Contractors are advised that spaces within the existing building for storage of materials will not be available for their use. All steps and platforms connected to shelters must be per OSHA regulations. Unless written permission is obtained from the Owner through the Architect/Engineer, only Prime Contractors will be allowed an on-site office due to space limitations. Contractors shall provide offices for their own personnel.
  2. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture .

3. Locate offices a minimum distance of 30 feet from existing and new structures.
4. All Contractor's offices and sheds must have the Contractor's identification on them.
5. Construction:
  - a. Structurally sound, secure, weather tight enclosures for office and storage spaces. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations with steps and landings at entrance doors.
  - b. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible and occupancy and storage requirements.
  - c. Exterior Materials: Weather resistant, finished in color acceptable to Architect/Engineer.
  - d. Interior Materials in Offices: Sheet type materials for walls and ceilings, pre-finished or painted; resilient floor and bases.
  - e. Lighting for Offices: 50ft C at desk top height, exterior lighting at entrance doors.
  - f. Fire Extinguishers: Appropriate type fire extinguisher at each office and each storage area.
  - g. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.
6. Environmental Control:
  - a. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain comfort conditions. 68 degrees F heating and 76 degrees F cooling.
  - b. Use of electric space heaters will not be allowed.
  - c. Storage Spaces: Heating and ventilation as needed to maintain products in accordance with Contract Documents; lighting for maintenance and inspection of products.
7. Preparation: The Contractor shall fill and grade sites for temporary structures sloped for drainage away from buildings.
8. Maintenance and Cleaning:
  - a. Weekly janitorial services for offices; periodic cleaning and maintenance for office and storage areas.
  - b. Maintain approach walk free of mud, water, and snow.
9. Removal: At completion of Work remove buildings, foundations, utility services and debris. The Contractor shall restore areas.

#### 1.16 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Each Contractor shall enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Each Contractor shall maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
  1. Maintain operation of temporary enclosures, heating cooling, humidity control, ventilation and similar facilities on a 24-hour a day basis where required to achieve indicated results and to avoid possible damage.
  2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect/Engineer requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility or not later than Substantial Completion. Complete or, if necessary restore, permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.

## 1.17 PROTECTION OF PROPERTY

### A. General:

1. Each Contractor shall continuously protect the Work, other work, and the property of the Owner and others from damage, injury or loss arising in connection with the Work. Owner and Architect/Engineer shall not be responsible for any loss or damage to the Work, however caused, until after final acceptance thereof by the Owner, nor shall Owner or Architect/Engineer be responsible for loss of or damage (however caused) to materials, equipment, appliances and other personal property of Contractors used in the performance of the Work.
2. The General Trades Contractor shall provide, erect and maintain barricades, warning signs, flags, lights as may be necessary to protect the Work and safeguard the workers and the general public. As such protection shall comply with the requirements of the proper Authorities having jurisdiction.
3. Each Contractor shall begin repair of damages resulting from any occurrence immediately if it is a life safety or security issue or presents the imminent possibility of further damage. Otherwise repairs must begin within three days after (in the judgment of the Architect/Engineer) the commencement of repairs is possible.

### B. Fire Safety:

1. Each Contractor shall store combustible materials in containers in fire-safe locations.
2. Each Contractor shall maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
3. Each Contractor shall provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
4. Architect/Engineer shall be notified prior to any and all hot work.
  - a. Each Contractor performing hot work shall provide a fire watch during and for at least 30-minutes after potential fire ignition work has been performed.

## 1.18 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION - NOT USED

END OF SECTION



SECTION 01 57 13  
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Performance bond.
- E. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for temporary and permanent erosion control structures indicated on drawings.
- B. Section 31 10 00 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.
- C. Section 31 22 00 - Grading: Temporary and permanent grade changes for erosion control.
- D. Section 31 37 00 - Riprap: Temporary and permanent stabilization using riprap.
- E. Section 32 11 23 - Aggregate Base Courses: Temporary and permanent roadways.
- F. Section 32 92 19 - Seeding: Permanent turf for erosion control.
- G. Section 32 92 23 - Sodding: Permanent turf for erosion control.
- H. Section 32 93 00 - Plants: Permanent plantings for erosion control.

1.3 REFERENCE STANDARDS

- A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus; 2014 (Reapproved 2018).
- B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 2017.
- C. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015.
- D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a.
- E. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2016.
- F. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017.
- G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Also comply with all more stringent requirements of the State of New York Erosion and Sedimentation Control Manual.
- C. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.
- D. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
- E. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.
- F. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- G. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
  - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
  - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- H. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
  - 1. Control movement of sediment and soil from temporary stockpiles of soil.
  - 2. Prevent development of ruts due to equipment and vehicular traffic.
  - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- I. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
  - 1. Prevent windblown soil from leaving the project site.
  - 2. Prevent tracking of mud onto public roads outside site.
  - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
  - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- J. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
  - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
  - 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- K. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.



1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- L. Open Water: Prevent standing water that could become stagnant.
- M. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Erosion and Sedimentation Control Plan:
  1. Include:
    - a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
    - b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
    - c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
    - d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
    - e. Other information required by law.
    - f. Format required by law is acceptable, provided any additional information specified is also included.
  2. Obtain the approval of the Plan by authorities having jurisdiction.
  3. Obtain the approval of the Plan by Owner.
- C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Mulch: Use one of the following:
  1. Straw.
- B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
- C. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
  1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
  2. Permittivity:  $0.05 \text{ sec}^{-1}$ , minimum, when tested in accordance with ASTM D4491/D4491M.

3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
  4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
  5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
  6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533/D4533M.
  7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
- D. Silt Fence Posts: One of the following, minimum 5 feet long:
- E. Compost Silt Sock: 5mm thick continuous HDPE filament, tubular knitted mesh with 3/8 inch openings.
1. Compost: Use only mature compost that has been certified by the U.S. Composting Council's seal of Testing Assurance Program and meets the specifications provided .
  2. Use 2" x 2" hardwood stakes.
  3. Diameter: Refer to Erosion & Sedimentation Plan Engineering Drawings.
- F. Gravel: See Section 32 11 23 for aggregate.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

#### 3.2 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

#### 3.3 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
1. Width: As required; 20 feet, minimum.
  2. Length: 50 feet, minimum.
  3. Provide at each construction entrance from public right-of-way.
  4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of silt fences, compost filter socks, or straw bales.
1. Provide linear sediment barriers:
    - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
- D. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
- E. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- F. Soil Stockpiles: Protect using one of the following measures:
1. Cover with polyethylene film, secured by placing soil on outer edges.
  2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw.

- G. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
- H. Temporary Seeding: Use where temporary vegetated cover is required.

### 3.4 INSTALLATION

- A. Traffic-Bearing Aggregate Surface:
  - 1. Excavate minimum of 6 inches.
  - 2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
  - 3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.
- B. Silt Fences:
  - 1. Store and handle fabric in accordance with ASTM D4873/D4873M.
  - 2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
  - 3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
  - 4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
  - 5. Install with top of fabric at nominal height and embedment as specified.
  - 6. Embed bottom of fabric in a trench on the upslope side of fence, with 2 inches of fabric laid flat on bottom of trench facing upslope; backfill trench and compact.
  - 7. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
  - 8. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.
- C. Compost Filter Socks:
  - 1. Locate/mark any utilities.
  - 2. Check all permits.
  - 3. Obtain compost meeting specifications.
  - 4. Obtain filter sock netting.
  - 5. Fill filter sock netting with compost.
  - 6. Mark out area for filter sock; install sock parallel to contour lines so that the runoff enters as sheet flow.
  - 7. In high-flow or steep-slope areas, orient a second sock parallel to the first to dissipate flows.
  - 8. Lay filter sock with compost.
  - 9. Stake filter sock every 10 ft. Stakes should be driven through the center of the sock, and 1 ft into the ground.
  - 10. If sock netting must be joined, fit beginning of the new sock over the end of the old sock, overlapping by 1-2 ft. Fill with compost; then stake the joint.
- D. Mulching Over Large Areas:
  - 1. Dry Straw: Apply 2-1/2 tons per acre; anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
- E. Mulching Over Small and Medium Areas:
  - 1. Dry Straw: Apply 4 to 6 inches depth.
- F. Temporary Seeding:
  - 1. When hydraulic seeder is used, seedbed preparation is not required.

2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

### 3.5 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
  1. Promptly replace fabric that deteriorates unless need for fence has passed.
  2. Remove silt deposits that exceed one-third of the height of the fence.
  3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Compost Silt Socks
  1. Inspect filter socks periodically, and especially after large storm events. Ensure that the filter sock is intact, and that the area upstream has not filled with sediment. If the upstream area has filled with sediment, or if the filter sock has been overtopped, install additional filter socks further upstream. Sediment behind the sock should be removed when the depth of the sediment reaches 3.25-in. for an 8-in. sock, 4.75-in. for a 12-in. sock and 7.25-in. for an 18-in. sock. For socks with greater diameters, remove sediment behind the sock when the accumulated sediment depth reaches 40 percent of the design diameter of the sock.
- E. Clean out temporary sediment control structures weekly and relocate soil on site.
- F. Place sediment in appropriate locations on site; do not remove from site.

### 3.6 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION



# Downtown Revitalization Initiative

**Kathy Hochul**  
Governor



Department  
of State

Homes and  
Community Renewal

Empire State  
Development



SECTION 01 58 13  
TEMPORARY PROJECT SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project identification sign.

1.2 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Responsibility to provide signs.

1.3 QUALITY ASSURANCE

- A. Design sign and structure to withstand 50 miles/hr wind velocity.
- B. Sign Painter: Experienced as a professional sign painter for minimum three years.
- C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawing: Show content, layout, lettering, color, foundation, structure, sizes and grades of members.

PART 2 PRODUCTS

2.1 SIGN MATERIALS

- A. Structure and Framing: New, wood, structurally adequate.
- B. Sign Surfaces: Exterior grade plywood with medium density overlay, minimum 3/4 inch thick, standard large sizes (4 by 8 foot) to minimize joints.
- C. Rough Hardware: Galvanized.
- D. Paint and Primers: Exterior quality, two coats; sign background of color as selected.
- E. Lettering: Exterior quality paint, contrasting colors,

2.2 PROJECT IDENTIFICATION SIGN

- A. One painted sign of construction, design, and content indicated on drawings, location designated.
- B. Content:
  - 1. Project number, title, logo and name of Owner as indicated on Contract Documents.
  - 2. Names and titles of authorities.
  - 3. Names and titles of Architect and Consultants.
  - 4. Name of each Prime Contractor.

- C. Send proof of sign to the Project Manager before fabrication and installation.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install project identification sign within one week from commencement of work at the site.
- B. Erect at location of high public visibility adjacent to site, approved by Architect/Engineer..
- C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
- D. Install sign surface plumb and level, with butt joints. Anchor securely.
- E. Paint exposed surfaces of sign, supports, and framing.

### 3.2 MAINTENANCE

- A. Maintain signs and supports clean, repair deterioration and damage until removal.

### 3.3 REMOVAL

- A. Remove signs, framing, supports, and foundations 60 days following completion of Project and restore the area.

### 3.4 ATTACHMENTS

- A. 01 58 13A Sign Template

END OF SECTION



SECTION 01 60 00  
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General product requirements.
- B. Sustainable design-related product requirements.
- C. Re-use of existing products.
- D. Transportation, handling, storage and protection.
- E. Product option requirements.
- F. Substitution limitations.
- G. Procedures for Owner-supplied products.
- H. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Lists of products to be removed from existing building.
- B. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- C. Section 01 40 00 - Quality Requirements: Product quality monitoring.
- D. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- E. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.3 REFERENCE STANDARDS

- A. 16 CFR 260.13 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; Recycled Content; Current Edition.
- B. ASTM D6866 - Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis; 2018.
- C. C2C (DIR) - C2C Certified Products Registry; Cradle to Cradle Products Innovation Institute; Current Edition.
- D. EN 15804 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products; 2014.
- E. GreenScreen (LIST) - GreenScreen for Safer Chemicals List Translator; Clean Production Action; Current Edition.
- F. GreenScreen (METH) - GreenScreen for Safer Chemicals Method v1.2; Clean Production Action; Current Edition.
- G. ISO 14025 - Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures; 2006.

- H. ISO 14040 - Environmental management -- Life cycle assessment -- Principles and framework; 2006.
- I. ISO 14044 - Environmental management -- Life cycle assessment -- Requirements and guidelines; 2006 (Amended 2017).
- J. ISO 21930 - Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services; 2017.
- K. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

#### 1.4 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
  - 1. Submit within 15 days after date of Agreement.
  - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

#### 1.5 QUALITY ASSURANCE

- A. Bio-Based Content: Of vegetable or animal origin, not including products made by killing the animal.
  - 1. Determine percentage of bio-based content in accordance with ASTM D6866.
  - 2. Bio-based content must be sourced from a Sustainable Agriculture Network certified farm.
- B. Cradle-to-Cradle Certified: End use product certified Cradle-to-Cradle v2 Basic or Cradle-to-Cradle v3 Bronze, minimum, as evidenced by C2C (DIR).
- C. Environmental Product Declaration (EPD): Publicly available, critically reviewed life cycle analysis having at least a cradle-to-gate scope.
  - 1. Good: Product-specific; compliant with ISO 14044.
  - 2. Better: Industry-wide, generic; compliant with ISO 21930, or with ISO 14044, ISO 14040, ISO 14025, and EN 15804; Type III third-party certification with external verification, in which the manufacturer is recognized as the program operator.
  - 3. Best: Commercial-product-specific; compliant with ISO 21930, or with ISO 14044, ISO 14040, ISO 14025, and EN 15804; Type III third-party certification with external verification, in which the manufacturer is recognized as the program operator.
  - 4. Where demonstration of impact reduction below industry average is required, submit both industry-wide and commercial-product-specific declarations; or submit at least 5 declarations for products of the same type by other manufacturers in the same industry.
- D. GreenScreen Chemical Hazard Analysis: Ingredients of 100 parts-per-million or greater evaluated using GreenScreen (METH).

1. Good: GreenScreen (LIST) evaluation to identify Benchmark 1 hazards; a Health Product Declaration includes this information.
  2. Better: GreenScreen Full Assessment.
  3. Best: GreenScreen Full Assessment by GreenScreen Licensed Profiler.
  4. Acceptable Evidence: GreenScreen report.
- E. Health Product Declarations (HPD): Complete, published declaration with full disclosure of known hazards, prepared using one of the HPDC (HPD-OLT) online tools.
- F. Manufacturer's Inventory of Product Content: Publicly available inventory of every ingredient identified by name and Chemical Abstract Service Registration Number (CAS RN).
1. For ingredients considered a trade secret or intellectual property, the name and CAS RN may be omitted, provided the ingredient's role, amount, and GreenScreen Benchmark are given.
- G. Recycled Content: Determine percentage of post-consumer and pre-consumer (post-industrial) content separately, using the guidelines contained in 16 CFR 260.13.
1. Previously used, reused, refurbished, and salvaged products are not considered recycled.
  2. Wood fabricated from timber abandoned in transit to original mill is considered reused, not recycled.
  3. Determine percentage of recycled content of any item by dividing the weight of recycled content in the item by the total weight of materials in the item.
  4. Determine value of recycled content of each item separately, by multiplying the content percentage by the value of the item.
  5. Acceptable Evidence:
    - a. For percentage of recycled content, information from manufacturer.
    - b. For cost, Contractor's cost data.
- H. Reused Products: Materials and equipment previously used in this or other construction, salvaged and refurbished as specified.
1. Wood fabricated from timber abandoned in transit after harvesting is considered reused, not recycled.
  2. Acceptable Evidence: Information about the origin or source, from Contractor or supplier.
- I. Source Location: Location of harvest, extraction, recovery, or manufacture; where information about source location is required to be submitted, give the postal address:
1. In every case, indicate the location of final assembly.
  2. For harvested products, indicate location of harvest.
  3. For extracted (i.e. mined) products, indicate location of extraction.
  4. For recovered products, indicate location of recovery.
  5. For products involving multiple manufacturing steps, provide a description of the process at each step, with location.
  6. Acceptable Evidence:
    - a. Manufacturer's certification.
    - b. Life cycle analysis (LCA) performed by third-party.
- J. Sustainably Harvested Wood: Solid wood, wood chips, and wood fiber certified or labeled by an organization accredited by one of the following:
1. The Forest Stewardship Council, The Principles for Natural Forest Management; for Canada visit <http://www.fsccanada.org>, for the USA visit <http://www.fscus.org>.
  2. Acceptable Evidence: Copies of invoices bearing the certifying organization's certification numbers.

## PART 2 PRODUCTS

### 2.1 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
- D. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is required.
  - 1. See Section 01 10 00 for list of items required to be salvaged for reuse and relocation.

### 2.2 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
  - 1. Made outside the United States, its territories, Canada, or Mexico.
  - 2. Made using or containing CFC's or HCFC's.
  - 3. Made of wood from newly cut old growth timber.
  - 4. Containing lead, cadmium, asbestos, or mercury.
- C. Where other criteria are met, Contractor shall give preference to products that:
  - 1. If used on interior, have lower emissions, as defined in Section 01 61 16.
  - 2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
  - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
  - 4. Have longer documented life span under normal use.
  - 5. Result in less construction waste. See Section 01 74 19
  - 6. Are made of vegetable materials that are rapidly renewable.
  - 7. Are made of recycled materials.
  - 8. If made of wood, are made of sustainably harvested wood, wood chips, or wood fiber.
  - 9. If bio-based, other than wood, are or are made of Sustainable Agriculture Network certified products.
  - 10. Are Cradle-to-Cradle Certified.
  - 11. Have a published Environmental Product Declaration (EPD).
  - 12. Have a published Health Product Declaration (HPD).
- D. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- E. All electrical products, components and packaged systems are to be approved and labeled by a nationally recognized testing agency such as Underwriters Laboratory (UL) or equal.
- F. Provide interchangeable components by the same manufacture for components being replaced.
- G. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.

- H. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

## 2.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

## 2.4 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

# PART 3 EXECUTION

## 3.1 SUBSTITUTION LIMITATIONS

- A. See Section 01 25 00 - Substitution Procedures.

## 3.2 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
  - 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
  - 2. Arrange and pay for product delivery to site.
  - 3. On delivery, inspect products jointly with Contractor.
  - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
  - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
  - 1. Review Owner reviewed shop drawings, product data, and samples.
  - 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
  - 3. Handle, store, install and finish products.
  - 4. Repair or replace items damaged after receipt.

## 3.3 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

### 3.4 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide off-site storage and protection when site does not permit on-site storage or protection.
- G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- H. Comply with manufacturer's warranty conditions, if any.
- I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- K. Prevent contact with material that may cause corrosion, discoloration, or staining.
- L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 61 16  
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements for Indoor-Emissions-Restricted products.
- B. Requirements for VOC-Content-Restricted products.
- C. Requirement for installer certification that they did not use any non-compliant products.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- B. Section 01 33 29.07 - Prohibited Content Installer Certification: Form for certifying that no non-compliant products were used.
- C. Section 01 40 00 - Quality Requirements: Procedures for testing and certifications.

1.3 DEFINITIONS

- A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
  - 1. Interior paints and coatings applied on site.
  - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
  - 3. Flooring.
  - 4. Composite wood.
  - 5. Products making up wall and ceiling assemblies.
  - 6. Thermal and acoustical insulation.
  - 7. Exterior applied products (for Healthcare and Schools projects only).
- B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
  - 1. Interior paints and coatings applied on site.
  - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
- C. Interior of Building: Anywhere inside the exterior weather barrier.
- D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
  - 1. Concrete.
  - 2. Clay brick.
  - 3. Metals that are plated, anodized, or powder-coated.
  - 4. Glass.
  - 5. Ceramics.
  - 6. Solid wood flooring that is unfinished and untreated.

#### 1.4 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).
- C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.
- D. SCAQMD 1113 - Architectural Coatings; 1977 (Amended 2016).
- E. SCAQMD 1168 - Adhesive and Sealant Applications; 1989 (Amended 2017).

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
- C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

#### 1.6 QUALITY ASSURANCE

- A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
  - 1. Evidence of Compliance: Acceptable types of evidence are:
    - a. Report of laboratory testing performed in accordance with requirements.
- B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
  - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
  - 2. Joint Sealants: SCAQMD 1168 Rule.
  - 3. Paints and Coatings: Each color; most stringent of the following:
    - a. 40 CFR 59, Subpart D.
    - b. 6 CRR-NY, Chapter III, Subpart A.
    - c. SCAQMD 1113 Rule.
    - d. CARB (SCM).



### PART 3 EXECUTION

#### 3.1 FIELD QUALITY CONTROL

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION



SECTION 01 70 00  
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination.
- B. Examination, preparation, and general installation procedures.
- C. Progress cleaning.
- D. Protection of installed work.
- E. System start-up.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Demonstration and instruction of Owner personnel.
- I. Testing, adjusting and balancing.
- J. Final cleaning.
- K. Closeout procedures.
- L. General requirements for maintenance service.

1.2 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.

1.3 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.

1.4 COORDINATION

- A. See Section 01 10 00 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts,

and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

### 3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### 3.3 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

### 3.4 PROGRESS CLEANING

- A. All contractors shall be responsible for daily cleaning of work areas as described.
- B. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- D. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- E. Collect and remove waste materials, debris, and trash/rubbish from site daily and dispose off-site; do not burn or bury.

### 3.5 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
- G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

### 3.6 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

### 3.7 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

### 3.8 TESTING, ADJUSTING AND BALANCING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

### 3.9 FINAL CLEANING

- A. The General trades Contractor shall employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
- B. Execute final cleaning operations before requesting inspection for certification of Substantial Completion.
  - 1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
- C. Use cleaning materials that are nonhazardous.
- D. Clean interior and exterior glass, including mirrors, door glass, windows, and surfaces exposed to view. Polish transparent and glossy surfaces.
  - 1. Remove temporary labels, stains and foreign substances.
  - 2. Remove glazing compounds and other substances that are noticeable vision-obscuring materials.
  - 3. Replace chipped or broken glass and other damaged transparent materials.
- E. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

- F. Clean exposed exterior and interior hard surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted and soft surfaces.
- G. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- H. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
- I. Clean filters of operating equipment.
- J. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even textured surface.
- K. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### 3.10 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
  - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
    - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
  - 2. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
  - 3. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases, including but not limited to:
    - a. Affidavit of Release of Liens on AIA Form G706-A:
      - 1) From Contractor
      - 2) From Subcontractor(s)
      - 3) From Major Material Supplier(s)
    - b. Affidavit of Debts and Claims Payment on AIA G706:
      - 1) From Contractor
      - 2) From all tiers of Subcontractor(s)
    - c. Consent of Surety on AIA G707 From Contractor.
    - d. One (1) year warranty from date of Substantial Completion.
  - 4. Submit final record information.
  - 5. Complete final cleanup requirements, including touchup painting.
  - 6. Touch up and otherwise repair and restore marred, exposed finishes.
- B. Inspection Procedures: Upon receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
  - 1. The Architect will repeat inspection when requested and assured that the Work is substantially complete.

2. Results of the completed inspection will form the basis of requirements for final acceptance.

### 3.11 FINAL ACCEPTANCE

- A. Each Contractor shall submit, prior to requesting final inspection, written certification that:
  1. Work has been completed in accordance with contract documents, listing any exceptions.
  2. Project has been inspected for compliance with contract documents.
  3. Equipment and systems have been tested in the presence of the Owner and are operational and video-taped instructions prepared and submitted to the Architect and Owner.
  4. Owner's designated staff have been instructed on all equipment and systems and an Owner signed receipt furnished to the Architect.
  5. Operational and Maintenance Manuals have been submitted and reviewed by the Architect.
  6. Owner has been furnished the specified warranties, guarantees and spare parts and an Owner signed receipt furnished to the Architect.
  7. Project has been completed and is ready for final inspection.
- B. If the Architect considers the work complete in accordance with the requirements of the Contract Documents, the Contractor will submit his final requisition (including final changes to the Contract Sum) together with the following to the Architect.
  1. AIA G706 - Contractor's Affidavit of Payments of Debts and Claims.
  2. AIA G706-A - Contractor's Release of Liens and Waiver of Liens.
  3. AIA G707 Consent of Surety to Final Payment.
  4. Evidence of continuing insurance coverage.
- C. If the Architect does not consider the work finally complete, the Contractor will be notified, in writing by the Architect with the reasons stated.
- D. Re-inspection Procedure: The Architect will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.
  1. Upon completion of re-inspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
  2. The Contractor shall achieve FINAL COMPLETION of all Work, including correction of punch list items, preparation and delivery of manuals, presentation of training and completion of final paper submissions not later than sixty (60) days following the Contract-scheduled Substantial Completion date. In the event the Contractor shall fail to achieve Final Completion in a timely manner in accordance with this provision, the Contractor and the Contractor's Surety shall be liable for and shall reimburse the Owner for any and all Architectural fees, materials or expenses made necessary by the Contractor's failure. Additional fees and expenses shall be charged by the Owner against any Final Payment due or which may become due the Contractor.

### 3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities. Refer to Section 01 78 00 - Closeout Submittals.
  1. Provide copies to Architect/Engineer.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.



- C. Notify Architect when work is considered ready for Substantial Completion.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Accompany Project Coordinator on Contractor's preliminary final inspection.
- H. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- I. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.
- J. Submit final application for payment identifying total adjusted contract sum, previous payments and sum remaining due.

### 3.13 GENERAL REQUIREMENTS FOR MAINTENANCE SERVICE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION



SECTION 01 74 19  
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 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. Land clearing debris, including brush, branches, logs, and stumps.
  - 6. 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.
- E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- F. Methods of trash/waste disposal that are not acceptable are:
  - 1. Burning on the project site.
  - 2. Burying on the project site.
  - 3. Dumping or burying on other property, public or private.
  - 4. Other illegal dumping or burying.
- G. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- C. Section 01 60 00 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- D. Section 01 70 00 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.3 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.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
  - 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
  - 2. Submit Report on a form acceptable to Owner.
  - 3. Landfill Disposal: Include the following information:
    - a. Identification of material.
    - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
    - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
    - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
  - 4. Incinerator Disposal: Include the following information:

- a. Identification of material.
  - b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
  - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
  - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following information for each:
  - a. Identification of material, including those retrieved by installer for use on other projects.
  - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
  - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
  - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
  - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: Include the following information for each:
  - a. Identification of material and how it was used in the project.
  - b. Amount, in tons or cubic yards.
  - c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

## PART 2 PRODUCTS

### 2.1 PRODUCT SUBSTITUTIONS

- A. See Section 01 60 00 - Product Requirements for substitution submission procedures.

## PART 3 EXECUTION

### 3.1 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

### 3.2 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

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

END OF SECTION

SECTION 01 78 00  
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.
- D. Spare Parts and Maintenance Products

1.2 RELATED REQUIREMENTS

- A. Section 00 72 14 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- D. Individual Product Sections: Specific requirements for operation and maintenance data.
- E. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
  - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
  - 3. Submit draft of completed documents in electronic format 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
  - 4. Submit one hard copy set and one electronic copy on thumb drive of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed shop drawings, product data, and samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - 3. Field changes of dimension and detail.
  - 4. Details not on original Contract drawings.

### 3.2 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### 3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:



1. Product data, with catalog number, size, composition, and color and texture designations.
  2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

### 3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
1. Description of unit or system, and component parts.
  2. Identify function, normal operating characteristics, and limiting conditions.
  3. Include performance curves, with engineering data and tests.
  4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports.

- P. Additional Requirements: As specified in individual product specification sections.

### 3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
  - 1. Project Directory.
  - 2. Table of Contents, of all volumes, and of this volume.
  - 3. Operation and Maintenance Data: Arranged by system, then by product category.
    - a. Source data.
    - b. Product data, shop drawings, and other submittals.
    - c. Operation and maintenance data.
    - d. Field quality control data.
    - e. Photocopies of warranties and bonds.
  - 4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.
- K. Electronic Format: Operation and maintenance data in electronic format shall be assembled and arranged as prescribed for hard copy manuals.
  - 1. All content shall be:
    - a. In individual documents, using .pdf format.
    - b. Organized into named folders.
    - c. In a fully searchable format.
    - d. Saved to high quality thumb drive.

### 3.6 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for

items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

### 3.7 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

END OF SECTION



SECTION 02 41 00  
SELECTIVE STRUCTURAL DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.
- B. Demolishing designated building equipment and fixtures.
- C. Demolishing designated construction.
- D. Removing designated items for Owner retention.
- E. Protecting items designated to remain.
- F. Removing demolished materials.

1.2 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 10 00 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 01 35 17 - Alteration Project Procedures: Protection of existing facilities; cutting and patching requirements.
- D. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- E. Section 01 57 13 - Temporary Erosion and Sediment Control.
- F. Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- G. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- H. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- I. Section 31 10 00 - Site Clearing: Vegetation and existing debris removal.
- J. Section 31 22 00 - Grading: Topsoil removal.
- K. Section 31 22 00 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- L. Section 31 23 23 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.
- M. Section 32 93 00 - Plants: Relocation of existing trees, shrubs, and other plants.
- N. Section 32 93 00 - Plants: Pruning of existing trees to remain.

### 1.3 DEFINITIONS

- A. Demolition: Dismantle, raze, destroy or wreck any building or structure or any part thereof.
- B. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.
- C. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Owner in ready-for-reuse condition.
- D. Remove and Reinstall: Detach or dismantle items from existing construction in a manner to prevent damage. Clean and prepare for reuse and reinstall where indicated.
- E. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

### 1.4 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.

### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Site Plan: Indicate:
  - 1. Areas for temporary construction and field offices.
- C. Demolition Plan: Submit demolition plan as required by OSHA and local AHJs.
  - 1. Indicate extent of demolition, removal sequencing, bracing and shoring, and location and construction of barricades and fences.
  - 2. Demolition firm qualifications.
  - 3. Indicate location of items designated for Owner retention.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

### 1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.
  - 1. Minimum of ten years of documented experience.
- B. Design shoring, bracing, underpinning under direct supervision of Professional Engineer experienced in design of this Work and licensed the State of New York.
- C. Conform to applicable code for demolition work, safety of adjacent structures, dust control, products requiring electrical disconnection and re-connection.
- D. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.
- E. Obtain required permits from authorities having jurisdiction.

### 1.7 SEQUENCING

- A. Section 01 10 00 - Summary: Requirements for sequencing.

- B. Owner will conduct salvage operations before demolition begins to remove materials Owner chooses to retain.

#### 1.8 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

#### 1.9 SCHEDULING

- A. Section 01 30 00 - Administrative Requirements: Requirements for scheduling.
- B. Schedule work to coincide with new construction.
- C. Cooperate with Owner in scheduling noisy operations and waste removal that may impact Owner operations.
- D. Performance of noisy, malodorous, dusty, and removal of hazardous material work:
  - 1. Will not be permitted during school hours.
  - 2. All activities must be coordinated with the Owner to ensure that programming and services will be uninterrupted by construction activities and to ensure the safety of the students and occupants.
- E. Coordinate utility and building service interruptions with Owner.
  - 1. Do not disable or disrupt building fire or life safety systems without five days prior written notice to Owner.
  - 2. Schedule tie-ins to existing systems to minimize disruption.
  - 3. Coordinate work to ensure fire sprinklers, fire alarms, smoke detectors, emergency lighting, exit signs and other life safety systems remain in full operation in occupied areas.

#### 1.10 PROJECT CONDITIONS

- A. Buildings indicated to be demolished will be vacated before start of Work.
- B. Owner assumes no responsibility for actual condition of buildings to be demolished.
- C. Hazardous Materials: Known hazardous materials will be removed before start of Work. Notify Architect/Engineer upon discovery of a hazardous material.
- D. Each contractor shall be responsible for the cutting and patching of existing surfaces as required to complete the work of their contract unless noted otherwise.
- E. Conduct demolition to minimize interference with adjacent and occupied building areas.
- F. Cease operations immediately if structure appears to be in danger and notify Architect. Do not resume operations until directed.

## PART 2 PRODUCTS -- NOT USED

## PART 3 EXECUTION

### 3.1 DEMOLITION

- A. Remove the entire building designated existing bathhouse..
- B. Remove other items indicated, for salvage, relocation, and recycling.

### 3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with requirements in Section 01 70 00.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
  - 1. Obtain required permits.
  - 2. Comply with applicable requirements of NFPA 241.
  - 3. Use of explosives is not permitted.
  - 4. Coordinate demolition sequence and procedures to prevent structures from becoming unstable.
  - 5. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
  - 6. Layout cuts in post-tensioned concrete elements to avoid cutting concrete within 12 inches of any stressing tendon. Notify Architect five days in advance of cutting post-tensioned concrete.
  - 7. Provide, erect, and maintain temporary barriers and security devices.
  - 8. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
  - 9. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
  - 10. Do not close or obstruct roadways or sidewalks or hydrants without permit.
  - 11. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
  - 12. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. Do not begin removal until built elements to be salvaged or relocated have been removed.
- E. Do not begin removal until vegetation to be relocated has been removed and vegetation to remain has been protected from damage.
- F. Protect existing structures and other elements to remain in place and not removed.
  - 1. Provide bracing and shoring.
  - 2. Prevent movement or settlement of adjacent structures.
  - 3. Stop work immediately if adjacent structures appear to be in danger.
- G. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.



- H. Verify hazardous material abatement is complete before beginning demolition.
- I. Carefully remove building components indicated to be reused.
  - 1. Mark components and packaged parts to permit reinstallation.
  - 2. Store components, protected from construction operations until reinstalled.
- J. At completion of the demolition work restore, repair or refinish all building systems, components and finishes disturbed as the result of the demolition process.
- K. Remove foundation walls and footings to minimum of two feet below finished grade .

### 3.3 EXISTING UTILITIES

- A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

### 3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
  - 1. Verify construction and utility arrangements are as indicated.
  - 2. Report discrepancies to Architect before disturbing existing installation.
  - 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Separate areas in which demolition is being conducted from areas that remain occupied.
  - 1. Provide sound retardant partitions of construction and in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.
- D. Remove existing work as indicated and required to accomplish new work.
  - 1. Remove items indicated on drawings.
- E. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as indicated.
  - 1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.

2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
  3. See Section 01 10 00 - Summary for limitations on outages and required notifications.
  4. Verify that abandoned services serve only abandoned facilities before removal.
  5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.
- F. Protect existing work to remain.
1. Prevent movement of structure. Provide shoring and bracing as required.
  2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
  3. Repair adjacent construction and finishes damaged during removal work.
  4. Patch to match new work.

### 3.5 SALVAGE REQUIREMENTS

- A. Coordinate with Owner to identify building components and equipment required to be removed and delivered to Owner.
- B. Tag components and equipment Owner designates for salvage.
- C. Protect designated salvage items from demolition operations until items can be removed.
- D. Carefully remove building components and equipment indicated to be salvaged.
- E. Disassemble as required to permit removal from building.
- F. Package small and loose parts to avoid loss.
- G. Mark equipment and packaged parts to permit identification and consolidation of components of each salvaged item.
- H. Prepare assembly instructions consistent with disassembled parts. Package assembly instructions in protective envelope and securely attach to each disassembled salvaged item.
- I. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

### 3.6 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site as work progresses.
- B. Remove materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03 01 00  
MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cleaning of existing concrete surfaces.
- B. Repair of exposed structural, shrinkage, and settlement cracks.
- C. Resurfacing of concrete surfaces having spalled areas and other damage.
- D. Repair of deteriorated concrete.
- E. Repair of internal concrete reinforcement.
- F. Repair and strengthening of concrete with applied composite materials.
- G. Scope of Work: As indicated on drawings.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.3 REFERENCE STANDARDS

- A. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2017.
- B. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.
- C. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- D. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.
- E. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- F. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.
- G. ASTM C928/C928M - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Material for Concrete Repairs; 2013.
- H. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2018.
- I. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.4 ADMINISTRATIVE REQUIREMENTS

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

## 1.6 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of Professional Engineer experienced in design of this type of work and licensed in the State of New York.

## PART 2 PRODUCTS

### 2.1 CLEANING MATERIALS

- A. Degreaser:
  - 1. Manufacturers:
    - a. Euclid Chemical Company; Euco Clean and Strip: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Detergent: Non-ionic detergent.
- C. Acidic Cleaning Agent:
  - 1. Manufacturers:
    - a. United Gilsonite Laboratories; DRYLOKae Concrete and Masonry Etch and Cleaner: [www.ugl.com/#sle](http://www.ugl.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.2 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
  - 1. Adhesives Technology Corporation: [www.atcepoxy.com/#sle](http://www.atcepoxy.com/#sle).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Cementitious Repair Mortar, Trowel Grade: One- or two-component, factory-mixed, polymer-modified cementitious mortar.
  - 1. Manufacturers:
    - a. ARDEX Engineered Cements; ARDEX Feather Finish: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.3 EPOXY PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
  - 1. Adhesives Technology Corporation: [www.atcepoxy.com/#sle](http://www.atcepoxy.com/#sle).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Epoxy Repair Mortar: Epoxy resin mixed with aggregate and other materials in accordance with manufacturer's instructions for purpose intended; comply with pot life and workability limits.
  - 1. Manufacturers:
    - a. ARDEX Engineered Cements; ARDEX BACA: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

#### 3.2 PREPARATION

- A. Prepare concrete surfaces to be repaired according to ICRI 310.2R.

#### 3.3 CLEANING EXISTING CONCRETE

- A. Provide enclosures, barricades, and other temporary construction as required to protect adjacent work from damage.
- B. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.
  - 1. Try the gentlest method first, then, if not clean enough, use a less gentle method taking care to watch for impending damage.
  - 2. Clean out cracks and voids using same methods.
- C. The following are acceptable cleaning methods, in order from gentlest to less gentle:
  - 1. Water washing using low-pressure, maximum of 100 psi, and, if necessary, brushes with natural or synthetic bristles.
  - 2. Increasing the water washing pressure to maximum of 400 psi.
  - 3. Adding detergent to washing water; with final water rinse to remove residual detergent.
  - 4. Steam-generated low-pressure hot-water washing.

#### 3.4 CONCRETE STRUCTURAL MEMBER REPAIR

- A. See drawings for specific areas to be repaired.

#### 3.5 CONCRETE SURFACE REPAIR USING CEMENTITIOUS MATERIALS

- A. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.
- B. Apply coating of bonding agent to entire concrete surface to be repaired.
- C. Fill voids with cementitious mortar flush with surface.
- D. Apply repair mortar by steel trowel to a minimum thickness of 1/4 inch over entire surface, terminating at a vertical change in plane on all sides.
- E. Trowel finish to match adjacent concrete surfaces.

END OF SECTION



SECTION 03 20 00  
CONCRETE REINFORCING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.

1.2 RELATED REQUIREMENTS

- A. Section 03 10 00 - Concrete Forming and Accessories.
- B. Section 03 30 00 - Cast-in-Place Concrete.
- C. Section 04 20 00 - Unit Masonry: Reinforcement for masonry.

1.3 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2016.
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).
- C. ACI SP-66 - ACI Detailing Manual; 2004.
- D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018.
- E. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2016.
- F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.
- G. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2010a (Reapproved 2015).
- H. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2018.
- I. CRSI (DA4) - Manual of Standard Practice; 2009.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices, supporting & spacing devices. Indicate quantities of reinforcing steel and welded wire fabric.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.5 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301, ACI 318, and CRSI.

## 1.6 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate with placement of formwork, formed openings and other work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Reinforcing Steel:
- B. Continuously Galvanized Reinforcing Steel:
  - 1. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.2 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
  - 1. Deformed billet-steel bars.
  - 2. Unfinished.
- B. Reinforcing Steel: ASTM A706/A706M, deformed low-alloy steel bars.
  - 1. Unfinished.
- C. Steel Welded Wire Reinforcement (WWR): Galvanized, deformed type; ASTM A1064/A1064M.
  - 1. Form: Flat Sheets.
- D. Reinforcing Fibers: ASTM C1116/C1116M, 130 ksi minimum tensile strength, fiber length = 0.75 inch, nominal.. Mixing rate per manufacturer's recommendations.
  - 1. Fibermesh 150 by Propex Concrete Systems: [www.fibermesh.com](http://www.fibermesh.com) [www.fibermesh.com](http://www.fibermesh.com)
  - 2. FRC Mono 150 by FRV Industries: [www.frcindustries.com](http://www.frcindustries.com) [www.frcindustries.com](http://www.frcindustries.com)
  - 3. FORTA-FERRO by Forta Corporation: [www.forta-ferro.com](http://www.forta-ferro.com) [www.forta-ferro.com](http://www.forta-ferro.com).
  - 4. Novomesh 950 by Propex Concrete Systems or approved equal (gymnasium floor).Product manufacturer representative to be on site during concrete pour.
  - 5. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.3 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice and ACI 318.
- B. Form standard hooks for 180 degree bends, 90 degree bend, stirrup and tie hooks, and seismic hooks as indicated on Drawings.
- C. Form reinforcement bends with minimum diameters in accordance with ACI 318 .
- D. Fabricate column reinforcement with offset bends at reinforcement splices
- E. Welding of reinforcement is permitted only with the specific approval of Architect/Engineer. Perform welding in accordance with AWS D1.4.
- F. Locate reinforcing splices not indicated on drawings at point of minimum stress.
  - 1. Review locations of splices with Architect/Engineer.



## 2.4 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Make completed reinforcement available for inspection at manufacturer's factory prior to packaging for shipment. Notify Architect/Engineer at least seven days before inspection is allowed.
- C. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
  - 1. Specified shop tests are not required for Work performed by approved fabricator.

## PART 3 EXECUTION

### 3.1 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.
  - 1. Do not weld crossing reinforcement bars for assembly.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Space reinforcement bars with minimum clear spacing in accordance with ACI 318.
  - 1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.
- E. Maintain concrete cover around reinforcing in accordance with ACI 318.
- F. Splice reinforcing where indicated on Drawings in accordance with splicing device manufacturer's instructions.

### 3.2 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Install reinforcement within the following tolerances for flexural members, walls, and compression members:

Reinforcement Depth	Depth Tolerance	Concrete Cover Tolerance
Greater than 8 inches	plus or minus 3/8 inch	minus 3/8 inch
Less than 8 inches	plus or minus 1/2 inch	minus 1/2 inch

- C. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.

### 3.3 FIELD QUALITY CONTROL

- A. Per Section 01 40 00, field inspection and testing will be performed by Owner's testing laboratory in accordance with ACI 318.
- B. Reinforcement Inspection shall be in accordance with Section 01 41 00: Special inspections & Structural Testing.
- C. Provide free access to Work and cooperate with appointed firm.

END OF SECTION



SECTION 03 30 00  
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete formwork.
- B. Floors and slabs on grade.
- C. Concrete foundation walls.
- D. Concrete reinforcement.
- E. Joint devices associated with concrete work.
- F. Miscellaneous concrete elements, including equipment pads.
- G. Concrete finishing.
- H. Concrete curing.

1.2 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealant: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.
- B. Section 32 13 13 - Concrete Paving: Sidewalks, curbs and gutters.

1.3 REFERENCE STANDARDS

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; 1998 (Reapproved 2004).
- D. ACI 301 - Specifications for Structural Concrete; 2016.
- E. ACI 302.1R - Guide to Concrete Floor and Slab Construction; 2015.
- F. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- G. ACI 305R - Guide to Hot Weather Concreting; 2010.
- H. ACI 306R - Guide to Cold Weather Concreting; 2016.
- I. ACI 308R - Guide to External Curing of Concrete; 2016.
- J. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).
- K. ACI 347R - Guide to Formwork for Concrete; 2014, with Errata (2017).
- L. ACI SP-66 - ACI Detailing Manual; 2004.

- M. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018.
- N. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2016.
- O. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.
- P. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- Q. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.
- R. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2019.
- S. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- T. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.
- U. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.
- V. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- W. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.
- X. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- Y. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016.
- Z. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- AA. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- AB. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2017.
- AC. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2019.
- AD. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.
- AE. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2015.
- AF. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- AG. ASTM C 1064 - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete, 2017.
- AH. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2010a (Reapproved 2015).
- AI. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2015.
- AJ. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.

- AK. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2015.
- AL. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 2014.
- AM. ASTM E1155M - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers (Metric); 2014.
- AN. 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.
- AO. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products such as joint devices, attachment accessories, and admixtures, showing compliance with specified requirements.
  - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
  - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
- D. Design Data:
  - 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
    - a. Hot and cold weather concrete work.
    - b. Air entrained concrete work.
  - 2. Identify mix ingredients and proportions, including admixtures.
  - 3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.
  - 4. Submit 28 day concrete strength test data for each mix design per ACI 318 requirements.
    - a. Provide a minimum of 15 concrete strength tests, where a concrete strength test is the average strength of at least two 6x12 inch or three 4x8 inch cylinders.
    - b. If 15 concrete tests are unavailable, the average strength of the concrete tests must exceed the required strength by 1200psi for up to 5000 psi mix concrete.
  - 5. Submit concrete strength test data for each mix design per ACI 301 requirements.
- E. Samples: Submit samples of underslab vapor retarder to be used.
- F. Reinforcing Placement Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices, supporting & spacing devices. Indicate quantities of reinforcing steel and welded wire fabric.
- G. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- H. Reports: Submit certified copies of mill test report of reinforcement materials analysis.
- I. Samples: Submit two, 12 inch long samples of waterstops and construction joint devices.
- J. Test Reports: Submit report for each test or series of tests specified.
- K. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

## 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution & Closeout Requirements.
- B. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

## 1.6 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.
- D. For slabs required to include moisture vapor reducing admixture (MVRA), do not proceed with placement unless manufacturer's representative is present for every day of placement.

## 1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Slabs with Porosity Inhibiting Admixture (PIA) or Moisture Vapor Reducing Admixture (MVRA): Provide warranty to cover cost of flooring failures due to moisture migration from slabs for life of the concrete.
  - 1. Include cost of repair or removal of failed flooring, placement of topical moisture remediation system, and replacement of flooring with comparable flooring system.
  - 2. Provide warranty by admixture manufacturer matching terms of flooring adhesive or primer manufacturer's material defect warranty.

## 1.8 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

# PART 2 PRODUCTS

## 2.1 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. 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.

## 2.2 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
  1. Type: Deformed billet-steel bars.
  2. Finish: Unfinished, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.
  1. Form: Flat Sheets.
  2. WWR Style: As indicated on drawings.
- C. Reinforcing Steel: ASTM A706/A706M, deformed low-alloy steel bars.
  1. Unfinished.
- D. Reinforcement Accessories:
  1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
  2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
  3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.
- E. Fiber Reinforcement: Alkali-resistant polypropylene monofilament complying with ASTM C1116/C1116M, 24 ksi minimum tensile strength. Mixing rate per manufacturer's recommendations.
  1. Fiber Length: 0.75 inch, nominal.
  2. Products:
    - a. Fibermesh 150 by Propex Concrete Systems: [www.fibermesh.com](http://www.fibermesh.com)
    - b. FRC Mono 150 by FRC Industries: [www.frcindustries.com](http://www.frcindustries.com)
    - c. ECONO-MONO by Forta Corporation: [www.forta-ferro.com](http://www.forta-ferro.com)
    - d. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.3 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.
  2. Coarse Aggregate Maximum Size: In accordance with ACI 318
- C. Fly Ash: ASTM C 618, Class F. Loss on ignition requirement waived if used in flowable fill concrete mix.
- D. Water: ACI 318; Clean and not detrimental to concrete.

## 2.4 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.

- F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- G. Accelerating Admixture: ASTM C494/C494M Type C.
- H. Retarding Admixture: ASTM C494/C494M Type B.
- I. Water Reducing Admixture: ASTM C494/C494M Type A.
- J. Moisture Vapor Reducing Admixture (MVRA): Liquid, inorganic admixture free of volatile organic compounds (VOCs). Closes capillary systems formed during concrete curing to reduce moisture vapor emission and transmission. Reduces concrete shrinkage with no adverse effect on concrete properties or applied flooring.
  - 1. Provide admixture in slabs to receive adhesively applied flooring or roofing.
  - 2. Products:
    - a. Barrier One, Inc; Barrier One Moisture Vapor Reduction Admixture: [www.barrierone.com](http://www.barrierone.com).
    - b. ISE Logik Industries, Inc; MVRA 900: [www.iselogik.com/#sle](http://www.iselogik.com/#sle).
    - c. Specialty Products Group; Vapor Lock 20/20: [www.spoggogreen.com/#sle](http://www.spoggogreen.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.5 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
  - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
  - 2. Products:
    - a. ISI Building Products; Viper VaporCheck II 15-mil (Class A): [www.isibp.com/#sle](http://www.isibp.com/#sle).
    - b. Poly-America; Husky Yellow Guard 15-mil Vapor Barrier: [www.yellowguard.com/#sle](http://www.yellowguard.com/#sle).
    - c. Stego Industries, LLC; Stego Wrap 15-mil: [www.stegoindustries.com/#sle](http://www.stegoindustries.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Insulated Underslab Vapor Retarder: Multilayer product of high-density closed-cell foam and high-density polyethylene bubble sandwiched between outer layers of extrusion-coated reflective polyethylene or equivalent, stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single-ply polyethylene is prohibited.
  - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
- C. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  - 1. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch.
  - 2. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.
  - 3. Flowable Products:
    - a. Euclid Chemical Company; NS GROUT: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
    - b. Five Star Products, Inc; Five Star Fluid Grout 100: [www.fivestarprouducts.com/#sle](http://www.fivestarprouducts.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, non-metallic aggregate, and activator.
  - 1. Minimum Compressive Strength at 7 days, ASTM D695: 12,000 pounds per square inch.



## 2.6 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
- B. Epoxy Bonding System:
  - 1. Complying with ASTM C881/C881M and of Type required for specific application.
  - 2. Products:
    - a. Adhesives Technology Corporation: [www.atcepoxy.com/#sle](http://www.atcepoxy.com/#sle).
    - b. Kaufman Products Inc; SurePox HM Class B: [www.kaufmanproducts.net/#sle](http://www.kaufmanproducts.net/#sle).
    - c. SpecChem, LLC; SpecPox 1000, SpecPox 2000, SpecPox 3000, or SpecPox 3000FS: [www.specchemllc.com/#sle](http://www.specchemllc.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
  - 1. Material: ASTM D1751, Nonextruding, resilient asphalt impregnated fiberboard or felt.
- D. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.
  - 1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
  - 2. Height: To suit slab thickness.
- E. Expansion and Contraction Joint Devices: ASTM B221 alloy, extruded aluminum; resilient elastomeric filler strip with Shore A hardness of 35 to permit plus or minus 25 percent joint movement with full recovery; extruded aluminum cover plate, of longest manufactured length at each location, flush mounted; color as selected.

## 2.7 CURING MATERIALS

- A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
- B. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
- C. Moisture-Retaining Sheet: ASTM C171.
  - 1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
  - 2. Non-staining cotton fabric, weighing not less than 8 oz/per square yd, bonded to prevent separation during handling and placing.
- D. Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch thick, clear.
- E. Water: Potable, not detrimental to concrete.

## 2.8 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Proportioning Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.
- C. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
  - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

- E. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
- F. Normal Weight Concrete:
  - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
  - 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
  - 3. Water-Cement Ratio: As indicated on drawings.
  - 4. Water-Cement Ratio: As indicated on drawings.
  - 5. Total Air Content: 5 +/- 1.5 percent, determined in accordance with ASTM C173/C173M.
  - 6. Maximum Design Slump: 4 inches prior to the addition of admixtures.
  - 7. Maximum Aggregate Size: 3/4 inch.

## 2.9 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
  - 1. Fiber Reinforcement: Batch and mix as recommended by manufacturer for specific project conditions.
- B. Transit Mixers: Comply with ASTM C94/C94M.
- C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.
- D. Do not use shrinkage-reducing admixture (SRA) in same concrete batch with MVRA or PIA.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

### 3.2 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Remove debris and ice from formwork, reinforcement, and concrete substrates.
- C. Remove water from areas receiving concrete before concrete is placed.
- D. Verify that forms are clean and free of rust before applying release agent.
- E. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- F. Wet sticking anchor rods shall not be permitted.
- G. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions. Remove laitance, coatings & unsound materials.

1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
  2. Use latex bonding agent only for non-load-bearing applications.
- H. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- I. 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. Unroll Vapor Barrier with the longest dimension parallel with the direction of the pour.
  2. Lap Vapor Barrier over footings and seal to foundation walls.
  3. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
  4. Seal all penetrations (including pipes) with pipe boot and tape.

### 3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 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.

### 3.4 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Notify testing laboratory and Architect not less than 24 hours prior to commencement of placement operations.
- C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

### 3.5 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.
- E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.
- F. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- G. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.
- H. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- I. Install joint covers in longest practical length, when adjacent construction activity is complete.

- J. Apply sealants in joint devices in accordance with Section 07 92 00.
- K. Deposit concrete at final position. Prevent segregation of mix.
- L. Place concrete in continuous operation for each panel or section determined by predetermined joints.
- M. Consolidate concrete.
- N. Place concrete continuously between predetermined expansion, control, and construction joints.
- O. Do not interrupt successive placement; do not permit cold joints to occur.
- P. Place floor slabs in checkerboard or saw cut pattern indicated.
- Q. Saw cut joints within 12 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness.
- R. Screed floors level, maintaining the following minimum F(F) Floor Flatness and F(L) Floor Levelness values when measured in accordance with ASTM E1155.

### 3.6 SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in.
- C. Apply bonding agent to substrate in accordance with manufacturer's instructions.
- D. Place concrete floor toppings to required lines and levels.
  - 1. Place topping in checkerboard panels not to exceed 20 feet in either direction.
- E. Screed toppings level, maintaining surface flatness of maximum 1/8 inch in 10 feet.

### 3.7 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 40 00, will inspect finished slabs for compliance with specified tolerances.
- B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
  - 1. Exposed to View and Foot Traffic: F(F) of 35; F(L) of 25, on-grade only.
  - 2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
  - 3. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
  - 4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.
- C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155 (ASTM E1155M), within 48 hours after slab installation; report both composite overall values and local values for each measured section.
- D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value.
- E. 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.

### 3.8 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 302.1R, and as follows:
  - 1. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
- D. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1/4 inch per foot nominal if not indicated on the drawings.

### 3.9 CURING

- A. Comply with requirements of ACI 308R. 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.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
  - 1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
  - 2. 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.
  - 3. Final Curing: Begin after initial curing but before surface is dry.

### 3.10 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Concrete Inspections:
  - 1. Continuous Placement Inspection: Inspect for proper installation procedures.
  - 2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.
- E. Strength Test Samples:
  - 1. Sampling Procedures: ASTM C172/C172M.
  - 2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, field cured.
  - 3. Sample concrete and make one set of four cylinders for every 50 cu yds or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
  - 4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
  - 5. Make one additional cylinder during cold weather concreting, and field cure.
- F. Field Testing:
  - 1. Slump Test Method: ASTM C143/C143M.

2. Air Content Test Method: ASTM C173/C173M.
  3. Temperature Test Method: ASTM C1064/C1064M.
  4. Measure slump and temperature for each compressive strength concrete sample.
  5. Measure air content in air entrained concrete for each compressive strength concrete sample.
- G. Cylinder Compressive Strength Testing:
1. Test Method: ASTM C39/C39M.
  2. Test Acceptance: In accordance with ACI 318 and applicable code.
  3. Test one cylinder at 7 days.
  4. Test two cylinders at 28 days.
  5. Retain one cylinder for 56 days for testing when requested by Architect.
  6. Dispose remaining cylinders when testing is not required.
- H. Slab Testing: Cooperate with manufacturer of specified moisture vapor reducing admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.
- I. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

### 3.11 PATCHING

- A. Allow Architect to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect upon discovery.
- C. Patch imperfections as directed by Architect in accordance with ACI 318.

### 3.12 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

### 3.13 PROTECTION

- A. If cold weather provisions of ACI 306R are required:
  1. Protect fresh concrete from freezing by heating the ground and forms to minimum temperatures of ACI 306R.
  2. Thermally protect the fresh concrete the following durations
    - a. Concrete footings/walls - 48 hours after placement
    - b. Concrete piers - 72 hours after placement.
    - c. Concrete slabs on grade - 72 hours after placement.
- B. Do not permit traffic over unprotected concrete floor surface until fully cured.

### 3.14 BACKFILL & WALL CONSTRUCTION

- A. Foundation walls shall achieve 75% of the specified compressive strength before backfilling.

1. When testing is not available allow walls to cure for 10 days before backfilling.
  - a. If cold weather provisions of ACI 306R apply allow 15 days before backfilling.
- B. Concrete walls and piers shall achieve 75% of the specified compressive strength before steel columns or masonry wall are erected.
  1. When testing is not available allow walls to cure for 10 days before backfilling.
    - a. If cold weather provisions of ACI 306R apply allow 15 days before backfilling.

END OF SECTION





SECTION 03 54 00  
CAST UNDERLAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Liquid-applied self-leveling floor underlayment.
  - 1. Use cementitious type at all locations.

1.2 RELATED REQUIREMENTS

- A. Section 01 70 00 - Execution and Closeout Requirements: Alteration project procedures; selective demolition for remodeling.
- B. Section 03 30 00 - Cast-in-place Concrete

1.3 REFERENCE STANDARDS

- A. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- B. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2019.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, mixing instructions, environmental limitations, and installation instructions.
- C. Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Instructions.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing Products specified in this section with minimum three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.7 FIELD CONDITIONS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.

- B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Cementitious Underlayment:
  - 1. ARDEX Engineered Cements; ARDEX V 1200 with ARDEX P51 Primer: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
  - 2. CMP Specialty Products; Level-1 with AS-100 Primer: [www.cmpsp.com](http://www.cmpsp.com)
  - 3. Dayton Superior Corporation: [www.daytonsuperior.com/#sle](http://www.daytonsuperior.com/#sle).
  - 4. Sika Corporation; Product Sikafloor Level 50. [www.sikaconstruction.com](http://www.sikaconstruction.com)

### 2.2 MATERIALS

- A. Cast Underlayments, General:
  - 1. Comply with applicable code for combustibility or flame spread requirements.
- B. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
  - 1. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
  - 2. Density: 125 pounds per cubic foot, nominal.
  - 3. Final Set Time: 1-1/2 to 2 hours, maximum.
  - 4. Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch.
  - 5. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E 84.
- C. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.
- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.
- E. Primer: Manufacturer's recommended type.
- F. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

### 2.3 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.
- B. Add aggregate for areas where thickness will exceed 1 inch or as required per product manufacturer. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- C. Mix to self-leveling consistency without over-watering.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

### 3.2 PREPARATION

- A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
- B. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- C. Vacuum clean surfaces.
- D. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
- E. Close floor openings.

### 3.3 APPLICATION

- A. Install underlayment in accordance with manufacturer's instructions.
- B. Pump or pour material onto substrate. Do not retemper or add water.
  - 1. Pump, move, and screed while the material is still highly flowable.
  - 2. Be careful not to create cold joints.
  - 3. Wear spiked shoes while working in the wet material to avoid leaving marks.
- C. Place to thickness indicated on Drawings or as required to achieve finished floor elevation, with top surface level to 1/16 inch in 10 ft.
- D. For final thickness over 1-1/2 inches, place underlayment in layers. Allow initial layer to harden to the point where the material has lost its evaporative moisture. Immediately prime and begin application of the subsequent layer within 24 hours.
- E. Place before partition installation.
- F. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.
- G. If a fine, feathered edge is desired, initial preparation per manufacturers recommendations and steel trowel the edge after initial set, but before it is completely hard.

### 3.4 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.

### 3.5 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field inspection and testing, as specified in Section 01 40 00 - Quality Requirements.

- B. Placed Material: Agency will inspect and test for compliance with specification requirements.

### 3.6 PROTECTION

- A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
- B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

SECTION 03 60 00  
GROUTING

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Portland cement grout.
- B. Rapid curing epoxy grout.
- C. Non-shrink cementitious grout.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-In-Place Concrete.

1.3 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2016.
- B. ASTM C191 - Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle; 2019
- C. ASTM C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing; 2018
- D. ASTM C40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete; 2019
- E. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes; 2018

1.4 SUBMITTALS

- A. Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit product data on grout.
- C. Manufacturer's Installation Instructions: Submit manufacturer's instructions for mixing, handling, surface preparation and placing epoxy type and non-shrink type grouts.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver grout in manufacturer's unopened containers with proper labels intact.
- C. Store grout in a dry shelter, protect from moisture.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

- B. Do not perform grouting if temperatures exceed 100 degrees F.
- C. Maintain minimum temperature of 50 degrees F before, during, and after grouting, until grout has set.

## PART 2 PRODUCTS

### 2.1 PORTLAND CEMENT GROUT MATERIALS

- A. Portland Cement: ASTM C150, Type I and II.
- B. Water:
  - 1. Potable; containing no impurities, suspended particles, algae or dissolved natural salts in quantities capable of causing:
    - a. Corrosion of steel.
    - b. Volume change increasing shrinkage cracking.
    - c. Efflorescence.
    - d. Excess air entraining.
- C. Fine Aggregate:
  - 1. Washed natural sand.
  - 2. Gradation in accordance with ASTM C33 and represented by smooth granulometric curve within required limits.
  - 3. Free from injurious amounts of organic impurities as determined by ASTM C40.
- D. Mix:
  - 1. Portland cement, sand and water. Do not use ferrous aggregate or staining ingredients in grout mixes.

### 2.2 RAPID CURING EPOXY GROUT

- A. Manufacturers:
  - 1. Sika.
  - 2. L & M Construction Chemicals Inc.
  - 3. Substitutions: Section 01 60 00 - Product Requirements
- B. Rapid Curing Epoxy Grout: High strength, three component epoxy grout formulated with thermosetting resins and inert fillers. Rapid-curing, high adhesion, and resistant to ordinary chemicals, acids and alkalis.

Property	Test	Result
Compressive Strength	ASTM C579	12,000 psi at 7 days
Tensile Strength	ASTM C307	2,000 psi minimum
Coefficient of Expansion	ASTM C531	30x10-6 in per degree F
Shrinkage	ASTM C827	None

### 2.3 NON-SHRINK CEMENTITIOUS GROUT

- A. Manufacturers:
  - 1. Sika.
  - 2. L & M Construction Chemicals, Inc.
  - 3. Substitutions: Section 01 60 00 - Product Requirements.

- B. Non-shrink Cementitious Grout: Pre-mixed ready for use formulation requiring only addition of water; non-shrink, non-corrosive, non-metallic, non-gas forming, no chlorides.
- C. Properties: Certified to maintain initial placement volume or expand after set and meet the following minimum properties when tested in accordance with CRD-C621, for Type D non-shrink grout:

Property	Test	Time	Result
Setting Time	ASTM C191	Initial Final	2 hours (Approx) 3 hours (Approx)
Expansion			0.10% - 0.4% Maximum
Compressive Strength	CRD-C621	1 day 7 days 28 days	4,000 psi 7,000 psi 10,000 psi to 10,800 psi

## 2.4 FORMWORK

- A. Refer to Section 03 30 00 for formwork requirements.

## 2.5 CURING

- A. Prevent rapid loss of water from grout during first 48 hours by use of approved membrane curing compound or with use of wet burlap method.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify areas to receive grout.

## 3.2 PREPARATION

- A. Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces by brushing, hammering, chipping or other similar means until sound, clean concrete surface is achieved.
- B. Rough concrete lightly, but not enough to interfere with placement of grout.
- C. Remove foreign materials from metal surfaces in contact with grout.
- D. Align, level and maintain final positioning of components to be grouted.
- E. Saturate concrete surfaces with clean water; remove excess water, leave none standing.

## 3.3 INSTALLATION - FORMWORK

- A. Construct leak proof forms anchored and shored to withstand grout pressures.
- B. Install formwork with clearances to permit proper placement of grout.

### 3.4 MIXING

- A. Portland Cement Grout:
  - 1. Use proportions of 2 parts sand and 1 part cement, measured by volume.
  - 2. Prepare grout with water to obtain consistency to permit placing and packing.
  - 3. Mix water and grout in two steps; pre-mix using approximately 2/3 of water; after partial mixing, add remaining water to bring mix to desired placement consistency and continue mixing 2 to 3 minutes.
  - 4. Mix only quantities of grout capable of being placed within 30 minutes after mixing.
  - 5. Do not add additional water after grout has been mixed.
  - 6. Capable of developing minimum compressive strength of 2400 psi in 48 hours and 7000 psi in 28 days.
- B. Mix and prepare rapid curing epoxy grout in accordance with manufacturer's instructions.
  - 1. Capable of developing minimum compressive strength of 2400 psi in 48 hours and 7000 psi in 28 days.
- C. Mix and prepare non-shrink cementitious grout in accordance with manufacturer's instructions.
  - 1. Capable of developing minimum compressive strength of 2400 psi in 48 hours and 7000 psi in 28 days.
- D. Mix grout components in proximity to work area and transport mixture quickly and in manner not permitting segregation of materials.

### 3.5 PLACING GROUT

- A. Place grout material quickly and continuously.
- B. Do not use pneumatic-pressure or dry-packing methods.
- C. Apply grout from one side only to avoid entrapping air.
- D. Do not vibrate placed grout mixture, or permit placement when area is being vibrated by nearby equipment.
- E. Thoroughly compact final installation and eliminate air pockets.
- F. Do not remove leveling shims for at least 48 hours after grout has been placed.

### 3.6 CURING

- A. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. After grout has attained its initial set, keep damp for minimum of 3 days.

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Field inspection and testing will be performed in accordance with ACI 301 and ACI 318 and under provisions of Section 01 40 00 - Quality Requirements.
- C. Submit proposed mix design of each class of grout to inspection and testing firm for review prior to commencement of Work.



- D. Tests of grout components may be performed to ensure conformance with specified requirements.

END OF SECTION



SECTION 04 05 11  
MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED REQUIREMENTS

- A. Section 04 20 00 - Unit Masonry: Installation of mortar and grout.

1.3 REFERENCE STANDARDS

- A. ASTM C91/C91M - Standard Specification for Masonry Cement; 2018.
- B. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.
- C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- D. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.
- F. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019.
- G. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.
- H. ASTM C476 - Standard Specification for Grout for Masonry; 2018.
- I. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2018a.
- J. ASTM C1019 - Standard Test Method for Sampling and Testing Grout; 2018, with Editorial Revision.
- K. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2013, with Editorial Revision (2014).
- L. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2018.
- M. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2016.
- N. ASTM E518/E518M - Standard Test Methods for Flexural Bond Strength of Masonry; 2015.
- O. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
- C. Samples: Submit two samples of mortar, illustrating mortar color and color range.

- D. Reports: Submit reports on mortar indicating conformance of mortar to property requirements of ASTM C 270 and test and evaluation reports per ASTM C 780 for aggregate ratio and water content, air content, consistency, and compressive strength.
- E. 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.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- G. Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

## 1.5 QUALITY ASSURANCE

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

## 1.6 DELIVERY, STORAGE, AND HANDLING

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

## 1.7 FIELD CONDITIONS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

# PART 2 PRODUCTS

## 2.1 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 M.
  - 2. Above Grade Masonry: Type S
- C. Grout Mix Designs:
  - 1. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; mix in accordance with ASTM C476.
    - 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.

## 2.2 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. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
- C. Portland Cement: ASTM C150/C150M.
  - 1. Type: Type I - Normal; ASTM C150/C150M.
  - 2. Color: Standard gray.
- D. Masonry Cement: ASTM C91/C91M.
  - 1. Type: Type N; ASTM C91/C91M.
- E. Hydrated Lime: ASTM C207, Type S.
- F. Mortar Aggregate: ASTM C144, standard masonry type.
- G. Grout Aggregate: ASTM C404, coarse.
- H. Water: Clean and potable.
- I. Bonding Agent: Latex type.

### 2.3 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.
- E. Use mortar within two hours after mixing at temperatures of 90 degrees F or two-and-one-half hours at temperatures under 50 degrees F.

### 2.4 GROUT MIXING

- A. Mix grout in accordance with ASTM C94/C94M.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.
- C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- D. Do not use anti-freeze compounds to lower the freezing point of grout.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Apply bonding agent to existing concrete surfaces.
- B. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

### 3.2 INSTALLATION

- A. Install mortar and grout to requirements of section(s) in which masonry is specified.

- B. Install grout in accordance with ACI 530.1 Specifications for Masonry Structures and ASTM C476.
- C. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

### 3.3 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.

### 3.4 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 40 00 - Quality Requirements.
- B. Test and evaluate mortar mix in accordance with ASTM C 780 procedures.
- C. Test and evaluate grout mix in accordance with ASTM C 1019 procedures.
- D. Prism Tests: Test masonry and mortar panels for compressive strength in accordance with ASTM C1314, and for flexural bond strength in accordance with ASTM C1072 or ASTM E518/E518M; perform tests and evaluate results as specified in individual masonry sections.

END OF SECTION

SECTION 04 20 00  
UNIT MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete block.
- B. Reinforcement and anchorage.
- C. Flashings.
- D. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Control
- B. Section 03 30 00 - Cast-in-Place Concrete: Installation of dovetail slots for masonry anchors. Reinforcing steel for grouted masonry
- C. Section 04 05 11 - Masonry Mortaring and Grouting.
- D. Section 07 92 00 - Joint Sealant: Sealing control and expansion joints.

1.3 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- D. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.
- F. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2012 (Reapproved 2019).
- G. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.
- H. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2018a.
- I. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2018a.
- J. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- K. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

#### 1.5 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
- B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.
- B. Handle and store pre-faced concrete block units in protective cartons or trays. Do not remove from protective packaging until ready for installation.

### PART 2 PRODUCTS

#### 2.1 CONCRETE MASONRY UNITS

- A. Manufacturers:
  - 1. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
    - a. Southern Tier Concrete Products.
    - b. Dagostino Building Blocks.
    - c. York Building Products, Inc.
    - d. Substitutions: Section 01 60 00 - Product Requirements.
- B. Concrete Block: Comply with referenced standards and as follows:
  - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 8" and 6".
  - 2. Special Shapes: Provide nonstandard blocks configured for corners.
    - a. Provide square-edged units for outside corners.
  - 3. Units: ASTM C90, normal weight.
    - a. Hollow block, as indicated.
    - b. Exposed Faces: Manufacturer's standard color and texture where indicated (wall type 1A & 1C)
    - c. Exposed Faces: Special color and texture where indicated, (wall type 1B) as follows: split face.



## 2.2 MORTAR AND GROUT MATERIALS

- A. Mortar and Grout: As specified in Section 04 05 11.

## 2.3 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers:
1. Blok-Lok Limited: [www.blok-lok.com/#sle](http://www.blok-lok.com/#sle).
  2. Hohmann & Barnard, Inc: [www.h-b.com/#sle](http://www.h-b.com/#sle).
  3. WIRE-BOND [www.wirebond.com/#sle](http://www.wirebond.com/#sle).
  4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Reinforcing Steel: Type specified in Section 03 30 00; size as indicated on drawings; uncoated finish.
- C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- D. 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.
- E. Strap Anchors: Bent steel shapes, 1-1/2 inch width, 0.105 inch thick, 24 inch length, with 1-1/2 inch long, 90 degree bend at each end to form a U or Z shape or with cross pins, hot dip galvanized to ASTM A153/A153M, Class B.
- F. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.

## 2.4 FLASHINGS

- A. Metal Flashing Materials:
1. Copper Flashing: ASTM B370, 060 soft annealed; 20 oz/sq ft thick; natural finish.
  2. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gauge, 0.0187 inch thick; finish 2B to 2D.
  3. Prefabricated Metal Flashing: Smooth fabricated 12 oz/sq ft copper flashing for surface mounted conditions.

## 2.5 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
1. Manufacturers:
- a. Blok-Lok Limited: [www.blok-lok.com/#sle](http://www.blok-lok.com/#sle).
  - b. Hohmann & Barnard, Inc: [www.h-b.com/#sle](http://www.h-b.com/#sle).
  - c. WIRE-BOND: [www.wirebond.com/#sle](http://www.wirebond.com/#sle).
  - d. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.
1. Manufacturers:
- a. Hohmann & Barnard, Inc: [www.h-b.com/#sle](http://www.h-b.com/#sle).
  - b. WIRE-BOND: [www.wirebond.com/#sle](http://www.wirebond.com/#sle).
  - c. Substitutions: See Section 01 60 00 - Product Requirements.

- C. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials. All material cleaning shall be done as recommended by material supplier.

## PART 3 EXECUTION

### 3.1 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.

### 3.2 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

### 3.3 COLD AND HOT WEATHER REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

### 3.4 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, unless shown otherwise in contract documents.
  - 2. Coursing: One unit and one mortar joint to equal 8 inches.
  - 3. Mortar Joints: Concave.

### 3.5 PLACING AND BONDING

- A. Lay hollow masonry units with face shell bedding on head and bed joints.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar and mortar smears as work progresses.
- D. Interlock intersections and external corners.
- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- G. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

- H. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- I. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

### 3.6 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. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.
- F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches horizontally and 16 inches vertically.

### 3.7 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
  - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at nonmasonry construction.
- B. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.

### 3.8 LINTELS

- A. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
  - 1. Reinforcing: As indicated on drawings.
  - 2. Do not splice reinforcing bars.
  - 3. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
  - 4. Place and consolidate grout fill without displacing reinforcing.
  - 5. Allow masonry lintels to attain specified strength before removing temporary supports.

### 3.9 GROUTED COMPONENTS

- A. Reinforce bond beams with 2, No. 5 bars, 1 inch from bottom web unless noted otherwise on contract documents.
- B. Lap splices minimum 50 bar diameters.
- C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

- D. Place and consolidate grout fill without displacing reinforcing.
- E. At bearing locations, fill masonry cores with grout for a minimum 16 inches either side of opening.

### 3.10 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

### 3.11 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and glazed 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.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
  - 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

### 3.12 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- 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.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

### 3.13 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, grounds, and ductwork. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

### 3.14 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
  - 1. The agency shall monitor the proportioning, mixing, and consistency of mortar and grout; the placement of mortar, grout and masonry units; and the placement or reinforcing steel for compliance with the contract documents.
- B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.

- C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.
- D. The agency shall prepare one set of prisms for testing at 7 days and one set for testing at 28 days. Tests are to be conducted by the agency for each 3,000 square feet of wall installed, but not less than two tests.

### 3.15 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.

### 3.16 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.
- B. Protect base of walls from mud and mortar splatter.
- C. Protect masonry and other items built into masonry walls from mortar droppings and staining caused by mortar.
- D. Protect tops of masonry work with waterproof coverings secured in place without damaging masonry. Provide coverings where masonry is exposed to weather when work is not in progress.

### 3.17 SCHEDULES

- A. Wall type 1A - standard 6" CMU block.
- B. Wall Type 1B - special color and texture splitface 8" CMU block (Block type 1 & 2)
- C. Wall Type 1C - standard 8" CMU block.

END OF SECTION



SECTION 05 50 00  
METAL FABRICATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop fabricated steel and metal items, including:
  - 1. Structural supports for miscellaneous attachments

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 20 00 - Unit Masonry: Placement of metal fabrications in masonry.
- C. Section 09 91 13 - Exterior Painting: Paint finish.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- F. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- G. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- H. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata.
- I. NOMMA Guideline 1 - Joint Finishes
- J. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- K. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- L. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

## 1.5 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.
- B. Finish joints in accordance with NOMMA Guideline 1.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept metal fabrications on site in labeled shipments. Inspect for damage.
- C. Protect metal fabrications from damage by exposure to weather.

## PART 2 PRODUCTS

### 2.1 MATERIALS - STEEL

- A. Steel Sections: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Steel Plates: ASTM A 36/A 36M.
- D. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
- E. Slotted Channel Framing: ASTM A 653, Grade 33 Structural quality with galvanized coating.
- F. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- G. Bolts, Nuts, and Washers:
  - 1. Bolts: ASTM F3125; Type 1
  - 2. Nuts: ASTM A 563 heavy hex type
  - 3. Washers: ASTM F 436; Type 1
- H. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- I. Shop and Touch-Up Primer: SSPC-Paint 15, Type 1, complying with VOC limitations of authorities having jurisdiction.
  - 1. Color: Gray
- J. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

### 2.2 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. Continuously seal joined members by continuous welds.
- D. 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. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## 2.3 FABRICATED ITEMS

- A. Lintels: Steel sections, size and configuration as detailed on drawings, length to allow 8 inches minimum bearing on both sides of opening.
  - 1. Galvanized and Prime paint, one coat
- B. Other Structural Supports: Steel sections, shape and size as indicated on drawings required to support applied loads with maximum deflection of 1/240 of the span; prime paint, one coat.
- C. Anchor bolts: ASTM F 1554; Grade 36, weldable, straight shape, Furnish with nut and washer; unfinished.
- D. Exterior Stair Nosings: 4 inch Wide Cast aluminum with intergrate abrasive treads. Model #801 (Poured Concrete stairs) Model 801SP (Poured concrete-filled steel pan stairs) as manufactured by American Safety Tread Company Inc. Color: Natural Metal Finish.

## 2.4 FINISHES - STEEL

- A. Prime paint steel items.
  - 1. Exceptions: Galvanize items to be embedded in concrete, items to be embedded in masonry, and items as specified in drawings.
  - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- 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 Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A 123/A 123M requirements; minimum 2.0 oz/sq ft coating thickness.
- G. Galvanizing for Fasteners, Connectors and Anchors: Hot-Dipped Galvanizing to ASTM A 153/A 153M.

## 2.5 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that field conditions are acceptable and are ready to receive work.

### 3.2 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.

### 3.3 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. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

### 3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story or for every 12 ft in height whichever is greater, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

### 3.5 FIELD QUALITY CONTROL

- A. Welding: Inspect welds in accordance with AWS D1.1.

END OF SECTION

SECTION 06 10 00  
ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Exposed timber structural framing.
- B. Preservative treated wood materials.
- C. Fire retardant treated wood materials.
- D. Miscellaneous framing and sheathing.
- E. Concealed wood blocking, nailers, and supports.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Setting anchors in concrete.
- B. Section 06 15 00 - Wood Decking.

1.3 REFERENCE STANDARDS

- A. ALSC (American Lumber Standards Committee) - Softwood Lumber Standards.; 2011
- B. ANSI A208.1 - American National Standard for Particleboard; 2016.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- D. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.
- F. AWWA U1 - Use Category System: User Specification for Treated Wood; 2018.
- G. PS 20 - American Softwood Lumber Standard; 2015.
- H. SPIB (GR) - Grading Rules; 2014.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials and application instructions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

## PART 2 PRODUCTS

### 2.1 GENERAL REQUIREMENTS

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

### 2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16 ):
  - 1. Species: Southern Pine.
  - 2. Grade: No. 1 and Better.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
  - 1. Lumber: S4S, No. 2 or Standard Grade.
  - 2. Boards: Standard or No. 3.

### 2.3 ACCESSORIES

- A. Fasteners and Anchors:
  - 1. Metal and Finish: Stainless steel for high humidity and preservative-treated wood locations, hot dipped galvanized per ASTM A153/A153M elsewhere.
  - 2. Anchors: Toggle bolt type for anchorage to hollow masonry.
- B. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
  - 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.

### 2.4 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWP A U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
  - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
  - 2. 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 AWP A standards.
- B. Fire Retardant Treatment:
  - 1. Products:
    - a. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Exterior Type: AWP A U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index

- of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
- a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
  - b. Do not use treated wood in direct contact with the ground.
3. Interior Type A: AWP A U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
- a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
  - b. Treat rough carpentry items as indicated .
  - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.
1. Preservative Pressure Treatment of Lumber Above Grade: AWP A 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 exposed to weather.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

### 3.2 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.

### 3.3 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Fit solid blocking at ends of members.
- H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

### 3.4 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.
- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

### 3.5 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

### 3.6 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

### 3.7 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

### 3.8 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.

### 3.9 CLEANING

- A. Waste Disposal: See Section 01 74 19 - Construction Waste Management and Disposal.
  - 1. Comply with applicable regulations.
  - 2. Do not burn scrap on project site.
  - 3. Do not burn scraps that have been pressure treated.

- 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION





SECTION 06 15 00  
WOOD DECKING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Softwood lumber structural wood decking.
- B. Fire retardant treatment of wood.
- C. Preservative treatment of wood.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Bearing support.
- B. Section 04 20 00 - Unit Masonry: Bearing support.
- C. Section 06 10 00 - Rough Carpentry: Bearing support.

1.3 REFERENCE STANDARDS

- A. AITC 112 - Standard for Tongue-and-Groove Heavy Timber Roof Decking; 1993, with Errata (2003).
- B. AWWA U1 - Use Category System: User Specification for Treated Wood; 2018.
- C. SPIB (GR) - Grading Rules; 2014.
- D. UL (FRD) - Fire Resistance Directory; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials.
- C. Manufacturer's Qualification Statement.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with at least three years of documented experience and certified by AITC.
- B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with at least three years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

## PART 2 PRODUCTS

### 2.1 WOOD MATERIALS

- A. Wood fabricated from old growth timber is not permitted.
- B. Marking: Mark each piece with producer's stamp indicating compliance with specified requirements; for pieces exposed to view in completed construction, submit manufacturer's certificate certifying that products comply with specified requirements in lieu of grade stamping.
- C. Lumber Decking: Fabricated to AITC 112.
  - 1. Species: Southern Pine, graded under SPIB (GR) rules as AITC select structural quality.
  - 2. Size: 2 by 6 inches, nominal.
  - 3. Pattern: AITC standard beveled V-joint with single tongue and groove.
  - 4. Moisture Content: 19 percent, maximum.

### 2.2 ACCESSORIES

- A. Fasteners and Anchors:
  - 1. Fastener Type and Finish: Hot-dipped galvanized steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
  - 2. Screws: Bugle head, hardened steel, power driven type, length three times thickness of decking.
  - 3. Anchors: Toggle bolt type for anchorage to hollow masonry.
- B. Adhesive: Waterproof, air cure type, cartridge dispensed.

### 2.3 WOOD TREATMENT

- A. Factory-Treated Lumber and Plywood: Comply with requirements of AWP A U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
- B. Preservative Pressure Treatment:
  - 1. Preservative Pressure Treatment of Lumber Decking: AWP A U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
    - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
  - 2. Preservative Pressure Treatment of Plywood Decking: AWP A U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
    - a. Kiln dry plywood after treatment to maximum moisture content of 18 percent.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that support framing is ready to receive decking.

### 3.2 PREPARATION

- A. Coordinate placement of bearing items.

### 3.3 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment in accordance with manufacturer's instructions.
- B. Brush apply one coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.
- C. Allow preservative to dry prior to erecting members.

### 3.4 INSTALLATION - BOARD DECKING

- A. Install decking perpendicular to framing members, with ends staggered over firm bearing. On sloped surfaces, lay decking with tongue upward.
- B. Engage decking tongue and groove edges.
- C. Secure with fasteners. Side spike planks together, through pre-drilled holes.

### 3.5 TOLERANCES

- A. Surface Flatness of Decking Without Load: 1/4 inch in 10 feet maximum, and 1/2 inch in 30 feet maximum.

END OF SECTION



SECTION 06 20 00  
FINISH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Finish carpentry items.
- B. Hardware and attachment accessories.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 09 91 13 - Exterior Painting: Painting of finish carpentry items.

1.3 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard; 2016.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2016, with Errata (2018).
- E. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.
- F. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2016.
- G. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- H. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress; 2015.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data:
  - 1. Provide data on fire retardant treatment materials and application instructions.
  - 2. Provide instructions for attachment hardware and finish hardware.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  - 1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

## PART 2 PRODUCTS

### 2.1 FINISH CARPENTRY ITEMS

- A. Quality Standard: Premium Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
- C. Exterior Woodwork Items:
- D. Interior Woodwork Items:

### 2.2 LUMBER MATERIALS

- A. Hardwood Lumber: Solid Maple species, Plain/Flat sliced sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

### 2.3 SHEET MATERIALS

- A. Particleboard: ANSI A208.1; Composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.

### 2.4 FASTENINGS

- A. Fasteners: Of size and type to suit application; no finish in concealed locations and Hot dipped galvanized steel for high humidity finish in exposed locations.
- B. Concealed Joint Fasteners: Threaded steel.

### 2.5 ACCESSORIES

- A. Veneer Edge Band: Standard wood veneer edge band matching face veneer.
- B. Primer: Alkyd primer sealer.
- C. Wood Filler: Solvent base, tinted to match surface finish color.
- D. Grommets: Plastic material for cut-outs. Provide 2" diameter grommet and grommet cover at maximum spacing of 5'-0"O.C. Exact location to be verified by the Owner.

### 2.6 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.
- C. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- D. Shop prepare and identify components for book match grain matching during site erection.
- E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

- F. 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.
- G. Apply laminate backing sheet to reverse face of plastic laminate finished surfaces.

## 2.7 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.
- D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
- E. Back prime woodwork items to be field finished, prior to installation.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

### 3.2 INSTALLATION

- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- D. Install components with nails, screws and bolts as indicated . Where not indicated provide fastener type to suit application and with least visibility.
- E. Install prefinished paneling with full bed contact adhesive applied to substrate.

### 3.3 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances
- B. Maximum Variation from True Position: 1/16 inch.
- C. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION





SECTION 07 25 00  
WEATHER BARRIERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Water-resistive barriers.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Water-resistive barrier under exterior cladding.

1.3 DEFINITIONS

- A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.

1.4 REFERENCE STANDARDS

- A. ASTM D779 - Standard Test Method for Determining the Water Vapor Resistance of Sheet Materials in Contact with Liquid Water by the Dry Indicator Method; 2016.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- C. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- D. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2018.
- E. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers; 2016.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.6 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

## PART 2 PRODUCTS

### 2.1 WATER-RESISTIVE BARRIER MATERIALS

- A. Building Paper with Embossed Drainage Layer: Asphalt-saturated kraft Grade D type sheathing paper with embossed spunbond polypropylene fabric and barrier layer complying with ICC-ES AC38.
  - 1. Water Resistance: At least 120 minutes when tested in accordance with ASTM D779.
  - 2. Water Vapor Permeance: 7.6 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
  - 3. Drainage Efficiency: Greater than 95 percent in accordance with ASTM E2273.

### 2.2 ACCESSORIES

- A. Sealants, Tapes, and Accessories Used for Sealing Water-Resistive Barrier and Adjacent Substrates: As indicated or complying with water-resistive barrier manufacturer's installation instructions.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
  - 1. Width: 4 inches.
- C. Thinners and Cleaners: As recommended by water-resistive barrier manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that surfaces and conditions comply with requirements of this section.

### 3.2 PREPARATION

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

### 3.3 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Water-Resistive Barriers: Install continuous water-resistive barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.
- C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.
- D. Mechanically Fastened Exterior Sheets:
  - 1. Install sheets shingle-fashion to shed water, with seams aligned horizontal.
  - 2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
  - 3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.

4. Attach to framed construction with fasteners extending through sheathing into framing, and space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
  5. For applications indicated to be airtight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners as recommended by manufacturer.
  6. Where stud framing rests on concrete or masonry substrate, extend lower edge of barrier sheets at least 4 inches below bottom of framing and seal to substrate with sealant or approved mounting tape.
  7. Install water-resistive barrier over jamb flashings.
  8. Install head flashings under water-resistive barrier.
  9. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.
- E. 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. Lap sheets shingle-fashion to shed water and seal laps airtight.
  3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
  4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
  5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.
- F. Openings and Penetrations in Exterior Water-Resistive Barriers:
1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
  2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
  3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
  4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
  5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
  6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Owner92s Inspection and Testing: Cooperate with Owner92s testing agency.
1. Allow access to work areas and staging.
  2. Notify Owner92s testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
  3. Do not cover work of this section until testing and inspection is accepted.
- C. Do not cover installed water-resistive barriers until required inspections have been completed.
- D. Obtain approval of installation procedures from water-resistive barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

### 3.5 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.
- B. Do not leave paper- or felt-based barriers exposed to weather for longer than one week.

END OF SECTION

SECTION 07 41 13  
METAL ROOF PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Metal roof panel system of preformed steel panels.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Roof sheathing.
- B. Section 07 92 00 - Joint Sealant: Sealing joints between metal roof panel system and adjacent construction.

1.3 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); 2017a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- C. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
- D. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005 (Reapproved 2017).
- E. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; 2011 (Reapproved 2018).
- F. ASTM E1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems; 2016.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Summary of test results, indicating compliance with specified requirements.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
  - 4. Specimen warranty.
- C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
  - 1. Show work to be field-fabricated or field-assembled.
- D. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each roofing system specified, submit samples of minimum size 12 inches square, representing actual roofing metal, thickness, profile, color, and texture.
  - 1. Include typical panel joint in sample.

2. Include typical fastening detail.

- F. Test Reports: Indicate compliance of metal roofing system to specified requirements.
- G. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company trained and authorized by roofing system manufacturer with minimum five years documented experience.
- B. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise recommended by manufacturer.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 - Product Requirements, for transporting, handling, storing, and protecting products.
- B. Materials shall be delivered to the site in a dry and undamaged condition, and unloaded per the manufacturer's instructions. The installer shall inspect materials for damage and stains upon arrival to the site. Materials shall be stored out of contact with the ground in weathertight coverings to keep them dry per manufacturer's recommendations. Storage accommodations shall provide good air circulation and protection from surface staining.
- C. Stack materials to prevent twisting, bending, abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- D. Prevent contact with materials causing discoloration or staining.

#### 1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.
- C. Special Warranty: Provide 2-year warranty for weathertightness of roofing system, including agreement to repair or replace metal roof panels that fail to keep out water commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Metal Roof System Manufacturers are:
  - 1. Centria, Inc.; [www.centria.com](http://www.centria.com)
- B. Acceptable Eave Protection Manufacturers are:
  - 1. Owens Corning : Weatherlock Mat Waterproofing, [roofing.owenscorning.com](http://roofing.owenscorning.com).
  - 2. Grace : Ice & Water Shield, [www.grace.com](http://www.grace.com).

## 2.2 PERFORMANCE REQUIREMENTS

- A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:
  - 1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed  $L/180$  of span length(L) when tested in accordance with ASTM E1592.
  - 2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
  - 3. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.

## 2.3 METAL ROOF PANELS

- A. Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.
- B. Metal Panels: Factory-formed panels with factory-applied finish.
  - 1. Steel Panels:
    - a. Zinc-coated steel complying with ASTM A653/A653M; minimum G60 galvanizing.
    - b. Steel Thickness: Minimum 24 gauge, 0.024 inch.
  - 2. Profile: Lapped seam, with integral sealant bead and exposed fastener system.
  - 3. Texture: Smooth.
  - 4. Width: Maximum panel coverage of 24 inches.

## 2.4 ATTACHMENT SYSTEM

- A. Exposed System: Provide manufacturer's recommended stainless steel fasteners engineered to meet performance requirements and equipped with appropriate sealant separators to provide weathertight connections that will accommodate anticipated thermal movement.

## 2.5 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 to match sample.

## 2.6 ACCESSORIES

- A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
- B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.
- C. Sealants:
  - 1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
  - 2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
- D. Underlayment for Wood Substrate: ASTM D226/D226M roofing felt, perforated type; covered by water-resistant rosin-sized building paper.

## PART 3 EXECUTION

### 3.1 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.

### 3.2 INSTALLATION

- A. Overall: Install roofing system in accordance with 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 exposed fasteners prefinished to match panels.
  - 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, gutters, downspouts, trim, moldings, closure strips, preformed crickets, 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.

### 3.3 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.

### 3.4 PROTECTION

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

END OF SECTION



SECTION 07 62 00  
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, and other items indicated in Schedule.

1.2 REFERENCE STANDARDS

- A. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2017.
- B. CDA A4050 - Copper in Architecture - Handbook; current edition.
- C. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.
- B. Perform work in accordance with ANSI/SPRI/FM 4435/ES-1 requirements for pull-off resistance to design wind pressure as defined by applicable local building code.

1.6 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

2.1 SHEET MATERIALS

2.2 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.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

### 3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install scuppers to lines and levels indicated on Drawings. Seal top of reglets with sealant
- C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

### 3.3 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.
- D. Seal metal joints watertight.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

SECTION 07 71 23  
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-finished aluminum gutters and downspouts.
- B. Precast concrete splash pads.
- C. Sheet metal splash pans.

1.2 RELATED REQUIREMENTS

- A. Section 07 62 00 - Sheet Metal Flashing and Trim.

1.3 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); 2017a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- C. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.
- B. Comply with applicable code for size and method of rain water discharge.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

1.6 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.

1.7 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for gutter and downspout finishes.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Gutters and Downspouts:
  - 1. Metal Era Roof Edge Systems
  - 2. SAF Perimeter Systems, a division of Southern Aluminum Finishing Company, Inc:  
[www.saf.com/persys/#sle](http://www.saf.com/persys/#sle).

### 2.2 MATERIALS

- A. Pre-Finished Aluminum Sheet: ASTM B209M; 0.032 inch thick.
- B. Primer: Zinc molybdate type.

### 2.3 COMPONENTS

- A. Anchors and Supports: Profiled to suit gutters and downspouts.
- B. Fasteners: Galvanized steel, with soft neoprene washers.

### 2.4 ACCESSORIES

- A. Splash Pads: Precast concrete type, profiles size(s) as indicated; minimum 3,000 psi compressive strength at 28 days, with minimum 5 percent air entrainment.

## PART 3 EXECUTION

### 3.1 EXAMINATION

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

### 3.2 PREPARATION

- A. Paint concealed sheet metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

### 3.3 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.
- C. Slope gutters 1/8 inch per foot .
- D. Connect downspouts to downspout boots at 4 inches above grade. Seal connection watertight.
- E. Set splash pans under downspouts. Secure in place

END OF SECTION





SECTION 07 92 00  
JOINT SEALANT

PART 1 GENERAL

1.1 SECTION INCLUDES

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

1.3 REFERENCE STANDARDS

- A. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2018.
- B. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
  - 5. Substrates for which use of primer is required.
  - 6. 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.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- G. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

- H. Field Quality Control Log: Submit filled-out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.
- I. Manufacturer's qualification statement.
- J. Installer's qualification statement.
- K. Executed warranty.

## 1.5 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.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- D. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
  - 1. Adhesion Testing: In accordance with ASTM C794.
  - 2. Compatibility Testing: In accordance with ASTM C1087.
  - 3. Allow sufficient time for testing to avoid delaying the work.
  - 4. Deliver sufficient samples to manufacturer for testing.
  - 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
- E. Field Quality Control Plan:
  - 1. Visual inspection of entire length of sealant joints.
  - 2. Field testing agency's qualifications.
  - 3. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

## 1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

## PART 2 PRODUCTS

### 2.1 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 61 16.

END OF SECTION



SECTION 08 11 16  
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flush aluminum doors with fiberglass reinforced plastic (FRP) face sheets.
- B. Aluminum frames.
- C. Aluminum door louvers.

1.2 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealant: Sealing joints between door frames and adjacent construction.
- B. Section 08 71 00 - Door Hardware: Hardware for aluminum doors.

1.3 REFERENCE STANDARDS

- A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- B. AAMA 701/702 - Combined Voluntary Specifications for Pile Weatherstrip and Replaceable Fenestration Weatherseals; 2011.
- C. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- D. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- I. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2011.
- J. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010 (Reapproved 2018).
- K. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2018).
- L. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2014.

- M. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2017.
- N. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of Barcol Impressor; 2013a.
- O. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.
- P. IBC 2603.4.1.7 - Standard for Plastic Foam Insulation in Non-Rated Swinging Doors.
- Q. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- R. ITS (DIR) - Directory of Listed Products; current edition.
- S. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.
- T. UL (DIR) - Online Certifications Directory; Current Edition.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's descriptive literature for each type of door and frame; include information on fabrication methods, finishing, hardware preparation, installation, and maintenance instructions.
- C. Shop Drawings: Include elevations of each opening type, details at each wall type, and schedule of openings.
  - 1. Verify dimensions by field measurements before fabrication and indicate on shop drawings.
- D. Selection Samples: Complete set of color and finish options, using actual materials, for Architect's selection.
- E. Test Report: Certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than ten years of documented experience.
- B. The manufacturer or his representative shall be available for consultation to all parties engaged in the project including instruction to installation personnel.
- C. Unless otherwise indicated, obtain doors and frames from a single company specializing in the type of construction required so that there will be undivided responsibility for the specified performance of all component parts including glazing for doors and factory installation of door hardware.
- D. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

## 1.6 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.

## 1.7 FIELD CONDITIONS

- A. Do not begin installation of interior aluminum components until space has been enclosed and ambient thermal conditions are being maintained at levels consistent with final project requirements.

## 1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Provide written warranty signed by manufacturer, installer and contractor, agreeing to replace, at no cost to the Owner, any doors, frames or factory hardware installation against failure in materials or workmanship within the warranty period. Failure of materials or workmanship includes: excessive deflection, faulty operation of entrances, deterioration of finish or construction in excess of normal weathering and defects in hardware installation. The minimum time period of warranty is ten years from Date of Substantial Completion.

# PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Flush Aluminum Doors with Fiberglass Reinforced Plastic (FRP) Face Sheets:
  - 1. Special-Lite, Inc; SL-20 Sandstone: [www.special-lite.com/#sle](http://www.special-lite.com/#sle).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Aluminum Frames:
  - 1. Special-Lite, Inc; SL-450TB: [www.special-lite.com](http://www.special-lite.com).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.2 DOORS AND FRAMES

- A. Accessibility: Comply with ICC A117.1 and ADA Standards.
- B. Flush Aluminum Doors with Fiberglass Reinforced Plastic (FRP) Face Sheets: Aluminum internal framing; no steel components.
  - 1. Thickness: 1-3/4 inches.
  - 2. Aluminum Finish: Superior performing organic coating.
  - 3. Facing: Seamless, ultraviolet stabilized laminated FRP sheet.
    - a. Sheet Thickness: 0.12 inch, minimum.
    - b. Texture - FRP: Sandstone.
    - c. Surface Burning Characteristics:

- 1) Exterior Facing: Flame spread index (FSI) of 76 to 200, Class C, and smoke developed index (SDI) of 450 or less; when tested in accordance with ASTM E84.
- 2) Interior Facing: Flame spread index (FSI) of 0 to 25, Class A, and smoke developed index (SDI) of 450 or less; when tested in accordance with ASTM E84.
- d. Color: As selected by Architect from manufacturer's standard line.
4. Weatherstripping: Replaceable pile type; at jambs and head of exterior doors.
- C. Aluminum Frames for Non-rated Doors, Sidelights, or Transoms: Extruded aluminum, thermally broken hollow sections; no steel components; open back framing shall not be accepted.
  1. Frame Depth: 4-1/2 inches.
  2. Frames for Fire-Rated Doors Specified Elsewhere: Tested in accordance with NFPA 252, listed and labeled by UL (DIR), ITS (DIR), or testing agency acceptable to authorities having jurisdiction.
  3. Finish: Same as doors.
  4. Weatherstripping: Replaceable pile type; at jambs and head.
- D. Dimensions and Shapes: As indicated on drawings; dimensions indicated are nominal.
  1. Provide louvers as indicated on drawings.
  2. 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.

## 2.3 COMPONENTS

- A. Flush Door Panels: Without visible seams on face sheet.
  1. Framing and Hardware Backup: Extruded aluminum tubing, 1/8 inch minimum thickness.
    - a. Minimum 2-5/16 inch deep one-piece with integral reglets to accept face sheet on interior and exterior of door for flush appearance.
      - 1) Screw applied removable rail caps or other face sheet capture methods are not acceptable.
    - b. Provide 3/16" angle blocks with hex type aircraft nuts for joinery without welds, glues or other methods for securing internal door extrusions.
    - c. Construct with mitered corners and provide joinery with 3/8" dia. full-width steel tie rods through extruded splines top and bottom as standard.
    - d. Hardware Preparations: Factory reinforce, machine, and prepare for all specified hardware; obtain manufacturer's templates for hardware preparations. Factory install hardware.
  2. Exterior Doors Thermal Transmittance: U-value of 0.50, nominal, when tested in accordance with ASTM C1363.
  3. Core: Poured-in-place polyurethane foam insulating material of not less than 5 lb/cu ft density.
    - a. Foam Plastic Insulated Doors: IBC 2603.4.
      - 1) Foam plastic shall be separated from the interior of a building by an approved thermal barrier.
      - 2) Approved thermal barrier must meet the acceptance criteria of the Temperature Transmission Fire Test and Integrity Fire Test as stated in NFPA 275.
      - 3) IBC 2603.4.1.7 foam plastic insulation, having a flame spread index less than 75 and a smoke developed index of not more than 450 shall be permitted as a door core when the face is metal minimum 0.032" aluminum or 0.016" steel.
      - 4) Standard door assembly shall be tested to show it meets these requirements without the use of thermal barrier. If no independent testing conducted all doors with foam plastic core must have a thermal barrier.

4. Laminating Adhesive: Manufacturer's standard low-VOC materials.
- B. Frames: Extruded aluminum shapes, not less than 0.125 inch thick, reinforced at hinge and strike locations.
  1. Corner Brackets: Extruded aluminum, fastened with stainless steel screws.
  2. Applied Door Stops: Extruded aluminum, not less than 0.125 inch thick, 0.625 high removable screw-in type with exposed fasteners.
    - a. Counterpunch fastener holes in door stop to preserve full metal thickness under fastener head.
    - b. At closer arm location, reinforce with solid bar stock for secure hardware attachment.
  3. Caulk joints before assembling frame members. Secure joints with fasteners and provide a hairline butt joint appearance. Prefit doors to frame assembly at factory prior to shipment. Field fabrication of framing using "stick" materials is not acceptable.
  4. Factory preassemble sidelights to greatest extent possible and mark frame assemblies according to location.
- C. Manufacture doors with cutouts for louvers as scheduled. Factory finish and install all glazing prior to shipment.
- D. Louvers: Blades and frame of extruded aluminum, minimum 0.06 inch thick; size as indicated.
- E. Provide manufacturers standard concealed adjustable door bottom with dual brushes for up to 5/8-inch adjustment.
  1. Special-Lite SL-301 or equal.
- F. Additional Door Hardware: See Section 08 71 00.
  1. All hardware with the exception of door closer, threshold and weatherstripping to be shipped to door manufacturer. Door manufacturer shall install hardware on doors and warranty attachment for ten years. Complete fabrication, assembly, finishing and other work before shipment to project site. Disassemble components only as necessary for shipment and installation.
- G. Replaceable Weatherstripping: AAMA 701/702 wool pile.

## 2.4 PERFORMANCE REQUIREMENTS

- A. Provide door assemblies that have been designed and fabricated in compliance with specified performance requirements.
- B. Fiberglass Reinforced Plastic (FRP) Face Sheet Properties; Class C:
  1. Izod Impact Resistance: ASTM D256, 7 ft lbf/inch of width, minimum, with notched izod.
  2. Tensile Strength at Break: ASTM D638, 18,000 psi, minimum.
  3. Water Absorption: ASTM D570, 0.16 percent, maximum, after 24 hours at 74 degrees F.
  4. Flexural Strength: ASTM D790, 27,000 psi, minimum.
  5. Barcol Hardness: ASTM D2583, minimum of 40 units.
- C. Fiberglass Reinforced Plastic (FRP) Face Sheet Properties; Class A:
  1. Izod Impact Resistance: ASTM D256, 4.0 ft lbf/inch of width, minimum, with notched izod.
  2. Tensile Strength at Break: ASTM D638, 7,000 psi, minimum.
  3. Water Absorption: ASTM D570, 0.16 percent, maximum, after 24 hours at 74 degrees F.
  4. Flexural Strength: ASTM D790, 14,000 psi, minimum.
  5. Barcol Hardness: ASTM D2583, minimum of 45 units.

## 2.5 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.

## 2.6 FINISHES

- A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
- B. Color: As selected by Architect from manufacturer's standard line.
- C. Touch-Up Materials: As recommended by coating manufacturer for field application.

## 2.7 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

## 3.1 EXAMINATION

- A. Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.
- B. Verify that frames installed by other trades for installation of doors of this section are in strict accordance with recommendations and approved shop drawings and within tolerances specified in manufacturer's instructions.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

## 3.2 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.

## 3.3 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and approved shop drawings.
  - 1. Provide thermal isolation where components penetrate or disrupt building insulation. Coordinate attachment and seal of perimeter air and vapor retarder materials. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

- B. 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.
  - 1. Install with anchors appropriate for wall conditions to anchor framing to wall materials.
  - 2. Secure head and sill members of transom, sidelights and similar conditions.
  - 3. Maintain continuity of line and accurate relation of planes and angles. Secure attachments and support at mechanical joints with hairline fit at contacting members.
- C. Set thresholds in bed of mastic and backseal.
- 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.

### 3.4 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.

### 3.5 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 08 51 13  
ALUMINUM WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Extruded aluminum windows with fixed sash, operating sash, and infill panels.
- B. Factory glazing.
- C. Operating hardware.
- D. Insect screens.

1.2 RELATED REQUIREMENTS

- A. Section 05 50 00 - Metal Fabrications: Steel lintels.
- B. Section 06 10 00 - Rough Carpentry: Rough opening framing.
- C. Section 07 25 00 - Weather Barriers: Sealing frame to water-resistive barrier installed on adjacent construction.
- D. Section 08 80 00 - Glazing.

1.3 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2017.
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
- G. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2017.
- H. NFRC 100 - Procedures for Determining Fenestration Product U-Factors and Solar Heat Gain Coefficients at Normal Incidence.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Include component dimensions, information on glass and glazing, internal drainage details, and descriptions of hardware and accessories.

- C. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, method for achieving air and vapor barrier seal to adjacent construction, anchorage locations, and installation requirements.
- D. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
  - 1. Evidence of AAMA Certification.
  - 2. Evidence of WDMA Certification.
  - 3. Evidence of CSA Certification.
  - 4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
- E. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.
- F. Submit NFRC 100- CMA Bid Report for the project showing compliance with the project thermal requirements at time of initial submission. Bid report shall be based on NFRC test sizes utilizing project specific glazing.

#### 1.5 QUALITY ASSURANCE

- A. Aluminum Windows: Fabricate window assemblies in accordance with AAMA 101 for types of windows required.
- B. Insulated Glass: Fabricate insulated glass units in accordance with GANA (formerly FGMA) Glazing Manual.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of AAMA CW-10.
- B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

#### 1.7 FIELD CONDITIONS

- A. Section 01 60 00 - Product Requirements
- B. Do not install sealants when ambient temperature is less than 40 degrees F.
- C. Maintain this minimum temperature during and 24 hours after installation of sealants.

#### 1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

### 2.2 ALUMINUM WINDOWS

- A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices.
  - 1. Frame Depth: 3-1/2 inch.
  - 2. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
  - 3. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
  - 4. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
  - 5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
  - 6. Thermal Movement: Design to accommodate thermal movement caused by 180 degrees F surface temperature without buckling stress on glass, joint seal failure, damaging loads on structural elements, damaging loads on fasteners, reduction in performance or other detrimental effects.
  - 7. Thermal Performance: Installed system shall conform to the following minimum standards:
    - a. Fabricator will be required to thermally model each head, sill and jamb, including adjacent construction, using thermal computer modeling software by an NFRC certified simulator to conform to the following:
    - b. Inside air temperature of 72 degrees F at 30 percent RH and an outside air temperature of -10 degrees F with a 15 mph wind speed.
    - c. An NFRC Component Modeling Approach (CMA) generated label certificate shall be provided by the manufacturer. The label certificate shall be project specific and will contain the thermal performance ratings of the manufacturer's framing combined with the specified glass, and the glass spacer used in the fabrication of the glass, at NFRC standard test size as defined in table 4-3 in NFRC 100-2010.
- B. Fixed, Non-Operable Type:
  - 1. Construction: Thermally broken.
  - 2. Exterior Finish: Class I natural anodized.
  - 3. Interior Finish: Class I natural anodized.

### 2.3 PERFORMANCE REQUIREMENTS

- A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
  - 1. Performance Class (PC): R.

### 2.4 COMPONENTS

- A. Subframe (Receptor System): .070 inch minimum thickness extruded aluminum, 6065 T6; one piece full width or height of opening.
- B. Operable Sash Weatherstripping: Resilient plastic; permanently resilient, profiled to achieve effective weather seal.

- C. Fasteners: Stainless steel.
- D. Glazing Materials: See Section 08 80 00.
- E. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

## 2.5 MATERIALS

## 2.6 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41, clear anodic coating not less than 0.7 mil thick.
- B. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
- C. Operator and Exposed Hardware: Enameled to color as selected from manufacturer's standard line.
- D. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that wall openings and adjoining water-resistive barrier materials are ready to receive aluminum windows; see Section 07 25 00.

### 3.2 PRIME WINDOW INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Install sill and sill end angles.
- E. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- F. Install glass and infill panels in accordance with requirements; see Section 08 80 00.

### 3.3 TOLERANCES

- A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

### 3.4 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

### 3.5 CLEANING

- A. Remove protective material from factory finished aluminum surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

END OF SECTION



SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
  - 1. Swinging doors.
  - 2. Sliding doors.
  - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
  - 1. Mechanical door hardware.
  - 2. Electromechanical door hardware.
  - 3. Cylinders specified for doors in other sections.
- C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
  - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
  - 2. ICC/IBC - International Building Code.
  - 3. NFPA 70 - National Electrical Code.
  - 4. NFPA 80 - Fire Doors and Windows.
  - 5. NFPA 101 - Life Safety Code.
  - 6. NFPA 105 - Installation of Smoke Door Assemblies.
  - 7. State Building Codes, Local Amendments.
- D. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
  - 1. ANSI/BHMA Certified Product Standards - A156 Series.
  - 2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
  - 3. UL 305 - Panic Hardware.

### 1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
  - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
  - 3. Content: Include the following information:
    - a. Type, style, function, size, label, hand, and finish of each door hardware item.
    - b. Manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    - e. Explanation of abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for door hardware.
    - g. Door and frame sizes and materials.
    - h. Warranty information for each product.
  - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- D. Informational Submittals:
  - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.



- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
  - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
  - 1. Function of building, purpose of each area and degree of security required.
  - 2. Plans for existing and future key system expansion.
  - 3. Requirements for key control storage and software.
  - 4. Installation of permanent keys, cylinder cores and software.
  - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s),

Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
  2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
  3. Review sequence of operation narratives for each unique access controlled opening.
  4. Review and finalize construction schedule and verify availability of materials.
  5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

#### 1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

#### 1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions

of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
  - 1. Structural failures including excessive deflection, cracking, or breakage.
  - 2. Faulty operation of the hardware.
  - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
  - 1. Ten years for heavy duty mortise locks.
  - 2. Five years for exit hardware.
  - 3. Twenty five years for manual overhead door closer bodies.
  - 4. Five years for motorized electric latch retraction exit devices.
  - 5. Two years for electromechanical door hardware, unless noted otherwise.

## 1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

## PART 2 - PRODUCTS

### 2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
  - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.

1. Permanent cylinders, cores, and keys to be installed by Owner.
- D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

## 2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
  1. Quantity: Provide the following hinge quantity:
    - a. Two Hinges: For doors with heights up to 60 inches.
    - b. Three Hinges: For doors with heights 61 to 90 inches.
    - c. Four Hinges: For doors with heights 91 to 120 inches.
    - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
  2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
    - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
    - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
  3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
    - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
  4. Hinge Options: Comply with the following:
    - a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
  5. Manufacturers:
    - a. Hager Companies (HA) - BB Series, 5 knuckle.
    - b. McKinney (MK) - TA/T4A Series, 5 knuckle.
    - c. dormakaba Best (ST) - F/FBB Series, 5 knuckle.

## 2.3 POWER TRANSFER DEVICES

- A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

- a. Securitron (SU) - EL-CEPT Series.
- b. Dormakaba Best (ST) EPT-12C Series.
- c. Von Duprin (VD) - EPT-10 Series.

## 2.4 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
1. Threaded mortise cylinders with rings and cams to suit hardware application.
  2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
  3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
  4. Tubular deadlocks and other auxiliary locks.
  5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
  6. Keyway: Manufacturer's Standard.
- D. Removable Cores: Provide removable cores as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
  2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
  3. Key locks to key system as directed by the Owner.
- F. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Two (2)

2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

G. Construction Keying: Provide temporary keyed construction cores.

H. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

## 2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant, stamped 12 gauge minimum formed steel case and be field-reversible for handing without disassembly of the lock body. Lockset trim (including knobs, levers, escutcheons, roses) to be the product of a single manufacturer. Furnish with standard 2 3/4" backset, 3/4" throw anti-friction stainless steel latchbolt, and a full 1" throw stainless steel bolt for deadbolt functions.

1. Acceptable Manufacturers:

- a. Sargent Manufacturing (SA) – 8200 Series.
- b. Corbin Russwin (RU) – ML2000 Series
- c. Schlage (SC) – L9000 Series

## 2.6 ELECTROMECHANICAL LOCKING DEVICES

A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical cylindrical locksets, electrified locksets to be of type and design as specified below.

1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control and request-to-exit signaling. Unless otherwise indicated, provide electrified locksets standard as fail secure.
2. Manufacturers:
  - a. Sargent Manufacturing (SA) - 8271 Series.
  - b. Corbin Russwin Hardware (RU) – ML20906 Series.
  - c. Schlage (SC) – L9000 Series.

## 2.7 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
  3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
  4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
1. Strikes for Mortise Locks and Latches: BHMA A156.13.
  2. Strikes for Bored Locks and Latches: BHMA A156.2.
  3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
  4. Dustproof Strikes: BHMA A156.16.

## 2.8 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
  2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
  3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
  4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
  5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
  6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring

power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - DC6000 Series.
- b. Norton Rixson (NO) - 7500 Series.
- c. Sargent Manufacturing (SA) - 351 Series.
- d. Yale Commercial(YA) - 4400 Series.

2.9 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:
  - a. Stainless Steel: 300 grade, .050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
  - a. Hiawatha, Inc. (HI).
  - b. Rockwood (RO).
  - c. Trimco (TC).

2.10 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.



- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

- a. Hiawatha, Inc. (HI).
- b. Rockwood (RO).
- c. Trimco (TC).

2.11 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products (NG).
2. Pemko (PE).
3. Reese Enterprises, Inc. (RE).

## 2.12 ELECTRONIC ACCESSORIES

- A. Linear Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw plus 50% for the specified electrified hardware and access control equipment.

1. Manufacturers:

- a. Securitron (SU) - BPS Series.
- b. Sargent Manufacturing (SA) - 3500 Series.
- c. Von Duprin (VD) - PS.

## 2.13 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

## 2.14 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

### 3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

### 3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
  - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
  - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  - 2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
  - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
  - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

### 3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

### 3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

### 3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

### 3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

### 3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
  1. Quantities listed are for each pair of doors, or for each single door.
  2. The supplier is responsible for handling and sizing all products.
  3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
- B. Manufacturer's Abbreviations:

1. MK - McKinney
2. SA - Sargent
3. SU - Securitron
4. RO - Rockwood
5. PE - Pemko

**Hardware Sets**

**Set: 01**

Doors: 100-1, 101-1

3 Hinge, Full Mortise	T4A3386 4-1/2" x 4-1/2" x NRP	US32D	MK
1 Mortise Deadlock	4877	US32D	SA
1 Mortise Cylinder	Keyed to Owners System	626	
1 Door Closer	351-CPS	EN	SA
1 Push Plate	70C x CFC	US32D	RO
1 Pull Plate	111 x 70C	US32D	RO
1 Kick Plate	K1050 10" X 2" LDW CSK BEV	US32D	RO
2 Jamb Seals	290APK	A	PE
1 Sweep	315CN	C	PE
1 Threshold	172A	A	PE

END OF SECTION 087100



SECTION 08 71 00  
DOOR HARDWARE

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealant: Sealants for setting exterior door thresholds.
- B. Section 08 11 16 - Aluminum Doors and Frames.

1.2 REFERENCE STANDARDS

- A. ITS (DIR) - Directory of Listed Products; current edition.
- B. UL (DIR) - Online Certifications Directory; Current Edition.

1.3 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.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule
- C. 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.
- D. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
  - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
  - 2. Provide complete description for each door listed.
  - 3. Mounting locations for door hardware.
  - 4. Door and frame sizes and materials.
  - 5. Warranty information for each product
- E. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.
- F. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

## 1.5 QUALITY ASSURANCE

- A. Furnish hardware marked and listed in BHMA Directory of Certified Products.
- B. Manufacturer: Obtain each type of hardware (ie., lock sets) from a single manufacturer, although several may be indicated as offering products complying with requirements.
  - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
  - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- C. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- D. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of door and door frame labels.
  - 1. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors' UL or FM labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL or FM label on exit devices indicating "Fire Exit Hardware."

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.
  - 1. Include necessary fasteners, installation instructions and templates with each item or package.
- B. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- C. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.
- D. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference."

## 1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
  - 1. Structural failures including excessive deflection, cracking, or breakage.
  - 2. Faulty operation of the hardware.
  - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 4. Electrical component defects and failures within the systems operation
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.



- D. Special Warranty Periods, from Date of Substantial Completion: against defects in material and workmanship for period indicated, from Date of Substantial Completion.
  - 1. Mortise Locks and Latches: Ten years, minimum.
  - 2. Heavy duty Cylindrical (bored) locks and latches: Seven years, minimum.
  - 3. Motorized electric latch retraction exit devices: Five years, minimum.
  - 4. Electromechanical Door Hardware: Two years, minimum.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS - BASIS OF DESIGN

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Finish Hardware Data Sheet and Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of manufacturers on Basis of Design standard:
  - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

### 2.2 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. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.

### 2.3 FINISHES

- A. Finishes: Identified in Section 08 06 71 - Door Hardware Schedule.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.

- D. 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.

END OF SECTION

SECTION 08 80 00  
GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Plastic sheet glazing units.
- B. Glazing compounds.

1.2 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers.
- B. Section 07 92 00 - Joint Sealant: Sealants for other than glazing purposes.
- C. Section 08 51 13 - Aluminum Windows: Glazing provided by window manufacturer.

1.3 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).
- D. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- E. ASTM F1233 - Standard Test Method for Security Glazing Materials And Systems; 2008 (Reapproved 2019).
- F. GANA (GM) - GANA Glazing Manual; 2008.
- G. GANA (SM) - GANA Sealant Manual; 2008.
- H. GANA (LGRM) - Laminated Glazing Reference Manual; 2009.
- I. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).
- J. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2017.
- K. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014, with Errata (2017).
- L. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2017.
- M. UL 972 - Standard for Burglary Resisting Glazing Material; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Samples: Submit two samples 10 by 10 inch in size of glass units, showing coloration and design.
- E. Certificate: Certify that sealed insulated glazing units meet or exceed specified requirements.
  - 1. Submit NFRC 100- CMA Bid Report for the project showing compliance with the project thermal requirements at time of initial submission. Bid report shall be based on NFRC test sizes utilizing project specific glazing.
- F. Installer's Certificate: Certify that glass furnished without identification label is installed in accordance with Construction documents and applicable code.
- G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

## 1.6 QUALITY ASSURANCE

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

## 1.7 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

## 1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.
- C. Laminated Glass: Provide a ten (10) year manufacturer warranty to include coverage for delamination, including replacement of failed units.
- D. Polycarbonate Sheet Glazing: Provide a five (5) year manufacturer warranty to include coverage for breakage, coating failure, abrasion resistance, including providing products to replace failed units.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Plastic Sheet Glazing Manufacturers:
  - 1. Altuglas International: [www.altuglasint.com/#sle](http://www.altuglasint.com/#sle).
  - 2. American Acrylic Corp: [www.americanacrylic.com/#sle](http://www.americanacrylic.com/#sle).
  - 3. Covestro LLC; Makrolon UV: [www.sheets.covestro.com/#sle](http://www.sheets.covestro.com/#sle).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.2 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
  - 1. Design Pressure: In accordance with ASCE 7.
    - a. Positive Design Pressure: 20 psf.
    - b. Negative Design Pressure: 20 psf.
  - 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
  - 3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7.
  - 4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
  - 5. Glass thicknesses listed are minimum.
- B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
  - 1. In conjunction with weather barrier related materials described in other sections, as follows:
    - a. Water-Resistive Barriers: See Section 07 25 00.
  - 2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
  - 3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.
- C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
  - 1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
  - 2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
  - 3. Solar Optical Properties: Comply with NFRC 300 test method.

### 2.3 PLASTIC SHEET GLAZING UNITS

- A. Type P-1 - Acrylic Sheet:
  - 1. Application: Locations as indicated on drawings.
  - 2. Type: Monolithic (single layer solid) sheet.
  - 3. Ultraviolet stabilized.
  - 4. Tint: Clear.
  - 5. Thickness: 1/4 inch.

6. Glazing Method: As required for application indicated on drawings.
7. Manufacturers:
  - a. Altuglas International: [www.altuglasint.com/#sle](http://www.altuglasint.com/#sle).
  - b. American Acrylic Corp: [www.americanacrylic.com/#sle](http://www.americanacrylic.com/#sle).
  - c. Evonik Industries: [www.acrylite.net/#sle](http://www.acrylite.net/#sle).

## 2.4 ACCESSORIES

- A. Setting Blocks: Neoprene, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. 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.
- D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color to match frame.

## PART 3 EXECUTION

### 3.1 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 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.
- C. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

### 3.2 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.

### 3.3 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. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- C. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- D. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

- E. 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.

### 3.4 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

### 3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- C. Monitor and report installation procedures and unacceptable conditions.

### 3.6 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.

### 3.7 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION





SECTION 09 05 61  
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
  - 1. Sealed concrete.
- B. Preparation of existing concrete floor slabs for installation of floor coverings.
- C. Testing of concrete floor slabs for moisture and alkalinity (pH).
- D. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
  - 1. Contractor shall include, in base bid, specified remediation work of all interior concrete floor slabs receiving floor coverings outlined below. If such remediation is indicated as not necessary following testing agency's report, a contract modification will be issued.
- E. Patching compound.
- F. Remedial floor coatings.

1.2 RELATED REQUIREMENTS

- A. Section 01 22 00 - Unit Prices: Bid pricing for remediation treatments not required.
- B. Section 01 40 00 - Quality Requirements: Additional requirements relating to testing agencies and testing.
- C. Section 01 74 19 - Construction Waste Management and Disposal: Handling of existing floor coverings removed.
- D. Section 03 30 00 - Cast-in-Place Concrete: Concrete admixture for slabs to receive adhered flooring, to prevent moisture content-related flooring failures.
- E. Section 03 30 00 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.
- F. Section 03 54 00 - Cast Underlayment: Self-leveling underlayment applied as remediation treatment.

1.3 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 1999 (Reapproved 2014).
- C. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- D. ASTM F3010 - Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings; 2018.
- E. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019.

- F. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2016a.
- G. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2018.
- H. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
  - 1. Manufacturer's qualification statement.
  - 2. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
  - 3. Manufacturer's installation instructions.
  - 4. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.
- C. Testing Agency's Report:
  - 1. Description of areas tested; include marked up floor finish plans and photographs if helpful.
  - 2. Summary of conditions encountered.
  - 3. Moisture and alkalinity (pH) test reports.
  - 4. Copies of specified test methods.
  - 5. Recommendations for remediation of unsatisfactory surfaces.
  - 6. Product data for recommended remedial coating.
  - 7. Submit report to Architect.
  - 8. Submit report not more than two business days after conclusion of testing.
- D. Adhesive Bond and Compatibility Test Report.
- E. Floor Moisture Testing Technician Certificate: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician- Grade I certificate.
- F. Copy of RFCI (RWP).

#### 1.6 PERFORMANCE REQUIREMENTS

- A. Manufacturer must provide Independent lab test reports documenting performance per the following:
  - 1. ASTM E 96, Water Vapor Transmission (wet method) Performance shall be documented by an independent testing laboratory at a minimum of 97% water vapor transmission reduction compared to untreated concrete.
  - 2. ASTM E96- Perm Rating - Standard Test Method for Water Vapor Transmission of Materials – Perm Rate results must not exceed 0.1 Perms.
  - 3. ASTM D 1308; Insensitivity to alkaline environment up to, and including, pH 14. A 14 day test is required with no degradation of sample reported.
  - 4. Certify acceptance and exposure to continuous topical water exposure after final cure.

## 1.7 QUALITY ASSURANCE

- A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
- B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
  - 1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
  - 2. Acceptable Testing Agencies:
    - a. Independent Floor Testing & Inspection, Inc. (IFTI): [www.ifti.com/#sle](http://www.ifti.com/#sle).
    - b. Substitutions: See Section 01 60 00.
- C. Contractor's Responsibility Relating to Independent Agency Testing:
  - 1. Provide access for and cooperate with testing agency.
  - 2. Confirm date of start of testing at least 10 days prior to actual start.
  - 3. Allow at least 4 business days on site for testing agency activities.
  - 4. Achieve and maintain specified ambient conditions.
  - 5. Notify Architect when specified ambient conditions have been achieved and when testing will start.
- D. Floor Moisture Testing Technician Qualifications: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician Certification- Grade I.
- E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging; include installation instructions.
- C. Keep materials from freezing.

## 1.9 FIELD CONDITIONS

- A. Only conduct calcium chloride tests at the same temperature and humidity expected during normal use, maintained 48 hours prior to and during testing. If this is not possible, use the following guidelines:
- B. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.
- C. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any

recommendation from flooring manufacturer, provide a product with the following characteristics:

1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
  2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
  3. Products:
    - a. ARDEX Engineered Cements; ARDEX Feather Finish: [www.ardexamericas.com](http://www.ardexamericas.com)
    - b. H.B. Fuller Construction Products, Inc; TEC Feather Edge Skim Coat: [www.tecspecialty.com/#sle](http://www.tecspecialty.com/#sle).
    - c. CMP Specialty Products; Prepstar: [www.cmpsp.com](http://www.cmpsp.com).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.
- C. Remedial Floor Coating: Single-layer epoxy based coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. System shall comply with requirements of ASTM F3010.
  2. Thickness: As required for application and in accordance with manufacturer's installation instructions.
  3. Water Vapor reduction system shall be a single coat, stand alone system with no requirements for additional components such as sand broadcast for adhesion of flooring systems.
  4. System must reduce Calcium Chloride readings of up to 25lbs/1000 ft<sup>2</sup>/24 hrs by 97% in one coat. System must be able to perform as required with RH Probe readings of 100%.
  5. Products:
    - a. ARDEX Engineered Cements; ARDEX MC RAPID: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
    - b. CMP Specialty Products; Lockdown: [www.cmpsp.com](http://www.cmpsp.com).
    - c. H.B. Fuller Construction Products, Inc; TEC LiquiDam with TEC Level Set 200 SLU: [www.tecspecialty.com/#sle](http://www.tecspecialty.com/#sle).
    - d. Or as approved by manufacturer of flooring system.
    - e. Substitutions: See Section 01 60 00 - Product Requirements.

## PART 3 EXECUTION

### 3.1 CONCRETE SLAB PREPARATION

- A. Perform following operations in the order indicated:
1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
    - a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
    - b. Removal of existing floor covering.
  2. Preliminary cleaning.
  3. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
  4. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.

5. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
6. Specified remediation, if required.
7. Patching, smoothing, and leveling, as required.
8. Other preparation specified.
9. Adhesive bond and compatibility test.
10. Protection.

B. Remediations:

1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
2. Excessive Moisture Emission or Relative Humidity: Apply remedial floor coating over entire suspect floor area.
3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.2 REMOVAL OF EXISTING FLOOR COVERINGS

- A. Comply with local, State, and federal regulations and recommendations of RFCI (RWP), as applicable to floor covering being removed.
- B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.3 PRELIMINARY CLEANING

- A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
- B. Do not use solvents or other chemicals for cleaning.

3.4 MOISTURE VAPOR EMISSION TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F1869 and as follows.
- D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.
- F. Report: Report the information required by the test method.

3.5 INTERNAL RELATIVE HUMIDITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F2170 Procedure A and as follows.
- D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
- F. Report: Report the information required by the test method.

### 3.6 ALKALINITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
  - 1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
  - 2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
  - 3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.
- C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

### 3.7 PREPARATION

- A. See individual floor covering section(s) for additional requirements.
- B. Comply with requirements and recommendations of floor covering manufacturer.
- C. Comply with recommendations for preparation and application in accordance with ASTM F3010.
- D. Clean all surfaces to receive moisture vapor reduction system. Shot blast all floors to a Concrete Surface Profile (CSP) #3 or #4 and clean surfaces with an industrial vacuum cleaner and remove all residues from the substrate. Grinding is allowed only in areas not accessible by shot blasting. Remove ALL defective materials, and foreign matter such as dust, adhesives, leveling compounds, paint, dirt, floor hardeners, bond breakers, oil, grease, curing agents, form release agents, efflorescence, laitance, Shot blast bee bees, etc. Repair all cracks, expansion joints, control joints, and open surface honeycombs and fill in accordance with Manufacturer's recommendations. If concrete additives such as chlorides or any other soluble compounds that may contaminate surfaces have been used in the concrete mix do not use this product on that floor without written approval from manufacturer. Reinforcing fibers that are visible after shot blasting must be removed and vacuumed leaving no fibers left on the concrete surfaces. Provide an uncontaminated, sound surface. DO NOT ACID ETCH!

- E. Repair concrete prior to moisture vapor reduction system installation by using MVRS manufacturer's approved concrete repair materials. Comply with all requirements as listed in Manufacturer's technical data information. Consult with vapor reduction manufacturer.
- F. Ensure surfaces to be treated with moisture vapor reduction system have NOT previously been treated with other materials such as underlayments, screeds, penetrating sealants, silicates, etc. If this is the case, consult with the Manufacturer's Representative prior to any application of moisture vapor reduction system.
- G. Any testing for concrete deficiencies or contamination such as alkali silica reaction, untreated silicates, organic residue, etc. is recommended and is the responsibility of the Building owner.
- H. Shot blast a small test area and review surface profile with the finished flooring applicator.
- I. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- J. Do not fill expansion joints, isolation joints, or other moving joints.

### 3.8 ADHESIVE BOND AND COMPATIBILITY TESTING

- A. The Owner's Special Inspector shall verify proper adhesion of flooring adhesives, coatings, and leveling compounds to the final vapor reduction coating system for acceptability. Contact Manufacturer's Representatives for recommendations.
- B. Comply with requirements and recommendations of floor covering manufacturer.

### 3.9 APPLICATION OF REMEDIAL FLOOR COATING

- A. Comply with requirements and recommendations of coating manufacturer.
- B. Allow to cure a minimum of 12 hours before installing flooring system.

### 3.10 PROTECTION

- A. Cover prepared floors with building paper or other durable covering.
- B. Protect each coat during specified cure period from any kind of traffic, topical water and contaminants.

END OF SECTION





SECTION 09 65 00  
RESILIENT FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Resilient base.
- B. Installation accessories.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.
- C. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.
- D. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.3 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2017a.
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019.
- C. ASTM F970 - Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading; 2017.
- D. ASTM F1861 - Standard Specification for Resilient Wall Base; 2016.
- E. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2019.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Verification Samples: Submit two samples, 4" x 4" illustrating color and pattern for each resilient flooring product specified.
- D. Manufacturer's Qualification Statement.
- E. Installer's Qualification Statement.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

2. Extra Wall Base: 15 linear feet of each type and color.

## 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum five years documented experience.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 - Product Requirements for additional storage and handling requirements.
- B. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- C. Store all materials off of the floor in an acclimatized, weather-tight space.
- D. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- E. Protect roll materials from damage by storing on end.

## 1.7 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.

## 1.8 CLOSEOUT SUBMITTALS

- A. See Section 01 70 00 - Execution and Closeout Requirements for closeout procedures.
- B. Furnish 10 percent of installed vinyl tile flooring and base, 5 percent of installed linoleum flooring and 5 percent of rubber flooring of each type and color specified. Deliver all required overage and maintenance stock to owner's specified location prior to start of installation.
- C. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials and suggested schedule for cleaning, stripping and re-waxing.

# PART 2 PRODUCTS

## 2.1 RESILIENT BASE

- A. Resilient Base: ASTM F1861, Type TV, vinyl, thermoplastic; style as scheduled.
  1. Manufacturers:
    - a. Johnsonite, a Tarkett Company: [www.johnsonite.com/#sle](http://www.johnsonite.com/#sle).
    - b. Roppe Corporation: [www.roppe.com/#sle](http://www.roppe.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
  3. Height: 6 inch.
  4. Thickness: 0.125 inch.
  5. Finish: Matte.
  6. Length: Roll.
  7. Color: Provide Roppe 148 "Steel Gray".

8. Accessories: Premolded external corners and end stops.
9. Basis of Design: Roppe, 700 series resilient base, <https://roppe.com/>

## 2.2 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.
  1. VOC Content Limits: As specified in Section 01 61 16.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. 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.
- C. 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.

### 3.2 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface. Fill excessive low areas with self leveling flowable fill. Reduce ridges or bumps by grinding.
- C. Prohibit traffic until filler is fully cured.
- D. Clean substrate to remove adhesives, coatings or contaminants that will inhibit adhesion of the new floor system. Use chemical treatment or bead blast as dictated by the existing conditions and as recommended by the flooring manufacturer .
- E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

### 3.3 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.

### 3.4 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.
- D. Scribe and fit to door frames and other interruptions.
- E. Reveal Base: Miter all corners.

### 3.5 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final Cleaning.
- B. Remove excess adhesive from floor, base, and wall surfaces without damage.
- C. Clean, seal and maintain in accordance with manufacturer's instructions.

### 3.6 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Prohibit traffic on resilient flooring for 48 hours after installation.
- C. Upon completion of installation, protect resilient flooring in traffic areas with heavy duty kraft paper.

END OF SECTION

SECTION 09 91 23  
INTERIOR PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
  - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
  - 2. Mechanical and Electrical:
    - a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
    - b. In finished areas, paint shop-primed items.
    - c. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
    - d. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
- D. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
  - 5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
  - 6. Marble, granite, slate, and other natural stones.
  - 7. Floors, unless specifically indicated.
  - 8. Ceramic and other tiles.
  - 9. Brick, architectural concrete, cast stone, integrally colored plaster, and stucco.
  - 10. Glass.
  - 11. Acoustical materials, unless specifically indicated.
  - 12. Concealed pipes, ducts, and conduits.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 09 91 13 - Exterior Painting.

1.3 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

#### 1.4 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 D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- D. ASTM D4259 - Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application; 2018.
- E. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
- F. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.
- G. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- H. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- I. SSPC-SP 2 - Hand Tool Cleaning; 2018.
- J. SSPC-SP 3 - Power Tool Cleaning; 2018.
- K. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- L. SSPC-SP 13 - Surface Preparation of Concrete; 1997 (Reaffirmed 2003).

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
  - 2. MPI product number (e.g., MPI #47).
  - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
  - 4. Manufacturer's installation instructions.
  - 5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. 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.
  - 2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.
  - 3. Allow 30 days for approval process, after receipt of complete samples by Architect.
  - 4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.

- F. 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.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
  - 3. Label each container with color in addition to the manufacturer's label.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum 10 years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 10 years experience and approved by manufacturer.

#### 1.7 MOCK-UP

- A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-up.
- B. Provide panel, 10 feet long by 10 feet wide, illustrating paint color, texture, and finish.
- C. Provide door and frame assembly illustrating paint color, texture, and finish.
- D. Locate where directed by Architect.
- E. Mock-up may remain as part of the work.

#### 1.8 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.

#### 1.9 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 ft candles measured mid-height at substrate surface.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
  - 1. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
  - 2. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.2 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.
    - b. 6 CRR-NY, Chapter III, Subpart A.
    - c. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; [www.otcair.org](http://www.otcair.org); specifically:
      - 1) Opaque, Flat: 50 g/L, maximum.
      - 2) Opaque, Nonflat: 150 g/L, maximum.
      - 3) Opaque, High Gloss: 250 g/L, maximum.
    - d. Architectural coatings VOC limits of the State of New York.
  - 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: Provide Sherwin Williams SW 7570 "Egret White".
  - 1. Extend colors to surface edges; colors may change at any edge as directed by Architect.



2. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

## PART 3 EXECUTION

### 3.1 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. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. 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. Concrete Floors and Traffic Surfaces: 8 percent.

### 3.2 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 repair existing paints or finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete:
  1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
  2. Clean surfaces with pressurized water. Use pressure range of 1,500 to 4,000 psi at 6 to 12 inches. Allow to dry.
  3. Clean concrete according to ASTM D4258. Allow to dry.
  4. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- H. 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.

3. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.
- I. Concrete Floors and Traffic Surfaces: Remove contamination, using alkaline based cleaners where required, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- J. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- K. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- L. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

### 3.3 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- F. Sand wood and metal surfaces lightly between coats to achieve required finish.
- G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.
- B. Owner will provide field inspection.

### 3.5 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

### 3.6 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

### 3.7 SCHEDULE - PAINT SYSTEMS: ALL MATERIALS ARE BASED ON SHERWIN WILLIAMS UNLESS NOTED OTHERWISE.

- A. Concrete Block:
  1. One coat Preprite Block Filler (B25) DFT- 8.0. (MPI #4)
  2. Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
- B. Concrete:

1. One coat Preprite Masonry Primer (B28W300) @ 3.0 MDFT. (MPI #149)
  2. Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
  - C. Concrete Floors (Lt. - Med. Duty):
    1. Unpainted Floors:
      - a. One coat ArmorSeal 8100 Water Based Epoxy Floor Coating (B70 Series) reduced with one pint of water per gallon @ 2.0-4.0 MDFT.
      - b. Two coats ArmorSeal 8100 Water Based Epoxy Floor Coating (B70 Series) unreduced @ 2.0-4.0 MDFT per coat.
    2. Previously Painted Floors:
      - a. Spot Prime bare areas with one coat ArmorSeal 8100 Water Based Epoxy Floor Coating (B70 Series) unreduced @ 2.0-4.0 MDFT.
      - b. Two coats ArmorSeal 8100 Water Based Epoxy Floor Coating (B70 Series) unreduced @ 2.0-4.0 MDFT per coat.
  - D. Steel and Metal - Steel access doors and frames, hollow metal doors and frames, all new removable mullions, stair railings, hollow metal Windows frames, existing painted fire extinguisher cabinets:
    1. One coat Kem Bond HS Primer (B50 Series) @ 2.5-5.0 MDFT. (MPI #76)
    2. Two coats DTM Acrylic Semi-Gloss Coating (B66-200) @ 2.5-5.0 MDFT per coat.
  - E. Galvanized Metal: Exposed miscellaneous metal, exposed ducts, conduits, mechanical and electrical devices.
    1. One coat DTM Acrylic Primer/Finish (B66W1) @ 2.5-5.0 MDFT. (MPI #134)
    2. Two coats DTM Acrylic Semi-Gloss Coating (B66-200) @ 2.5-4.0 MDFT per coat. (MPI #153)
  - F. Steel - Exposed steel lintels:
    1. One coat Kem Bond HS Primer (B50 Series) DFT. (MPI #76)
    2. Two coats Steel-Master 9500 Silicone Alkyd (B56-300 Series).
    3. Application: Preparation and prime coat is to be applied including previously primed in factory by steel fabricator.
  - G. Gypsum Board: Finish surfaces exposed to view.
    1. Interior Ceilings and Bulkheads: GI-OP-3L, flat.
    2. Interior Walls: GI-OP-3A, semi-gloss.
    3. All interior drywall gypsum board wall surfaces for a painted finish. (Spot prime all areas containing joint compound with primer first)
      - a. Walls and ceilings: One coat Pro Mar 200 Zero VOC Primer (B28) DFT- 1.0. (MPI #50).
      - b. Walls: Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
      - c. Ceilings: Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
- 3.8 SCHEDULE - PAINT SYSTEMS: ALL MATERIALS ARE BASED ON PPG UNLESS NOTED OTHERWISE.
- A. Concrete Block:
    1. One coat Speedhide Masonry Hi Fill Latex Block Filler, 6-15XI. (MPI #4)
    2. Two coats Copper Armor Interior Latex, 29-1510, Semi-Gloss.
  - B. Concrete:
    1. One coat Perma-Crete Interior/Exterior Alkali Resistant Primer, 4-603XI Series. (MPI #3)
    2. Two coats Pure Performance Interior Latex, 9-510XI Series, Semi-Gloss. (MPI #147)
  - C. Concrete Floors (Lt. - Med. Duty):
    1. One coat Perma-Crete Plex-Seal WB Interior/Exterior Clear Sealer Stain, 4-6200XI. (MPI #99)

2. Two coats Perma-Crete Plex-Seal WB Interior/Exterior Clear Sealer Stain, 4-6200XI. (MPI #99)
- D. Steel and Metal - Steel access doors and frames, hollow metal doors and frames, all new removable mullions, stair railings, hollow metal Windows frames, existing painted fire extinguisher cabinets:
  1. One coat Multi-Prime Multi-Purpose Primer, 4160 Series. (MPI #79)
  2. Two coats Pitt-Tech Plus WB DTM Industrial Enamel, Semi-Gloss 4216 Series. (MPI #153).
- E. Galvanized Metal: Exposed miscellaneous metal, exposed ducts, conduits, mechanical and electrical devices.
  1. One coat Pitt-Tech Plus DTM Industrial Primer/Finish, 4020. (MPI #134)
  2. Two coats Pitt-Tech Plus WB DTM Industrial Enamel, Semi-Gloss 4216 Series. (MPI #153)
- F. Steel - Exposed steel lintels:
  1. One coat Multi-Prime Multi-Purpose Primer, 4160 Series. (MPI #79)
  2. Two coats Sil-Shield Silicone Alkyd Enamel High Gloss 95-5000 Series.
- G. Gypsum Board: Finish surfaces exposed to view.
  1. All interior drywall gypsum board wall surfaces for a painted finish. (Spot prime all joints and spots with primer first)
    - a. Walls and ceilings: Two coats Pure Performance Interior Latex Primer, 9-900.
    - b. Walls: Two coats Copper Armor Interior Latex, 29-1310, Eggshell. (MPI #144)
    - c. Ceilings: Two coats Copper Armor Interior Latex, 29-1310, Eggshell. (MPI #144)

END OF SECTION

SECTION 09 93 00  
STAINING AND TRANSPARENT FINISHING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of stains and transparent finishes.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.3 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

1.4 REFERENCE STANDARDS

- A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
- C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.
- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category.
  - 2. MPI product number (e.g. MPI #33).
  - 3. Manufacturer's installation instructions.
  - 4. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit two samples, illustrating selected colors and sheens for each system with specified coats cascaded. Submit on actual wood substrate to be finished, 6 by 12 inch in size.
- D. Certification: By manufacturer that stains and transparent finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.
- F. Manufacturer's Qualification Statement.

- G. Applicator's Qualification Statement.
- H. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, safety data sheets (SDS), care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.
- I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Extra Stain and Transparent Finish Materials: 1 gallon of each color and type; from the same product run, store where directed.
  - 3. Label each container with color and type in addition to the manufacturer's label.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of stain or transparent finish, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Stain and Transparent Finish Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

## 1.8 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by manufacturer of stains and transparent finishes.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- 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 Temperature: 50 degrees F unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Provide finishes used in any individual system from the same manufacturer; no exceptions.
- B. Stains:
  - 1. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).

2. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
3. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.2 STAINS AND TRANSPARENT FINISHES - GENERAL

- A. Finishes:
  1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at [www.paintinfo.com](http://www.paintinfo.com), for specified MPI categories, except as otherwise indicated.
  2. Provide finishes capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  3. 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.
  4. Supply each finish material in quantity required to complete entire project's work from a single production run.
  5. Do not reduce, thin, or dilute finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: To be selected from manufacturer's full range of available colors.
  1. Selection to be made by Architect after award of contract.

## 2.3 EXTERIOR STAIN AND TRANSPARENT FINISH SYSTEMS

- A. Finish on Wood:
  1. Stain: Exterior Solid Stain for Wood, Water Based; MPI #16.
    - a. Products:
      - 1) PPG Paints ProLuxe Premium Solid Wood Finish, SIK710 Series, Matte. (MPI #16)
      - 2) Sherwin-Williams WoodScapes Acrylic Solid Color Stain. (MPI #16)
      - 3) Substitutions: Section 01 60 00 - Product Requirements.
  2. Stain: Exterior Semi-Transparent Stain for Wood, Water Based; MPI #156.
    - a. Products:
      - 1) PPG Paints ProLuxe SRD Semi-Transparent Wood Finish, SIK500-190, Matte. (MPI #156)
      - 2) Sherwin Williams Superdeck SD8T00200 (MPI #156).
      - 3) Substitutions: Section 01 60 00 - Product Requirements.
  3. Top Coat(s): Exterior Clear Water-Based Varnish with UV Inhibitor.
    - a. Products:
      - 1) PPG Paints Deft Interior/Exterior Water-Based Polyurethane, DFT259, Satin.
      - 2) PPG Paints Deft Interior/Exterior Water-Based Polyurethane, DFT258, Semi-Gloss
      - 3) PPG Paints Deft Interior/Exterior Water-Based Polyurethane, DFT257, Gloss.
      - 4) Sherwin Williams MinWax Fast Dry Polyurethane, 154-3479.
      - 5) Substitutions: Section 01 60 00 - Product Requirements.
  4. Top Coat(s): Exterior Clear Alkyd Varnish with UV Inhibitor.
    - a. Products:

- 1) PPG Paints Deft Defthane Interior/Exterior Polyurethane Oil-Based 275, DFT21 VOC, Gloss.
- 2) PPG Paints Deft Defthane Interior/Exterior Polyurethane Oil-Based 275, DFT26 VOC, Satin.
- 3) PPG Paints Deft Defthane Interior/Exterior Polyurethane Oil-Based 275, DFT123 VOC, Semi-Gloss.
- 4) Sherwin Williams Helmsman Spar Urethane, 154-5110.
- 5) Substitutions: Section 01 60 00 - Product Requirements.

## 2.4 ACCESSORY MATERIALS

- A. Accessory Materials: Cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of finished surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin application of stains 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 effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  1. Wood: 15 percent, measured in accordance with ASTM D4442.

### 3.2 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 repair existing finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. 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.
- G. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.



### 3.3 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Sand wood 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.
- F. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- G. Reinstall items removed prior to finishing.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

### 3.5 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

### 3.6 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION



SECTION 10 21 13.17  
PHENOLIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Phenolic toilet compartments.

1.2 RELATED REQUIREMENTS

- A. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

1.3 REFERENCE STANDARDS

- A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on panel construction, hardware, and accessories.
- C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- D. Samples: Submit two samples of partition panels, 2 by 2 inch in size illustrating panel finish, color, and sheen.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Phenolic Toilet Compartments:
  - 1. ASI Global Partitions: [www.asi-globalpartitions.com/#sle](http://www.asi-globalpartitions.com/#sle).
  - 2. Substitutions: Section 01 60 00 - Product Requirements.

2.2 PHENOLIC TOILET COMPARTMENTS

- A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid phenolic core panels with integral melamine finish, floor-mounted headrail-braced.
  - 1. Color: ASI; #5107 "Burnt Strand" <https://asi-globalpartitions.com/>.
- B. Doors:
  - 1. Thickness: 3/4 inch.
  - 2. Width: 24 inch.
  - 3. Width for Handicapped Use: 36 inch, out-swinging.
  - 4. Height: 58 inch.

## 2.3 ACCESSORIES

- A. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with No. 4 finish, 3 inch high, concealing floor fastenings.
- B. Head Rails: Hollow anodized aluminum, 1 inch by 1-1/2 inch size, with anti-grip profile and cast socket wall brackets.
- C. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
- D. Hardware: Polished stainless steel:
  - 1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
  - 2. Door Latch: Slide type with exterior emergency access feature.
  - 3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
  - 4. Coat hook with rubber bumper; one per compartment, mounted on door.
  - 5. Provide door pull for outswinging doors.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.

### 3.2 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

### 3.3 ADJUSTING

- A. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

END OF SECTION

SECTION 10 28 00  
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Commercial shower and bath accessories.
- C. Electric hand/hair dryers.
- D. Diaper changing stations.
- E. Utility room accessories.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Placement of concealed wood blocking and backing plates for support of accessories.
- B. Section 10 21 13.17 - Phenolic Toilet Compartments.

1.3 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a (Reapproved 2019).
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- H. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use; 2004, with Editorial Revision (2016).
- I. GSA CID A-A-3002 - Mirrors, Glass; U.S. General Services Administration; 1996.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Samples: Submit two samples of each accessory, illustrating color and finish.
- D. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Commercial Toilet, Shower, and Bath Accessories:
  - 1. American Specialties, Inc (ASI): [www.americanspecialties.com](http://www.americanspecialties.com).
  - 2. Bobrick Washroom Equipment, Inc.: [www.bobrick.com](http://www.bobrick.com)
  - 3. Bradley Corporation: [www.bradleycorp.com/#sle](http://www.bradleycorp.com/#sle).
  - 4. Substitutions: Section 01 60 00 - Product Requirements.
- B. Provide products of each category type by single manufacturer.

### 2.2 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.
  - 1. Grind welded joints smooth.
  - 2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- E. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
- F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
- G. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

### 2.3 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser: Double roll, recessed, satin finish, horizontal type, spindleless type for tension spring delivery designed to prevent theft of tissue roll .
- B. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gauge refill indicator, tumbler lock.
  - 1. Minimum Capacity: 48 ounces.
- C. Mirrors: Stainless steel framed, 1/4 inch thick tempered safety glass; ASTM C1048.
  - 1. Size: As scheduled.
  - 2. Frame: 0.05 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.

3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
  - D. Grab Bars: Stainless steel, smooth surface.
    1. Standard Duty Grab Bars:
      - a. Push/Pull Point Load: 250 pound-force, minimum.
      - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
      - c. Length and Configuration: As indicated on drawings.
- 2.4 COMMERCIAL SHOWER AND BATH ACCESSORIES
- A. Robe Hook: Heavy-duty stainless steel, single-prong, rectangular-shaped bracket and backplate for concealed attachment, satin finish.
- 2.5 ELECTRIC HAND/HAIR DRYERS
- A. Electric Hand Dryers: Traditional fan-in-case type, with downward fixed nozzle.
  - B. Basis of design: ThinAir Hand Dryer by Excel Dryer INC.
    1. Operation: Automatic, sensor-operated on and off.
    2. Mounting: Surface mounted.
    3. Depth: 4" maximum
    4. Cover: Stainless steel with brushed finish.
      - a. Tamper-resistant screw attachment of cover to mounting plate.
- 2.6 DIAPER CHANGING STATIONS
- A. Diaper Changing Station: Wall-mounted folding diaper changing station for use in commercial toilet facilities, meeting or exceeding ASTM F2285.
    1. Material: Polyethylene.
    2. Mounting: Surface.
    3. Color: White.
    4. Minimum Rated Load: 250 pounds.
- 2.7 UTILITY ROOM ACCESSORIES
- A. Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, hat-shaped channel.
    1. Holders: Three spring-loaded rubber cam holders.
    2. Length: 36 inches.
    3. Products:
      - a. American Specialties, Inc: [www.americanspecialties.com/#sle](http://www.americanspecialties.com/#sle).

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.
- D. Verify that field measurements are as indicated on drawings.

- E. See Section 06 10 00 for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

### 3.2 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

### 3.3 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.

END OF SECTION



SECTION 13 00 00

SPECIAL CONSTRUCTION - SKATEPARK

**SKATEPARK CONTRACTOR (OR SUBCONTRACTOR) QUALIFICATIONS**

**PART 1 – GENERAL**

1.1 SECTION INCLUDES

- A. This section identifies the project specific qualifications that the Skatepark Contractor (or Subcontractor) shall meet prior to Award of the Contract.
- B. These Supplemental Bidder Qualifications shall be incorporated into the Supplemental Bidder Responsibility Criteria Form and must be submitted with BID.

1.2 DEFINITION OF TERMS USED IN THIS SECTION

- A. "Successfully performed and completed" and "Successful performance and completion" as used in this section refers to a complete installation and acceptance of the installation by the project owner.
- B. Project Field Superintendent/Supervisor.
  - 1. The Project Field Superintendent/Supervisor shall be the employee of the Skatepark Contractor (or Subcontractor) who directs and coordinates the Skatepark Contractors' (or Subcontractors') daily physical construction activities in the field.
  - 2. Responsibilities of the Project Field Superintendent/Supervisor include, but are not limited to:
    - a. Physically overseeing, coordinating and scheduling day to day skatepark construction work.
    - b. Coordinating with subcontractors and the Engineer as needed for the execution of the work.
    - c. Responsible for the day-to-day execution of the skatepark work.
- C. "Similar project" as used in this section means a project similar in character to the work required by this Contract. The "similar project" shall also be equal or greater in scope and complexity than the work required by this Contract.
- D. Foreman/Alternate Foreman: Employee of the Skatepark Contractor (or Subcontractor) working in their area of expertise in direct control of the work at the craft level.

### 1.3 QUALIFICATIONS OF BIDDERS

- A. Skatepark Contractor (or Subcontractor) Experience: Skateparks are not considered standard concrete flatwork; they require unique shapes, such as concave and convex features, and the sculptural blending of compound radius curves. All must be completed with precision for the skate facility to function properly.
- B. To be considered a qualified Skatepark Contractor (or Subcontractor), the Bidder shall provide documentation establishing that the Skatepark Contractor (or Subcontractor) has satisfied the experience requirements listed below:
1. Installation of storm drainage system components integral to skatepark elements including setting storm drain grates, frames and basins.
  2. Shaping of earthwork to specified radius.
  3. Experience creating cast in place concave and convex shaped concrete elements containing compound radius curves.
  4. Experience in application of vertical and horizontal shotcrete work, including horizontal and vertical radius transitions, formed concrete, grinding rails, and associated concrete reinforcement as needed.
  5. Experience with installation of steel coping edges, smooth flowing seamless transition areas, and smooth trowel concrete finish work.
  6. Experience with layout, fabrication, and construction of the steel coping and other skatepark specific edge treatments.
  7. Installation of skatepark concrete flatwork between bowled areas.
- C. Documentation of Project Experience: This Skatepark Contractor (or Subcontractor) shall demonstrate compliance with the above project experience criteria by submitting the required Project Description Form (found at the end of this section) for **(10)** public concrete skatepark facilities with a minimum skating area of **10,000 square feet** in the last **10 years. 5 must be complete within the past 5 years, and 5 must have been opened and operating for at least 5 years:**
1. Each project must be a public cast in place concrete skatepark facility.
  2. Each project must be open, fully operational and operating for at least one year.
  3. Only those projects where the complete construction of the facility has been the sole responsibility of the skatepark contractor (or subcontractor) will be considered acceptable projects.
  4. The projects must be described in sufficient detail for the Owner to confirm that the skatepark contractor has experience for all construction and skill elements described by Section 1.3.

5. If a Bidding Contractor provides information for a Skatepark Subcontractor that is considered false, incomplete, or unverifiable, the low bidder shall have the opportunity to submit experience qualifications for a different Skatepark Subcontractor for the same bid price.
  6. Each project listed must be similar in complexity to this project.
- D. Documentation of Personnel Experience: To be considered a qualified Bidder, each participating firm shall directly employ supervisory and lead personnel (Include Project Manager, Field Superintendent, Head Finisher, and Certified Nozzleman) meeting the qualifications required in this document.
- E. Each Project Manager, Field Superintendent, and Head Finisher utilized by the Skatepark Contractor (or Subcontractor) shall have successfully performed and completed a minimum of five similar projects equal or greater in scale and complexity to this Project, as applicable to the proposed role of the individual in this Project. The Skatepark Contractor (or Subcontractor) shall demonstrate compliance with this requirement by completing the Personnel Qualifications Form and attaching resumes at the end of this section.
- F. Verification of Information Provided: It shall be the Skatepark Contractors' (or Subcontractors') responsibility to verify that the reference information provided (names and phone numbers) is current. If the Owner or Engineer is unable to contact the listed individuals in order to verify Bidder experience, the related experience will not be considered by the Engineer in its determination of compliance with the requirements of this Section.

To be considered a qualified skatepark subcontractor, the Skatepark Contractor (or Subcontractor) must be EXCLUSIVELY ENGAGED IN THE SPECIALIZED FIELD OF CAST-IN-PLACE CONCRETE SKATEPARK CONSTRUCTION.

**SKATEPARK CONTRACTOR (OR SUBCONTRACTOR) PREQUALIFICATION STATEMENT**

The intent of the OWNER is to pre-qualify Skatepark Contractors (or Subcontractors) for this project who must have prior specialty skate park construction experience. This prequalification is required for specialty skate park items only. Other work normally performed by a general contractor (site grading, drainage, paving, concrete flatwork, etc.) that is considered site work does not require prequalification. This statement will determine the skatepark subcontractor's qualification for this project. In addition to skate park construction experience, firms must also demonstrate an ability to meet minimum guidelines as set in the SPECIAL PROVISIONS of the Contract Documents. Submission of this questionnaire does not constitute qualification. Qualification may be denied for any reason the Owner deems necessary for the successful completion of the project.

**SKATEPARK CONTRACTOR (OR SUBCONTRACTOR) INFORMATION**

COMPANY NAME (Full Legal Name)

STREET ADDRESS

MAILING ADDRESS (If Different Than Above)

STATE /ZIP /PHONE

CONTACT PERSON E-MAIL /FAX #

FEDERAL TAX ID NO.

APPLICATION SUBMITTED BY:

(Name)

(Title)

**DOCUMENTATION OF PROJECT EXPERIENCE**

The following forms shall be completed by each skatepark subcontractor.

- ☐ Skatepark Contractor (or Subcontractor) prequalification statement
- ☐ Skatepark Contractor (or Subcontractor) information
- ☐ Current skatepark project experience
- ☐ Past skatepark Project experience
- ☐ All attachments requested

**SKATEPARK CONTRACTOR (OR SUBCONTRACTOR) INFORMATION**

How many years has your organization been in business under your present name?

\_\_\_\_\_ years

If the Skatepark Contractor (or Subcontractor) is a corporation, please provide the following:

State & Date of Incorporation: \_\_\_\_\_

Contractor License # and Classification: \_\_\_\_\_

Secretary / Treasurer's Name: \_\_\_\_\_

If the Skatepark Contractor (or Subcontractor) is a partnership, please provide the following:

State & Date of Partnership \_\_\_\_\_

Contractor License # \_\_\_\_\_

General Partner(s) Names \_\_\_\_\_

If the Skatepark Contractor (or Subcontractor) is sole proprietor, or individually owned, please provide the following:

State, & Date of Ownership \_\_\_\_\_

Primary Owner's Name & License # \_\_\_\_\_

**Please Check**

**YES   NO**

☐   ☐ 1. Have you ever operated under any other names in the past?

If so, name of organization \_\_\_\_\_

☐   ☐ 2. Has any owner, officer or partner of your organization ever been an owner, officer or partner of this or any other organization that failed to complete a construction contract or been charged liquidated damages? If yes, please provide additional information on a separate sheet.

☐   ☐ 3. Has your organization ever been denied, debarred, or suspended by a government agency with regard to licensing or award of contracts? If yes, please provide additional information on a separate sheet.

☐   ☐ 4. Does the organization owe back taxes to the IRS ? If so how much ? ? If yes, please provide additional information on a separate sheet.

☐   ☐ 5. Has your organization ever failed to qualify as a Skatepark subcontractor of any project? If yes, please provide additional information on a separate sheet.

6. Does your organization meet the following minimum requirements?

- a. The successful Skatepark Contractor (or Subcontractor) must be able to provide valid and in good standing the following insurance coverage for the entire duration of the project, naming your firm and the Owner as additionally insured. A sample certificate with the following minimum coverage's must be submitted with this statement:
- Commercial General Liability \$1,000,000 Each Occurrence / \$2,000,000 General Aggregate,  
Automobile Liability Insurance \$1,000,000 Minimum, Workman's Compensation Insurance  
State Minimum Coverage as Required By Law

**Certificate of Insurance Attached?**

**YES NO**

☐ ☐

- b. The selected Skatepark Contractor (or Subcontractor) shall have the ability to provide a Bid Bond at the time of the project submission. Also, Performance Material & Payments Bonds in the total amount of the project within 10 days of the award of contract. Please provide a letter of reference from your surety company (not an agent or broker) stating your good standing ability to bond a project of this scope.

**Letter from Surety Attached?**

**YES NO**

☐ ☐

- c. Attach 3 Letters of Reference from a past public agency giving recommendation of the Skatepark Contractor's (or Subcontractor's) ability to perform quality skate park construction.

**Letters of Reference Attached?**

**YES NO**

☐ ☐

- d. The selected Skatepark Contractor (or Subcontractor) shall be required to pay at a minimum Local Prevailing Wage rates as determined by the Department of Industrial Relations. Certified payrolls will be required.

**Can your organization comply with these requirements?**

**YES NO**

☐ ☐

- e. The selected Skatepark Contractor (or Subcontractor) shall be required to execute the contract (including providing bonds) within 15 calendar days of award. Mobilization shall occur within 10 calendar days after execution.

**Can your organization comply with this requirement?**

**YES NO**

☐ ☐

**CURRENT SKATEPARK PROJECT EXPERIENCE**

Please provide a list of **all** concrete skatepark construction projects that are **in progress** by your organization or which are complete but have not been open and in operation for a period of at least one year. The projects listed must have a construction agreement. **PROJECT INFORMATION REQUIRED** – Please provide all information requested including the name, location, owner, address, size, percent of completion, designer, scope of work and a description of the projects.

**PAST COMPLETED SKATEPARK PROJECT EXPERIENCE**

The Skatepark Contractor (or Subcontractor), in order to be pre-qualified for this project must have completed **(10)** public concrete skate park facilities with a minimum skating area of **10,000 square feet** in the last **10 years. 5 must be complete within the past 5 years, and 5 must have been opened and operating for at least 5 years.**

These parks must be open and in good operating condition for at least one year. Only those projects where the complete construction of the facility has been the sole responsibility of your firm can be included. Please provide detailed project information and verifiable references for each of these qualifying skatepark facilities.

The city reserves the right to waive minor irregularities regarding the skatepark subcontractor's requirements.

**PROJECT INFORMATION REQUIRED** – Please provide all information requested including the name, location, owner, address, size, percent of completion, designer, scope of work and a description of the projects.

**PROJECT PHOTO REQUIRED** – Please provide at least one (1) photo of each completed construction.

**ACI SHOTCRETE NOZZLEMAN CERTIFICATION**

The Skatepark Contractor's (or Subcontractor's) proposed Shotcrete Nozzle Operator(s) must be qualified under the ACI Shotcrete Nozzleman Certification Program and have at least (5) years of experience in shotcrete as applied to Skateparks. Contractors must provide proof of certification. Contractors must provide (5) project references (skateparks constructed by your company only) that the Shotcrete Nozzle Operator(s) was directly involved with applying shotcrete. Only qualified and approved Shotcrete Nozzle Operator(s) are permitted to perform shotcrete work on this project. Qualified and approved Shotcrete Nozzle Operator(s) must be onsite during all major shotcrete work. The Contract Administrator reserves the right to reject any Skatepark Contractors (or Subcontractors) with Shotcrete Nozzle Operator(s) that do not meet the required skills and experience criteria.

**Project #1** \_\_\_\_\_  
ACI Certified Shotcrete Nozzleman \_\_\_\_\_  
Reference name & contact number \_\_\_\_\_  
\_\_\_\_\_

**Project #2** \_\_\_\_\_  
ACI Certified Shotcrete Nozzleman \_\_\_\_\_  
Reference name & contact number \_\_\_\_\_  
\_\_\_\_\_

**Project #3** \_\_\_\_\_  
ACI Certified Shotcrete Nozzleman \_\_\_\_\_  
Reference name & contact number \_\_\_\_\_  
\_\_\_\_\_

**Project 4** \_\_\_\_\_  
ACI Certified Shotcrete Nozzleman \_\_\_\_\_  
Reference name & contact number \_\_\_\_\_  
\_\_\_\_\_

**Project 5** \_\_\_\_\_  
ACI Certified Shotcrete Nozzleman \_\_\_\_\_  
Reference name & contact number \_\_\_\_\_  
\_\_\_\_\_

**Proof of ACI Nozzleman Certification Attached?**

**YES    NO**

☐

☐



**HEAD CONCRETE FINISHER**

The Skatepark Contractor's (or Subcontractor's) proposed Head Concrete Finisher must have at least (5) years of experience in concrete finishing as applied to concrete skateparks. Contractors must be directly involved with finishing skatepark concrete in a lead role. Only qualified and approved Concrete Finishers are permitted to perform finishing work on this project. The Head Concrete Finisher must be onsite during all major finishing work. The Contract Administrator reserves the right to reject any contractors with a Head Concrete Finisher that does not meet the required skills and experience criteria.

**Project #1** \_\_\_\_\_

Head Concrete Finisher \_\_\_\_\_

Reference name & contact number \_\_\_\_\_

\_\_\_\_\_

**Project #2** \_\_\_\_\_

Head Concrete Finisher \_\_\_\_\_

Reference name & contact number \_\_\_\_\_

\_\_\_\_\_

**Project #3** \_\_\_\_\_

Head Concrete Finisher \_\_\_\_\_

Reference name & contact number \_\_\_\_\_

\_\_\_\_\_

**Project 4** \_\_\_\_\_

Head Concrete Finisher \_\_\_\_\_

Reference name & contact number \_\_\_\_\_

\_\_\_\_\_

**Project 5** \_\_\_\_\_

Head Concrete Finisher \_\_\_\_\_

Reference name & contact number \_\_\_\_\_

\_\_\_\_\_

### **ADDITIONAL QUESTIONNAIRE & REQUIREMENTS**

Please accurately answer & provide for all the information requested utilizing a separate sheet as necessary.

**Please Check**

**YES NO**

- ☐ ☐ A. Has your firm excavated a below ground skate park structure and prepared it for shotcrete application?
- ☐ ☐ B. Has your firm placed transitional and radial shotcrete sculptures using approved methods including a smooth trowel finish?
- ☐ ☐ C. Does your firm possess all the necessary equipment, labor forces, and material suppliers to complete this project per plans and specifications within the given schedule?
- ☐ ☐ D. Has your firm fabricated, galvanized, and installed rolled/bent ornamental metal coping?
- ☐ ☐ E. Has your firm installed standard pool coping and tile?

F. Has your firm constructed custom concrete skate park features like:  
(mark those that apply)

- ☐ Stamped Brick      ☐ Integral Color      ☐ Sculptural artistic elements

**Please Check**

**YES NO**

- ☐ ☐ G. Has your firm performed any concrete skate park construction with workmanship issues, defects, or warranty problems, including having to repair or replace portions of work?
- ☐ ☐ H. Can your firm provide shop drawings and submittals for all of the required and specified materials on this project?

**SCHEDULE & SKATE PARK MANAGEMENT EXPERIENCE**

1. Please provide a schedule identifying key tasks and milestones your project team has identified to demonstrate your ability to coordinate the entire job. This will be for evaluation purposes only and not intended as a working schedule.

**Schedule Attached?**

**YES NO**

☐ ☐

2. Please provide a detailed list, and resumes, identifying your firm's key personnel and management team that is responsible for the aforementioned skate park experience. Please include any owners, officers, managers, construction supervisors, or any other employee with the identified experience for the listed qualifying projects. Show that the individual directly responsible for the construction management of these projects will be the same individual utilized on this project and responsible for weekly reports, site meetings and quality control inspections. Substitutions of key personnel will not be allowed without written agreement from the Owner.

**Resumes Attached?**

**YES NO**

☐ ☐

3. The Project Manager and/or Field Superintendent shall be considered a competent person per OSHA guidelines AND shall have completed and received certification for OSHA 30 training.

**OSHA 30 Certification Attached?**

**YES NO**

☐ ☐

**This document must be notarized.** This pre-qualification statement will not be considered valid unless it is completed in its entirety and signed, dated, and notarized.

**The SKATEPARK CONTRACTOR or SUBCONTRACTOR (undersigned) hereby certifies and that all of the information contained in this document is true and correct to the best of their knowledge. I declare under penalty of perjury that the foregoing is correct.**

\_\_\_\_\_  
Legal Business Name of Submitting Individual, Partnership, Limited Liability Company,  
or Corporation & Contractor License Number

\_\_\_\_\_  
Printed Name of Specialty contractor or Authorized Agent

\_\_\_\_\_  
Signature of Specialty contractor or Authorized Agent

**ALL SIGNATURES MUST BE WITNESSED BY NOTARY (ATTACH JURAT)**

## **CONCRETE FORMWORK FOR SKATEPARKS**

### **PART 1 – GENERAL**

#### **1.1 SCOPE OF WORK**

- A. Furnish materials, labor, transportation, services, and equipment necessary to install all concrete formwork related to the skate park as indicated on scope of work contract and shown on drawings and as specified herein.
- B. Provide all formwork and accessories for construction of Portland Cement Concrete paving for the skatepark.
- C. Related Work:
  - 1. Concrete Reinforcement for Skateparks
  - 2. Cast in Place Concrete for Skateparks
  - 3. Concrete Finishing for Skateparks
  - 4. Shotcrete for Skateparks

#### **1.2 REFERENCES**

- A. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes and regulations required by the governing municipality.
- B. Comply with the current provisions of the following Codes and Standards:
  - 1. ASTM – American Society for Testing and Materials.
  - 2. IBC – International Building Code.
  - 3. ACI – American Concrete Institute.
  - 4. Standard Specifications (as specified in the General Provisions).

#### **1.3 QUALITY ASSURANCE**

- A. Design Criteria: Conform to ACI 347-68, Chapter I.
- B. Allowable Tolerances: Conform to ACI 117 and 347-68, 2.4.
- C. Concrete Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- D. Safety and Performance Guidelines: Comply with all safety and performance requirements and all applicable references as specified in the ASTM F2480 Standard Guide for In-ground Skate Parks.

#### 1.4 STORAGE OF MATERIALS

- A. Store materials on and under protective sheeting.

#### 1.5 COORDINATION

- A. Notify responsible trades of schedules of concrete pours to allow time for installation and coordination.

### **PART 2 – PRODUCTS**

#### **2.1 MATERIALS**

- A. Forms:
  - a. Flatwork and Bond Beam: 1" Exterior Masonite Siding or approved alternate for all Tangents. 7/16" Exterior Masonite Siding or approved alternate for all radii. Create true arc to tangent connections as per layout plan. No kinks will be accepted.
  - b. Vertical and Custom Work: Exterior grade Standard Douglas Fir (or equal plywood), minimum three ply, one smooth side sufficiently thick to sustain loads, or steel forms.
- B. Form Oil: Non staining, paraffin-base oil having a specific gravity of between 0.8 and 0.9.
- C. Form Ties: Bolts, rods, or patented devices having tensile strength of 3000 lbs., adjustable length, free of lugs which would leave a hole larger than 5/8" diameter and having a full one-inch depth of break-back.

### **PART 3 – EXECUTION / CONSTRUCTION**

#### 3.1 CONSTRUCTION AND ERECTION

- A. Construct forms in accordance with ACI 347-68.
- B. Build forms to shapes, lines and dimensions of detailed members of concrete construction. Set to line and grade, brace and secure to withstand placing of concrete and maintain their shape and position.
- C. Construct forms with care to produce concrete surfaces without unsightly or objectionable form marks in exposed concrete surfaces.
- D. Thoroughly clean surfaces of form material and remove nails before reuse. Do not reuse damaged or worn forms. Coat contact surfaces of forms with non-staining form oil prior to placing metal reinforcement.
- E. Immediately before placing concrete, clean forms of chips, sawdust, and debris. Immediately after removal of forms, remove form ties, wires, and defects and patch.

3.2 INSERTS AND ACCESSORIES

- A. Make provisions for required installation of accessories, bolts, hangers, sleeves, anchor slots and inserts expansion joints where detailed and required, also shown in the Jointing Plan in the drawings.

3.3 REMOVAL OF FORMS AND SHORING

- A. Remove forms and shores in accordance with ACI 347-68.

3.4 CLEANUP

- A. Upon completion of the concrete formwork, remove surplus construction materials, loose earth, trash and debris so that the job site is left in a neat and orderly condition.

END OF SECTION

## **CONCRETE REINFORCEMENT FOR SKATEPARKS**

### **PART 1 – GENERAL**

#### **1.1 SPECIALTY SKATE PARK CONSTRUCTION**

- A. All work contained in this Section is considered specialty skate park construction. Only those firms that meet the minimum experience requirements contained in the Bidder Qualifications Section within Section 13 00 00 Special Construction - Skatepark may perform this work as specified herein.

#### **1.2 REGULATIONS**

- A. The work shall conform to requirements of the IBC and the governing municipality Building Code for concrete reinforcement, as supplemented and modified on drawings or herein.

#### **1.3 REFERENCE STANDARDS**

- A. Conform to requirements of the following Reference Standards as the Engineer judges them applicable and as modified and supplanted herein.
- B. American Concrete Institute (ACI) Building Code Requirements for Reinforced Concrete, ACI 318.
- C. ACI Specifications for Structural Concrete for Buildings, ACI 301.
- D. ACI Detailing Manual, ACI 315.

#### **1.4 RELATED SECTIONS**

- 1. Concrete Formwork for Skateparks
- 2. Cast in Place Concrete for Skateparks
- 3. Concrete Finishing for Skateparks
- 4. Shotcrete for Skateparks
- 5. Metal Fabrication for Skateparks

#### **1.5 QUALITY ASSURANCE:**

- A. Notify the Inspector at least 24 hours before placing any concrete.

#### **1.6 SUBMITTALS**

- A. Product Data
  - 1. Submit manufacturers' published literature for specified products and accessories as applicable, including manufacturers' specifications, physical characteristics and performance data. Submit as a supplement, manufacturers' instructions and directions for application if not included in manufacturers' published literature.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Bars: ASTM A615; types, sizes and grades as indicated and noted on drawings; all bars free from rust and loose scale at time of delivery.
- B. Tie wire: 16-gauge double annealed wire.

## **PART 3- EXECUTION**

### **3.1 FABRICATION AND DETAILING**

- A. Fabricate steel bar reinforcement to shapes and dimensions as shown and placed as indicated.
- B. Bending and Straightening: Form bars accurately to detail, other kinks or bends will not be permitted; conform to requirements of ACI 318. Make bends cold around pin with diameter at least 6 times bar dimension; heating of reinforcement will be permitted only if entire operation is approved.
- C. Splices: In general, avoid splices at points of maximum stress. Splice overlap shall be at least 16 times the diameter of the bars.

#### **PLACEMENT**

### **3.2**

- A. Clean reinforcing bars free from loose rust, mud, oil and other foreign matter affecting or reducing bond. Accurately position bars in accordance with approved placement drawings and secure against displacement. Lap bars at intersections for at least 16 times the diameter of the bars; extend reinforcement through, and lap beyond, construction joints.
- B. Displacement: If bars are displaced, or if it is necessary to move bars to avoid interference with other reinforcing or embedded items, and if bars are moved to exceed tolerances, obtain approval of resulting arrangement prior to placing concrete.
- C. Miscellaneous: After cutting tie-wire, turn wires to the inside of the section and bend in such manner that concrete placement will not force ends to exposed concrete surfaces.

END OF SECTION



## **CAST-IN-PLACE CONCRETE FOR SKATEPARKS**

### **PART 1 – GENERAL**

#### **1.1 SPECIALTY SKATE PARK CONSTRUCTION**

- A. All work contained in this Section is considered specialty skate park construction. Only those firms that meet the minimum experience requirements contained in the Bidder Qualifications Section 13 00 00 Special Construction - Skatepark may perform this work as specified herein.

#### **1.1 REGULATIONS**

- A. Conform to requirements of the IBC and the governing municipality Building Code as it pertains to structural cast-in-place concrete, except as supplemented and modified

#### **1.2 here. REFERENCE STANDARDS**

- A. Conform to requirements of the following Reference Standards or as modified and supplemented hereinafter:
- B. American Concrete Institute (ACI) Specifications for Structural Concrete for Buildings, ACI 301.
- C. ACI Recommended Practice for Selecting Proportions for Concrete, ACI 613.
- D. ACI Recommended practices for Cold Weather Concreting, ACI 306.
- E. ACI Recommended Practice for Hot Weather Concreting, ACI 605.

#### **RELATED WORK:**

#### **1.3**

- 1. Concrete Formwork for Skateparks
- 2. Concrete Reinforcing for Skateparks
- 3. Concrete Finishing for Skateparks
- 4. Shotcrete for Skateparks
- 5. Metal Fabrication for Skateparks

#### **1.4 QUALITY ASSURANCE**

- A. Notify the Engineer at least 24 hours before inspection. Inspection shall be required immediately prior to any intended pours or placement of concrete.
- B. Concrete Work: Concrete work, where indicated, shall be exposed, as finished. Special care must be taken to provide specified, finished surfaces without gravel pockets, and other defacements.

#### **1.5 SUBMITTALS**

- A. Submit, for approval, all layout drawings for all cast-in-place concrete work. Show joint locations and other pertinent information.

- B. Records: Maintain records of all concrete placements; indicate exact mix proportions, list time, date, location in the project, weather conditions at the time of placement, and the source of the concrete supply. Make records available to Engineer at any time during the course of construction and submit at end of concrete placement phase of project for the purposes of preparing record documents.
- C. Certificates: Submit certification of previously tested mix designs.

## PART 2 - PRODUCTS

### 2.1 CONCRETE MATERIALS

- A. Aggregates: Standard: ASTM C33
- B. Cements:
  - 1. Provide cements obtained from same source or of same brand for concrete in same element or portion of the work.
  - 2. Standard Portland Cement: Columbia, Ideal, Kaiser, Lone Star, or approved. Standard gray Portland cement, ASTM C150; uses type I or type III.
- C. Cementitious Materials: Fly ash, ASTM C618 type F, except that the maximum allowable loss on ignition shall be 0.75%. Use for all concrete.
- D. Admixtures:
  - 1. Use only one brand of admixtures.
  - 2. Water-Reducing Admixture: Master Builders Pozzolith 300-N, or approved. Chemical admixture conforming to requirements of ASTM C494, Type A.
  - 3. Retarder-Densifying Admixture: Master Builders Retarding Pozzolith, or approved; ASTM C494, Type B.
  - 4. Accelerator: Chemical admixture designed to accelerate set on concrete but not corrode reinforcing steel; ASTM C494, Type C.
  - 5. Air Entraining Agent: Conform to requirements of ASTM C260.
- E. Other Ingredients: Provide other ingredients as indicated or as required by Code or Reference Standards

#### CONCRETE MIX

- 2.2 28 day compressive strength 4000 psi

Sacks Cement	(6)per Cubic Yard - (see "Cement", below)
Fine Aggregate (Type 2)	(291 lbs.) per Sack. - (see "Aggregates", below)
Coarse Aggregate (Type 5)	(387 lbs.) per Sack, - (see "Aggregates", below)
Max. Water,	(6.5 Gal.) per Sack

Slump (inches) (2 - 6) per ASTM C143

### 2.3 PORTLAND CEMENT

- A. Use only Type II Portland Cement, and AASHTO M 85.

## 2.4 AGGREGATES

- A. Fine Aggregates: Fine Aggregates shall consist of sand or other inert materials, or combinations thereof, having hard, strong, durable particles free from an adherent coating. Fine Aggregate shall be washed thoroughly to remove clay, loam, alkali, organic matter, or other deleterious matter. Fine Aggregate #1 Particle Gradation is as follows:

<u>Sieve Size</u>	<u>% Passing</u>
#4	95 - 100
#8	68 - 86
#16	47 - 65
#30	27 - 42
#50	9 - 20
#100	0 - 7
#200 (wet)	0 - 2

- B. Coarse Aggregates: Coarse Aggregate shall consist of gravel, crushed stone, or other inert material or combination thereof having hard, strong, and durable pieces free from adherent coatings. Coarse Aggregate shall be washed to thoroughly remove clay, silt, bark, sticks, alkali, organic matter, or other deleterious material. Mineral Aggregate #5 Particle Gradation is as follows:

<u>Sieve Size</u>	<u>% Passing</u>
1-1/2" Square	100
3/4" Square	80 - 100
3/8" Square	10 - 40
#4	0 - 4
#200	0 - 0.5

## 2.5 BONDING AGENTS AND ADHESIVES

- A. Bonding Agents as required.
- B. Primers and Sealers: As recommended by the adhesive and bonding agent

## 2.6 manufacturers. CONSTRUCTION JOINTS

- A. See concrete joints plan

## 2.7 MIXING CONCRETE

- A. Standard Concrete - Ready-Mixed Concrete: Mix and transport in accordance with ASTM C94.

# PART 3 - EXECUTION

## 3.1 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete any unfinished formwork, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete", and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.
- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
  - 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
  - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- E. Cold Weather Placement: Comply with provisions of ACI 306
- F. When air temperature has fallen to or is expected to fall below, 40 degrees F (4 degrees C), uniformly heat water and aggregates before mixing, to obtain a concrete mixture temperature of not less than 50 degrees F (10 degrees C) and not more than 80 degrees F (27 degrees C), at point of placement.
  - 1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen sub-grade or on sub-grade containing frozen materials.
  - 2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- G. Hot Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with provisions of ACI 305.

#### CONSTRUCTION JOINTS

### 3.2

- A. Form all joints perpendicular to main reinforcement. Continue reinforcing across joints, unless otherwise indicated.
- B. Roughen surface of concrete at joints and remove laitance to obtain bond before placing next lift.
- C. For bonding new concrete to existing concrete use bonding agent. For grouting dowels and reinforcing bars use specified adhesives in accordance with manufacturer's instructions.

3.3 CONTROL JOINTS

- A. See Concrete Joints Plan. In slabs on grade, tool or saw-cut control joints to true, straight lines, with maximum variance from true line of 1/2 inch in 10 feet and no irregularities across joint in excess of 1/8 inch.

3.4 CLEANING

- A. Leave premises clean and free of residue from work in this section.

END OF SECTION

## **CONCRETE FINISHING FOR SKATEPARKS**

### **PART 1 – GENERAL**

#### **1.1 SPECIALTY SKATE PARK CONSTRUCTION**

- A. All work contained in this Section is considered specialty skate park construction. Only those firms that meet the minimum experience requirements contained in the Bidder Qualifications Section 13 00 00 Special Construction - Skatepark may perform this work as specified herein.

#### **1.2 REGULATIONS**

- A. The work shall conform to requirements of the IBC, as supplemented and modified on drawings or herein.

#### **1.3 REFERENCE STANDARDS**

- A. The Concrete Finishing shall conform to requirements of the following Reference Standards or as modified and supplemented hereinafter.
  - 1. American Concrete Institute (ACI) Specifications for Structural Concrete for Buildings, ACI 301
  - 2. ACI Recommended Practice for Cold Weather Concreting, ACI 306
  - 3. ACI Recommended Practice for Hot Weather Concreting, ACI 605

#### **1.4 RELATED SECTIONS**

- 1. Concrete Formwork for Skateparks
- 2. Concrete Reinforcement for Skateparks
- 3. Cast in Place Concrete for Skateparks
- 4. Shotcrete for Skateparks
- 5. Metal Fabrication for Skateparks

#### **1.5 QUALITY ASSURANCE**

- A. Concrete Finishing work, where indicated to be exposed, is architecturally finished concrete. Special care must be taken to provide specified, finished surfaces without gravel pockets, and other defacements. The Engineer shall inspect concrete after removal of forms and before concrete repair work begins.

#### **1.6 PROTECTION**

- A. Protect persons and adjacent materials and finishes from dust, dirt and other surface or physical damage during finishing operations, including materials driven by wind.

## **PART 2 - PRODUCTS**

### **2.1 FINISHING PRODUCTS**

- A. All products to be used as evaporation retardants and/or finishing aids to be approved prior to concrete placement

### **2.2 REPAIR PRODUCTS**

- A. Submit proposed repair/sacking products for approval prior to use.

## **PART 3 - EXECUTION**

### **3.1 REPAIRS**

- A. Immediately after the removal of forms inspect all surfaces for defects. Repair or patch defects only after defects are inspected by the Engineer and then only with the Engineer's permission.
- B. Do all cutting and repair within 48 hours after removal of forms; cure repairs same as new concrete.
- C. Sacking and Patching: Apply approved products per manufacturer recommendation.

### **3.2 FINISHES FOR FORMED SURFACES**

- A. Rough Form Finish: Provide for surface of walls and footings adjacent to grade or below grade. This is the concrete surface having texture imparted by form facing material use with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.
- B. Smooth Formed Finish: Provide a smooth formed finish on formed concrete surfaces exposed to view. This is an as-cast concrete surface obtained with selected form facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Remove fins and other projections completely and smoothed. Repair and patch honeycombs and defective areas as directed by the Engineer. Tie holes shall not be filled.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated. Provide for face surface of walls adjacent to plaza, walks and stairs.

### **3.3 FINISHES FOR UNFORMED SURFACES**

- A. Screed all slabs, for whatever finishes, to true levels or slopes, work surfaces only to the degree required to produce the desired finish; do no finishing in areas where water has accumulated until they have been drained and excess moisture has dried. Carefully finish all joints and edges with proper tools, unless otherwise specified.

- B. Hard Trowel Finish: After floated surface is firm enough to receive steel trowels, trowel at least two complete passes, or until last stage before blackening. Leave no trowel marks discernible to the touch. Do not use excessive water, especially on last pass.
- C. Defective Work: Remove and replace when directed by the Engineer, surfaces which show inferior finish quality.

### 3.4 CURING

- A. Protect freshly deposited concrete from premature drying and excessively hot or cold temperatures; maintain minimal moisture loss at relatively constant temperature for necessary hydration time and proper relatively constant temperature for necessary hydration time and proper hardening of concrete. Seal transitions, flats and decks with water-based cure and seal.
- B. Duration of Curing: In addition to the initial overnight curing, continue final curing operations until the cumulative number of days or fractions thereof (not necessarily consecutive) occurs, during which time the temperature of the air in contact with the concrete is above 50 degrees F, equals 7 days. If high-early strength concrete has been used, continue final curing operation for 3 days total time, calculated as before.

### CLEANING

### 3.5

- A. Leave premises clean and free of residue from work in this section.

END OF SECTION



## **SHOTCRETE FOR SKATEPARKS**

### **PART 1 – GENERAL**

#### **1.1 SPECIALTY SKATE PARK CONSTRUCTION**

- A. All work contained in this Section is considered specialty skate park construction. Only those firms that meet the minimum experience requirements contained in the Bidders Qualifications Section 13 00 00 Special Construction - Skatepark may perform this work as specified herein.
  - 1. Provide sprayed-on concrete (concrete conveyed into place by air pressure through a flexible tube or gun with controlled nozzle) referred to herein as shotcrete, complete as shown and as specified.
  - 2. Application, cutting, and sculpting and finish work related to this Work is deemed sole source specialty work within the Contract Documents.
  - 3. All work related to this application, cutting, sculpting, and installation shall be coordinated by CLIENT, prior to project start.

#### **1.2 GENERAL CONDITIONS**

- A. Requirements of the Contract Documents, including but not limited to, the General, Special, and Technical Provisions, apply to work in this Section with the same force and effect as though repeated in full herein.

#### **1.3 SCOPE OF WORK**

- A. Furnish materials, labor, transportation, services, and equipment necessary to install all Shotcrete related to the skate park as indicated on scope of work contract and shown on drawings and as specified herein.
- B. Refer to Drawings for specific locations of shotcrete.
- C. Related Work:
  - 1. Concrete Formwork for Skateparks
  - 2. Concrete Reinforcement for Skateparks
  - 3. Cast in Place Concrete for Skateparks
  - 4. Concrete Finishing for Skateparks
  - 5. Concrete Curing for Skateparks

#### **1.3 REFERENCES**

- A. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes and regulations required by the governing municipality. Comply with the current provisions of the following Codes and Standards:

B. ASTM - American Society for Testing and Materials:

1. ASTM C33 – Concrete Aggregates.
2. ASTM C39 – Test Method of Compressive Strength of Cylindrical Concrete Specimens.
3. ASTM C94 – Ready-Mixed Concrete.
4. ASTM C143 – Test for Slump of Portland Cement Concrete.
5. ASTM C150 – Portland Cement.
6. ASTM C260 – Air-Entraining Admixtures for Concrete.
7. ASTM C494 – Chemical Admixtures for Concrete.
8. ASTM C979 – Pigments for Integrally Colored Concrete.
9. ASTM C618 – Fly Ash and Raw or Calcined Natural Pozzalans for Use in Portland Cement Concrete.
10. ASTM F2480 – Standard Guide for In-ground Concrete Skate Park.

C. ACI – American Concrete Institute:

1. ACI 211.1 – Recommended Practice for Selecting Proportions for Normal-Weight Concrete.
2. ACI 211.2 – Recommended Practice for Selecting Proportions for Lightweight Concrete.
3. ACI 301 – Specifications for Structural Concrete for Buildings.
4. ACI 305 – Recommended Practice for Hot Weather Concreting.
5. ACI 306 – Recommended Practice for Cold Weather Concreting.
6. ACI 318 – Building Code Requirements for Reinforced Concrete.

D. IBC – International Building Code

E. AWS – American Welding Society

1. AWS 3.0 – Standard Qualifications Procedure.
2. AWS D1.4 – Structural Welding Code – Reinforcement.
3. AWS D12.1 – Reinforced Concrete Construction.
4. CRSI – Concrete Reinforcing Steel Institute: MSP-1 – Manual of Standard Practice

## 1.4 SUBMITTALS

A. Manufacturer's Data: Current printed specifications with application and installation instruction for proprietary materials including concrete admixtures.

B. Shop Drawings: Radial templates cut to exact radii shown on drawings to ensure exact radii from flat bottom of Skate Park to face of coping. Template shall be fabricated from steel or  $\frac{3}{4}$ " Plywood. CLIENT may elect to waive this requirement if necessary.

C. Design of Concrete Mixes:

1. CONTRACTOR shall be responsible for and pay for design of concrete mixes for each type of concrete specified. Design of concrete mixes shall be performed by a Testing Laboratory selected by CONTRACTOR and approved by the CLIENT. Design methods to be in accordance with ACI 318.
2. Make three trial mixes using aggregate proposed or provide historical data of proposed.
3. Make advance tests of trial mixes with proposed materials or provide historical data of proposed. Test four cylinders in accordance with ASTM C-39 at 7 days and 28 days. Do not

place concrete on project until laboratory reports and breaks of confirmation cylinders indicate that proposed mixes will develop required strengths.

4. Check mix design and revise, if necessary, wherever changes are made in aggregate or in surface water content of aggregate or workability of concrete. Slump shall be the minimum to produce workable mix. Laboratory shall prescribe minimum quantity of water.
  5. If Portland cement reducers or other additives are used, submit control mix design without reducers or additives as well as mix exactly proposed to be used. Submit recommendations for retarders and shrinkage compensation of slab on grade
  6. Sample of Workmanship: Provide on-site, minimum 48"x48" sample. CONTRACTOR may pour item type as part of finished project. It shall be reviewed by the CLIENT, if approved it may remain in place as finished product. If the sample is not approved, CONTRACTOR in charge of the specific scope of work must remove and replace another sample for the CLIENT approval.
  7. Forward a copy of design mix to CLIENT and DESIGNER for written approval prior to placement.
- D. Submit product data and manufacturer's instructions for:
1. Color admixture
  2. Curing compound
  3. Crack repair materials
  4. Form release agents
  5. Finishing aids
  6. Evaporation retarders
  7. Proprietary cleaning agents
- DI. Samples: Samples from Color Selection: Submit color additive manufacturer's color chart & sample chip set; indicate color additive number and required dosage rate. Samples indicate general color and may vary from concrete finished in field according to Specifications.
- DII. Delivery Documentation: Batch tickets for each load of concrete, for informational purposes.

## 1.5 MATERIALS

- A. Portland Cement: ASTM C150, Type I/II, one brand only.
- B. Normal Weight Aggregates: ASTM C33 and as herein specified. Aggregate shall comply with gradation No. 2 as shown in ACI 506R Table 2.1. If the CONTRACTOR can show satisfactory performance of an alternate grading under similar conditions of use, the CLIENT and/or SKATE PARK DESIGNER may waive the requirement for gradation No. 2. Combined gradation of coarse and fine aggregate as follows:

Sieve Size	
U.S. Standard	Percent by Weight
<u>Square Mesh</u>	<u>Passing Individual Sieves</u>
3/8 in	90-100
No. 4	70-85
No. 8	50-70
No. 16	35-55
No. 30	20-35
No. 50	8-20
No. 100	2-10

- C. Batch fine coarse aggregates separately to avoid segregation.
- D. Aggregates shall be free from clay, mud, loam, or other deleterious substances.
- E. Dune sand, bank run sand, and manufactured sand are not acceptable for fine aggregate.
- F. Coarse aggregate shall be clean, un-coated, heavy media processed aggregate of crushed stone or river washed aggregate.
- G. Color Additives:
  - 1. Mix in accordance with manufacturer's instructions. Mix until color additives are uniformly dispersed throughout mixture and disintegrating bags, if used, have disintegrated.

## 1.6 CONCRETE PLACEMENT

- A. Placement Schedule:
  - 1. CONTRACTOR to indicate on plans the locations to be shot within a day's work and not exceeding 40 cubic yards per day for quality control and inspection schedules.
  - 2. Schedule and sequence to be reviewed and approved by CLIENT and DESIGNER prior to starting this Work.

END OF SECTION

## CONCRETE CURING FOR SKATEPARKS

### PART 1 – GENERAL

#### 1.0 SPECIALTY SKATE PARK CONSTRUCTION

- A. All work contained in this section is considered specialty skatepark construction. Only those contractors that meet the minimum experience requirements contained in the Bidder Qualifications Section 13 00 00 Special Construction - Skatepark may perform this work as specified herein.

#### 1.1 GENERAL CONDITIONS

- A. Requirements of the Contract Documents, including but not limited to, the General, Special, and Technical Provisions, apply to work in this Section with the same force and effect as though repeated in full herein.

#### 1.2 SCOPE OF WORK

- A. Furnish materials, labor, transportation, services, and equipment necessary to install all Concrete Curing related to the skate park as indicated on the Drawings complete as shown and as specified herein.
- B. Related Work:
  - 1. Cast in Place Concrete for Skateparks
  - 2. Shotcrete for Skateparks

#### 1.3 REFERENCES

- A. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes and regulations required by the governing municipality. Comply with the current provisions of the following Codes and Standards:
- B. ASTM - American Society for Testing and Materials:
  - 1. ASTM C94 – Ready-Mixed Concrete.
  - 2. ASTM C150 – Portland Cement.
  - 3. ASTM C271 – Sheet Materials for Curing Concrete.
  - 4. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete.
  - 5. ASTM F2480 – Standard Guide for In-ground Concrete Skate Park.
- C. ACI – American Concrete Institute:
  - 1. ACI 301 – Specifications for Structural Concrete for Buildings.
  - 2. ACI 305 – Recommended Practice for Hot Weather Concreting.
  - 3. ACI 306 – Recommended Practice for Cold Weather Concreting.
  - 4. ACI 318 – Building Code Requirements for Reinforced Concrete.
- D. UBC – Uniform Building Code

#### 1.4 SUBMITTALS

- A. In accordance with Contract Documents, General, Special and Technical Provisions.
- B. Submit product data and manufacturer's instructions for:
  - 1. Curing compound.
  - 2. Proprietary cleaning agents.
  - 3. Plastic film for curing.
  - 4. Surface retarders.

#### 1.5 QUALITY ASSURANCE

- A. Safety and Performance Guidelines: Comply with all safety and performance requirements and all applicable references as specified in the ASTM F2480 Standard Guide for In-ground Skate Parks.
- B. Contractor Experience: Provide evidence to indicate successful experience in providing cast-in-place concrete work for skate parks similar in scope to that specified herein per Section 13 00 00.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials in dry and protected locations and protect from damage.

#### 1.7 SITE CONDITIONS

- A. Environmental Requirements: Protect concrete against extreme cold and heat, frost, rapid drying, and damage by rain.

### **PART 2 - PRODUCTS**

#### 2.1 MATERIALS

- A. Curing Compound: ASTM C 309, non-staining, all resin type, white-pigmented, compatible with color admixture.
- B. Acceptable Products: SpecChem Cure & Seal WB or equal. Curing Compound Application Rate: 200 sq. ft./U.S. Gallon

### **PART 3 - EXECUTION**

#### 3.1 CURING

- A. Protect concrete surfaces against rapid drying. Keep sealed with cure agent for necessary amount of time to reach concrete strength and inhibit moisture loss after placing per manufacturer's recommendation.
- B. Apply to exposed surface of concrete as soon as manufacturer recommends with an airless sprayer.

- C. Apply to sides of concrete paving upon removal of form boards.
- D. Meet requirements of manufacturer's current printed application instructions.
- E. Uniformly apply 2 coats and apply the second coat at right angle to first coat.
- F. Apply compound to form a continuous, uniform, coherent film that will not check, crack, or peel.
- G. Do not apply to concrete that is still bleeding, or has a visible water sheen on the surface.
- H. Protect paving surfaces from foot traffic with scuff-proof paper.
- I. Immediately re-coat damaged areas of curing compound.
- J. Protect surface from water, adjacent shotcrete work and debris.

### 3.2 CLEANUP

- A. Contractor to remove all cure agent from concrete surface with power washing equipment and soft brush not causing abrasion to finish work surface prior to final inspection. No Cure Agent shall be present on any surfaces for final inspection acceptance. Remove debris and trash resulting from specified work.

END OF SECTION

## **METAL FABRICATIONS FOR SKATEPARKS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. Furnish materials, labor, transportation, services, and equipment necessary to install all Metal Fabrications for the skate park as indicated on the Drawings complete as shown and as specified herein.

#### **1.2 RELATED SECTIONS**

- 1. Concrete Formwork for Skateparks
- 2. Concrete Reinforcement for Skateparks
- 3. Cast in Place Concrete for Skateparks
- 4. Shotcrete for Skateparks

#### **1.3 QUALITY ASSURANCE**

- A. Qualifications of Fabricators: Experienced in fabrication of miscellaneous metals.
- B. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, and who shall be thoroughly familiar with the type of materials being installed, the referenced standards, the requirements of this Work, and who shall direct all work performed under this Section. Welds indicated may be made in shop or field with approval.
- C. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes and regulations required by the governing municipality. At a minimum comply with the current provisions of the following Codes and Standards:
  - 1. ASTM A36 - Structural Steel.
  - 2. ASTM A53 - Steel Pipe and Tubing.
  - 3. ASTM F2480 - Standard Guide for In-ground Concrete Skate Park.
- D. ASTM - American Society for Testing and Materials:
  - 1. ASTM A36 - Structural Steel.
  - 2. ASTM A53 - Steel Pipe and Tubing.
  - 3. ASTM F2480 - Standard Guide for In-ground Concrete Skate Park.
- E. UBC - Uniform Building Code
- F. AWS - American Welding Society
  - 1. AWS D1.1 - Structural Welding Code (latest edition)
- G. CRSI - Concrete Reinforcing Steel Institute: "Manual of Standard Practice," latest edition.
- H. AISC - American Institute of Steel Construction, Inc: "Specifications of Architecturally Exposed Structural Steel," latest edition.



#### 1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's published literature for specified products and accessories as applicable including manufacturer's specifications, performance calculations, and physical characteristics.
- B. Shop Drawings:
  - 1. Submit shop drawings for approval by the Owner's representative for all custom fabricated items under this section. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories. Indicate welded connections using standard AWS welding symbols.
  - 2. Verification: Verify all measurements at the job. Show dimensions, sizes, thicknesses, gauges, finishes, joining, attachments, and relationship of work to adjoining construction. Where items must fit and coordinate with finished surfaces and/or constructed spaces, take measurements at site and not from drawings.
- C. Samples:
  - 1. Contractor to provide fabricated, onsite sample of metal item(s), complete with approved finish, for approval by the Parks Engineer before fabrication of total quantities.
  - 2. Any fabrication of project item(s) by Contractor before Owner review and approval is subject to rejection.
  - 3. Approved sample(s) shall be used as the standard of workmanship and shall remain on site until work has been completed and accepted in writing by the Parks Engineer.
  - 4. The Parks Engineer must approve all samples prior to delivery to site.
  - 5. Attach name, address of manufacturer and/or supplier to each sample.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Ship, store, and handle all items so as to protect metal components from damage on site.
- B. Store in a safe location, out of pedestrian and vehicular traffic and protected from weather.
- C. Repair or replace any damaged components before installation.
- D. Where items must be incorporated or built into adjacent work, deliver to trade responsible for such work in sufficient time that progress of work is not delayed. Be responsible for proper location of such items.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. 2" ROUND STEEL PIPE COPING: 2.375 X 0.154.
- B. 2-1/2" ROUND STEEL PIPE COPING: 2.875 X 0.203.
- C. C6 x 8.2, HR A36: CHANNEL STEEL: 6" X 1.920" HSS 6.000 X 1.920 X 0.200.

D. 1/4" X 4" STEEL PLATE: HSS 0.250 X 4.00

2.2 GROUT:

- A. Rapid Set Blue Grout Cement All Multi-Purpose Repair Material & Non-Shrink Grout, or approved equal.

2.3 OTHER MATERIALS:

- A. All other materials, not specifically described but required for a complete and proper installation of miscellaneous metals, shall be new, first quality of their respective kinds and subject to the approval of the Engineer.

**PART 3 - EXECUTION**

3.1 EXISTING CONDITIONS

- A. Prior to commencing any work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Notify the Engineer if conditions are unacceptable to begin work.
- C. Do not proceed with the work until all unsatisfactory conditions have been corrected.

COORDINATION

3.2

- A. General: Carefully coordinate with all other trades to insure proper and adequate interface of the work of other trades with the Work of this Section.
- B. Templates and Built-ins:
  - 1. Furnish all anchors, fastenings, sleeves, setting templates and layouts affecting or installed in the work of other trades in sufficient time that progress of work is not delayed.
- C. Delivery:
  - 1. Ensure timely delivery of all metal fabrications where items must be incorporated or built into adjacent work.
  - 2. Be responsible for to field verify the proper location all metal fabrications prior to final installation in sufficient time that progress of work is not delayed.

### 3.3 INSTALLATION

#### A. Workmanship:

1. Employ only workmen specifically skilled in such work.
2. Install metal fabrications in strict accordance with the Drawings, the approved Shop Drawings, and all applicable codes, regulations and standards.
3. Obtain Owner's Representative review prior to site cutting or making adjustments which are not parts of the scheduled work.
4. Set all work plumb, true, rigid, and neatly trimmed out.
5. Miter corners and angles of exposed molding and frames unless otherwise noted.
6. Fit exposed connections accurately together to form tight hairline joints.
7. Align all metal fabrications as shown on the Drawings, and where vertical or horizontal members are shown. Align them straight, plumb and level within tolerance.
8. Make provisions for erection stresses by temporary bracing. Keep work in alignment.
9. Replace all work damaged in course of installation. Perform field welding in accordance with AWS D1.1.
10. After installation, grind smooth and touch-up field welds.

### 3.4 FABRICATION

- A. Provide all surfaces free of file marks, dents, hammer marks, wire edges or any unsightly surface defects.
- B. Roll all steel pipe coping to conform with top radius curve of each bowl and/or ledge as shown on drawings. Refer to drawings for relational tolerance to concrete surface and other steel.
- C. For all attachments and reinforcements do all cutting, shearing, drilling, punching, threading, tapping, etc., required for site metalwork or for attachment of adjacent work. If applicable, drill or punch holes; do not use cutting torch.
- D. Make all permanent connections in ferrous metal surfaces using welds where at all possible; do not use bolts or screws.

### 3.5 WELDING

- A. Preparation: Remove all rust, paint, scale and other foreign matter. Wire brush all flame-cut edges. Clamp members as required and alternate welds, all as necessary to prevent warping or misalignment.
- B. Exposed Welds: Uniformly grind smooth (no tolerance) all welds normally exposed to view and feel in the finished work.
- C. Faulty and Defective Welding: Chip out and replace all welding showing cracks, slag inclusion, lack of fusion, bad undercut or other defects ascertained by visual or other means of inspection. Replace and re-weld at no cost to Owner.
- D. Field Welding:
  - 1. Procedure: Comply with AWS code of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.
  - 2. Protection: Protect all adjacent surfaces from damage due to weld sparks, spatter, or tramp metal.

### 3.6 SURFACE TREATMENT & PROTECTIVE COATINGS

- A. Cleaning:
  - 1. Thoroughly clean all mill scale, rust, dirt, grease and other foreign matter from ferrous metal prior to any galvanizing, or painting.
  - 2. Conditions which are too severe to be removed by hand cleaning, shall be cleaned using appropriate methods for solvent cleaning, power tool cleaning and brush-off blast cleaning.
- B. Exterior Ferrous Metal:
  - 1. Grind smooth all welds, burrs, and rough surfaces. Clean all coping from grease.
  - 2. Shop coat iron metal items; using anti-rust primer (red color).
  - 3. All welds to be painted with primer after appropriate connections and grinding has taken place. Touch-up all scratched primer prior to shotcrete application.

### 3.7 CLEAN-UP

- A. Keep all areas of work clean, neat and orderly at all times. Keep paved areas clean during installation.
- B. Clean up and remove all debris from the entire work area prior to final acceptance by of the Engineer.

END OF SECTION

## **PAINTING (SKATE PARK)**

### **PART 1 – GENERAL**

#### **1.1 SCOPE OF WORK**

- A. Furnish materials, labor, transportation, services, and equipment necessary to install all concrete formwork related to the skate park as indicated on scope of work contract and shown on drawings and as specified herein.
- B. Related Work:
  - 1. Concrete Formwork for Skateparks
  - 2. Concrete Reinforcement for Skateparks
  - 3. Cast-In-Place Concrete for Skateparks
  - 4. Concrete Finishing for Skateparks
  - 5. Concrete Curing for Skateparks
  - 6. Metal Fabrications for Skateparks
- C. This Section includes surface preparation and shop/field painting of the following:
  - 1. Miscellaneous exposed exterior items and surfaces.
- D. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, OWNER'S REPRESENTATIVE AND SKATE PARK CONSULTANT shall select from standard colors and finishes available.
  - 1. Painting includes shop/field painting of exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- E. Do not paint prefabricated items, concealed surfaces, finished metal surfaces, operating parts, and labels.
  - 1. Finished metal surfaces include the following if used:
    - a. Stainless steel.
    - b. Bronze and brass.
    - c. Iron
  - 2. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code required labels or equipment name, identification, performance rating, or nomenclature plates.

## 1.2 REFERENCES

- A. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes, and regulations required by the local, governing municipality. Comply with the current provisions of the following Codes and Standards:
- B. ASTM - American Society for Testing and Materials
- C. IBC – International Building Code
- D. SSPC – Society for Protective Coatings: “Steel Structures Painting Manual,” latest edition.

## 1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D16-08 apply to this Section.
  - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
  - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
  - 3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
  - 4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
  - 5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

## 1.4 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers.
  - 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
  - 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
  - 3. Certification by the manufacturer that the products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

1. After color selection, CONTRACTOR will furnish color chips for surfaces to be coated.
- C. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
  1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
  2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.
  3. Submit Samples for SKATE PARK DESIGNER review of color and texture.

#### 1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
  1. Product name or title of material.
  2. Product description (generic classification or binder type).
  3. Manufacturer's stock number and date of manufacture.
  4. Contents by volume, for pigment and vehicle constituents.
  5. Thinning instructions.
  6. Application instructions.
  7. Color name and number.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
- C. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

#### 1.7 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).

- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces

## PART 2 – PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.

### 2.2 MATERIALS

- A. Material Compatibility: Provide fillers, primers, undercoats, and finish-coat 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.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
  - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. Color for Skate Park Rails & Metal/Coping Protection:
  - 1. Provide color selections made by the OWNER'S REPRESENTATIVE AND SKATE PARK CONSULTANT.

## PART 3 – EXECUTION / CONSTRUCTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
  - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
  - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.



1. Notify the OWNER'S REPRESENTATIVE AND SKATE PARK CONSULTANT about anticipated problems using the materials specified over substrates primed by others.

### 3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime.
  2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to make smooth and dust off.
    - a) Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
  3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
    - a) Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
  2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain

material before using.

3. Use only thinners approved by paint manufacturer and only within recommended limits.

### 3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
  1. Paint colors, surface treatments, and finishes as indicated in the schedules.
  2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
  3. Provide finish coats that are compatible with primers used.
  4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, covers, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
  5. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
  1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
  2. Omit primer on metal surfaces that have been shop primed and touchup painted.
  3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
  4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
  1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.

2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer or the material and texture required. Spray cans are acceptable.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- E. Fillers: Apply fillers at a rate to ensure complete coverage of pores filled.
- F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
- G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

### 3.4 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
- B. After completing painting, clean paint-spattered surfaces. Remove spattered paint by washing and Scraping. Be careful not to scratch or damage adjacent finished surfaces.

### 3.5 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by the OWNER'S REPRESENTATIVE AND SKATE PARK CONSULTANT.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in Painting Contractors Association (PDCA) P1.

### 3.6 EXTERIOR PAINT SCHEDULE

A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.

1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
  - a) Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).
    - 1) Rust-Oleum: Self- Etching Primer
    - 2) Krylon: Self- Etching Primer
    - 3) 433 RustPlate Rust Inhibitive Primer by Kurfees Coating.
    - 4) Fuller: 621-04 Blox-Rust Alkyd Metal Primer.
    - 5) Glidden: 5205 Glid-Guard Tank & Structural Primer, Red.
    - 6) Moore: IronClad Retardo Rust-Inhibitive Paint #163.
    - 7) PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
    - 8) P & L: S/D 1009 Suprime "9" Interior/Exterior Alkyd Metal Primer.
  - b) First and Second Coats: Semigloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).
    - 1) Rust-Oleum: Professional Enamel Sprays
    - 2) Krylon: Professional All Surface Enamel
    - 3) Fuller: 664-XX Weather King II Semi-Gloss House & Trim Paint.
    - 4) Glidden: 6600 Series Spred Ultra Exterior Gloss Latex House & Trim Paint.
    - 5) Moore: MoorGlo Latex House & Trim Paint #096.
    - 6) PPG: 78 Line Sun-Proof Semi-Gloss Acrylic Latex House and Trim Paint.
    - 7) P & L: Z/F 3100 Series Aqua Royal Latex House & Trim Finish.

END OF SECTION

## **GRADED AGGREGATE BASE FOR SKATEPARKS**

### **PART 1 -GENERAL**

#### **1.1 SECTION INCLUDES:**

- A. Aggregates for Concrete Base Course

#### **1.2 RELATED SECTIONS:**

- 1. Cast in Place Concrete for Skateparks
- 2. Shotcrete for Skateparks

#### **1.3 SUBMITTALS:**

- A. Submit material gradation sieve analysis per ASTM D-422.

#### **1.4 GENERAL REQUIREMENTS:**

- A. Aggregate Base shall be composed of clean; uniform (in quality) particulate size groups essentially free from wood Waste and other deleterious Materials. They shall be obtained only from sources approved by the Engineer.
  - 1. Written requests for source approval shall be submitted to the Engineer not less than 10 Days prior to the intended use of the Aggregate Base.
  - 2. Should the proposed source be one that the Engineer has no history of Material performance with, the Engineer reserves the right to take preliminary samples at the proposed source, and make preliminary tests, to first determine acceptability of the new source and then perform the applicable Material approval testing.
  - 3. Continued approval of a source is contingent upon the Aggregate Base from that source continuing to meet Contract requirements.
- B. Aggregate Base shall meet the Standard Specifications for grading and quality for use in the Work; however, allowable exceptions may be specified in other Project Manual Sections.
- C. Crushed concrete shall meet the requirements specified in "Aggregate for Bases" and Articles of this Section as applicable.
- D. All percentages are by weight unless otherwise specified.

## **PART 2-PRODUCTS**

### **2.1 AGGREGATE FOR BASES:**

- A. Aggregate Base Material under pavements shall be 5/8" Minus Base Material.
- B. At the option of the Contractor, recycled concrete crushed to the requirements of this Section will be permitted as a substitute for Aggregate Base Material (Type) with the following exception
  - 1. In exposed areas.
  - 2. Where free drainage is required.

## **PART 3-EXECUTION**

### **3.1 AGGREGATE PREPARATION:**

- A. Base shall be readily compacted and spread with equipment that will provide a uniform layer conforming to the planned section.
- B. Base Material to be compacted to 95% compaction by standard proctor

END OF SECTION

SECTION 22 05 53  
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Stencils.
- D. Pipe markers.
- E. Ceiling tacks.

1.2 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2015.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Schedules:
  - 1. Submit plumbing component identification schedule listing equipment, piping, and valves.
  - 2. Detail proposed component identification data in terms of wording, symbols, letter size, and color coding to be applied to corresponding product.
  - 3. Valve Data Format: Include id-number, location, function, and model number.
- C. Operation and Maintenance, O&M, Manual Data: Record actual locations of tagged valves, and provide laminated valve chart which includes valve tag numbers, location and function in chart form for placement into Operations and Maintenance Manual.

PART 2 PRODUCTS

2.1 PLUMBING COMPONENT IDENTIFICATION GUIDELINE

- A. Nameplates:
  - 1. Control panels, transducers, and other related control equipment products.
- B. Tags:
  - 1. Piping: 3/4 inch diameter and smaller.
  - 2. Manual operated and automated control valves.
  - 3. Instrumentation, relays, gauges, and other related control equipment products.
  - 4. Ceiling tacks placed on lay-in ceiling surface to reference plumbing components.
- C. Stencil:
  - 1. Pumps, tanks, filters, water treatment devices, and other fluid managing products.
  - 2. Ceiling tacks placed on lay-in ceiling surface to reference plumbing components.
- D. Pipe Markers: 3/4 inch diameter and higher.

## 2.2 NAMEPLATES

- A. Description: Laminated piece with up to three lines of text.
  - 1. Letter Color: White.
  - 2. Letter Height: 1/4 inch.
  - 3. Background Color: Black.
- B. Generator Gas Shutoff Valve: 2 inch by 4 inch, engraved yellow anodized aluminum with rounded corners and 1/4 inch text for exterior use. Nameplate to read "GENERATOR GAS SHUTOFF VALVE - DO NOT TURN OFF". Nameplate to be secured with brass chains. Nameplate available from Craftmark Pipe Markers or Equivalent.
- C. Main Gas Shutoff Valve: 2 inch by 4 inch, engraved yellow anodized aluminum with rounded corners and 1/4 inch text for exterior use. Nameplate to read "BUILDING GAS SHUTOFF VALVE - NOT GENERATOR SHUTOFF". Nameplate to be secured with brass chains. Nameplate available from Craftmark Pipe Markers or Equivalent.

## 2.3 TAGS

- A. Flexible: Vinyl with engraved black letters on light contrasting background color with up to three lines of text. Minimum tag size 1-1/2 inch in diameter.
- B. Valve Tag Chart: Typewritten letter sized list, plastic laminated. Typewritten letter size list to include applied tag function description, valve tag number and location.

## 2.4 STENCILS (CONCEALED PIPING)

- A. Stencil Paint: As specified in Section 09 91 23, semi-gloss enamel, colors complying with ASME A13.1.

## 2.5 PIPE MARKERS (EXPOSED PIPING)

- A. Comply with ASME A13.1.
- B. Flexible Marker: Factory fabricated, semi-rigid, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid conveyed.
- C. Flexible Tape Marker: Flexible, vinyl film tape with pressure-sensitive adhesive backing and printed markings.
- D. Identification Scheme, ASME A13.1:
  - 1. Primary: External Pipe Diameter, Uninsulated or Insulated.
  - 2. Secondary: Color scheme per fluid service.
    - a. Water; Potable, Cooling, Boiler Feed, and Other: White text on green background.

## 2.6 CEILING TACKS

- A. Description: Steel with 3/4 inch diameter color coded head.
- B. Color code as follows:
  - 1. Plumbing Valves: Green.



## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Degrease and clean surfaces to receive identification products.
- B. Prepare surfaces for stencil painting, see Section 09 91 23.

### 3.2 INSTALLATION

- A. Install flexible nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags in clear view and align with axis of piping
- C. Identify water heaters, pumps, tanks, and water treatment devices with plastic nameplates. Identify in-line pumps and other small devices with tags.
- D. Apply stencil painted identification in compliance with Section 09 91 23 requirements. Identify unit with assigned id-number and area being served using pipe marking rules.
- E. Install plastic pipe markers in accordance with manufacturer's instructions.
  - 1. Identify service, flow direction, and pressure.
  - 2. Install in clear view and align with axis of piping.
  - 3. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.
- F. Locate ceiling tacks to locate valves above lay-in panel ceilings. Locate in corner of panel closest to equipment.
- G. Identify concealed piping, with stenciled painting. Identify exposed piping with plastic pipe markers. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.
- H. Identify valves in main and branch piping with tags.

END OF SECTION



SECTION 22 07 19  
PLUMBING PIPING INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Expanded polystyrene insulation.
- B. Flexible elastomeric cellular insulation.
- C. Glass fiber insulation.
- D. Jacketing and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping and Specialties: Placement of hangers and hanger inserts.
- B. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

1.3 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.
- B. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007 (Reapproved 2013).
- C. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2013).
- D. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- E. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation; 2017.
- F. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2016.
- G. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2019.
- H. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2017, with Editorial Revision (2018).
- I. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2018.
- J. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation; 2019a.
- K. ASTM C610 - Standard Specification for Molded Expanded Perlite Block and Pipe Thermal Insulation; 2017.
- L. ASTM D1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber; 2014.
- M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.

- N. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- O. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 5 years of experience.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

#### 1.7 FIELD CONDITIONS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Maintain ambient conditions required by manufacturers of each product.
- C. Maintain temperature before, during, and after installation for minimum of 24 hours.

### PART 2 PRODUCTS

#### 2.1 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

#### 2.2 GLASS FIBER INSULATION

- A. Manufacturers:
  - 1. Armstrong
- B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
  - 1. K Value: ASTM C177, 0.24 at 75 degrees F.
  - 2. Maximum Service Temperature: 850 degrees F.

3. Maximum moisture absorption: 0.1 percent by volume.
- C. Vapor Retarder Jacket: ASTM C1136 Flexible, Low Permeance Vapor Retarders for Thermal Insulation, Type II. Facing: 1 inch galvanized steel hexagonal wire mesh stitched on one face of insulation.
- D. Vapor Barrier Lap Adhesive: Compatible with insulation.
- E. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.

## 2.3 EXPANDED POLYSTYRENE INSULATION

- A. Manufacturers:
  1. Armstrong.
  2. Certainteed Company.
  3. Manville Products
  4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Insulation: ASTM C578; rigid closed cell.
  1. K Value: 0.23 at 75 degrees F.
  2. Maximum Service Temperature: 165 degrees F.
  3. Maximum Moisture Absorption: 0.2 percent by volume.
  4. Maximum Water Vapor Permeance: 5.0 perm inch.

## 2.4 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Manufacturers:
  1. Armstrong
  2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.

## 2.5 JACKETING AND ACCESSORIES

- A. PVC Plastic Pipe Jacket.
  1. Manufacturers:
    - a. Armstrong.
    - b. Owens Corning.
    - c. Knauf.
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
    - a. Maximum Service Temperature: 450 degrees F.
    - b. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
    - c. Thickness: 15 mil.
    - d. Connections: Brush on welding adhesive.
  3. Covering Adhesive Mastic: Compatible with insulation.
  4. Insulation covering cold water systems shall contain integral vapor retarder system for moisture removal and mold prevention.
- B. Aluminum Jacket:
  1. Thickness: 0.020 inch sheet.
  2. Finish: Embossed.
  3. Joining: Longitudinal slip joints and 2 inch laps.
  4. Fittings: 0.016 inch thick die-shaped fitting covers with factory-attached protective liner.
  5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.
- D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections and expansion joints.
- E. Glass fiber insulated pipes conveying fluids below ambient temperature:
  - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
  - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- G. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.
- H. Glass fiber insulated pipes conveying fluids above ambient temperature:
  - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples.
  - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- I. Inserts and Shields:
  - 1. Application: Piping 1-1/2 inches diameter or larger.
  - 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
  - 3. Insert Location: Between support shield and piping and under the finish jacket.
  - 4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
  - 5. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- J. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions.
- K. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with PVC jacket and fitting covers.
- L. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh

reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

- M. Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
- N. Provide insulation to storm piping in its entirety from roof drain, entire length of horizontal storm piping run to main vertical drop.

### 3.3 SCHEDULES

#### A. Plumbing Systems:

- 1. All sizes of Domestic Cold water, 1/2 inch to 1-1/4 inch Hot Water, 1/2 inch to 1-1/4 inch Hot Water Recirculation and 1/2 inch to 1-1/4 inch Tempered Water Piping:
  - a. Glass Fiber Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1 inch.
  - b. Cellular Glass Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1 inch.
  - c. Expanded Polystyrene Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1 inch.
  - d. Cellular Foam Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1 inch.
- 2. 1-1/2 inch and Larger Domestic Hot Water, Hot Water Recirculation and Tempered Water Piping:
  - a. Glass Fiber Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1-1/2 inch.
  - b. Cellular Glass Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1-1/2 inch.
  - c. Expanded Polystyrene Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1-1/2 inch.
  - d. Cellular Foam Insulation:
    - 1) Pipe Size Range: As Noted.
    - 2) Thickness: 1-1/2 inch.
- 3. Roof Drain Bodies:
  - a. Fiber Glass Insulation with integral vapor retarder. All pipe sizes, 1 inch thick.
  - b. Elastomeric Cellular Foam Insulation. All pipe sizes, 1 inch thick.
  - c. Cellular Glass Insulation. All pipe sizes, 1 inch thick.
- 4. Exposed Roof Drainage Above Grade
  - a. Fiber Glass Insulation with integral vapor retarder. All pipe sizes, 1 inch thick.
  - b. Elastomeric Cellular Foam Insulation. All pipe sizes, 1 inch thick.
  - c. Cellular Glass Insulation with full PVC jacket. All pipe sizes, 1 inch thick.
- 5. Concealed Roof Drainage
  - a. Fiber Glass Insulation with integral vapor retarder. All pipe sizes, 1 inch thick.
  - b. Elastomeric Cellular Foam Insulation. All pipe sizes, 1 inch thick.
  - c. Cellular Glass Insulation. All pipe sizes, 1 inch thick.
- 6. Roof Drainage Run Horizontal at Roof Level:
  - a. Fiber Glass Insulation with integral vapor retarder. All pipe sizes, 1 inch thick.

- b. Elastomeric Cellular Foam Insulation. All pipe sizes, 1 inch thick.
    - c. Cellular Glass Insulation. All pipe sizes, 1 inch thick.
  - 7. Plumbing Vents Within 10 Feet of the Exterior:
    - a. Fiber Glass Insulation with integral vapor retarder. All pipe sizes, 1 inch thick.
    - b. Elastomeric Cellular Foam Insulation all pipe sizes, 1 inch thick.
    - c. Cellular Glass Insulation. All pipe sizes, 1 inch thick.
- B. Plumbing Systems:
  - 1. Domestic Hot Water Storage Tanks:
    - a. Cellular Glass Insulation: 2 inches thick.
  - 2. Domestic Cold Water Storage Tanks:
    - a. Cellular Glass Insulation: 2 inches thick.
  - 3. Piping Exposed to Freezing with Heat Tracing: All pipe sizes, 1 inch thick.

END OF SECTION



SECTION 22 10 05  
PLUMBING PIPING AND SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sanitary waste piping, buried within 5 feet of building.
- B. Sanitary waste piping, above grade.
- C. Domestic water piping, buried within 5 feet of building.
- D. Domestic water piping, above grade.
- E. Pipe, pipe fittings, valves, connections and specialties for:
  - 1. Sanitary sewer systems.
  - 2. Domestic water systems.
  - 3. Pipe flanges, unions, and couplings.
  - 4. Pipe hangers and supports.
  - 5. Pipe sleeve-seal systems.
  - 6. Ball valves.
  - 7. Pressure reducing valves.

1.2 RELATED REQUIREMENTS

- A. Section 22 05 53 - Identification for Plumbing Piping and Equipment.
- B. Section 22 07 19 - Plumbing Piping Insulation.
- C. Section 31 23 16 - Excavation.
- D. Section 31 23 23 - Fill.
- E. Section 33 01 10.58 - Disinfection of Water Utility Piping Systems.

1.3 REFERENCE STANDARDS

- A. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems; 2015.
- B. ANSI Z223.1 - National Fuel Gas Code; 2016.
- C. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2016.
- D. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- E. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- F. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings - DWV; 2016.
- G. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2018.
- H. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV; 2017.
- I. ASME B31.9 - Building Services Piping; 2017.
- J. ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; 2019.

- K. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications; 2019.
- L. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems; 2009.
- M. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- N. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2017.
- O. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2019.
- P. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- Q. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2015a.
- R. ASTM B68/B68M - Standard Specification for Seamless Copper Tube, Bright Annealed; 2011.
- S. ASTM B75/B75M - Standard Specification for Seamless Copper Tube; 2011.
- T. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2016.
- U. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2018.
- V. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV); 2013.
- W. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- X. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- Y. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2014.
- Z. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter; 2012a.
- AA. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012 (Reapproved 2018).
- AB. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe; 2015.
- AC. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2014.
- AD. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2015.
- AE. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.
- AF. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.
- AG. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe; 2014.

- AH. ASTM F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings; 2016.
- AI. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; 2010.
- AJ. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2017.
- AK. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2017, with Errata (2018).
- AL. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2017.
- AM. AWWA C651 - Disinfecting Water Mains; 2014.
- AN. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service; 2017.
- AO. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2017 (Revised 2018).
- AP. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2012 (Revised 2018).
- AQ. ICC (IFGC) - International Fuel Gas Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- AR. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2015.
- AS. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry Elements; 2015.
- AT. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2015.
- AU. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements; 2016.
- AV. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- AW. MSS SP-71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends; 2018.
- AX. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.
- AY. MSS SP-85 - Cast Iron Globe & Angle Valves, Flanged and Threaded Ends; 2011.
- AZ. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
- BA. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- BB. NSF 372 - Drinking Water System Components - Lead Content; 2016.
- BC. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, hangers, supports and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
- C. Project Record Documents: Record actual locations of valves.

- D. Hangers and Supports: Submit manufacturers catalog information including load capacity.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements for additional provisions.
  - 2. Valve Repacking Kits: One for each type and size of valve.

#### 1.5 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Perform Work in accordance with standards of the State of New York.
- C. Valves: Manufacturer's name and pressure rating marked on valve body.
- D. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.
- E. Welder Qualifications: Certified in accordance with ASME BPVC-IX.
- F. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

#### 1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for installation of backflow prevention devices.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of installation of backflow prevention devices.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

#### 1.8 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

### PART 2 PRODUCTS

#### 2.1 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Plenum-Installed Acid Waste Piping: Flame-spread index equal or below 25 and smoke-spread index equal or below 50 according to ASTM E84 or UL 723 tests.

#### 2.2 SANITARY WASTE PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Cast Iron Pipe: ASTM A74 extra heavy weight.
  - 1. Fittings: Cast iron.
  - 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.

- B. PVC Pipe: ASTM D2665 or ASTM D3034.
  - 1. Fittings: PVC.
  - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

## 2.3 SANITARY WASTE PIPING, ABOVE GRADE

- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
  - 1. Fittings: Cast iron.
  - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
- B. Copper Tube: ASTM B306, DWV, Type L.
  - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.23, solvent.
  - 2. Joints: Solder, lead free, ASTM B32, 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F.
- C. PVC Pipe - (Not For Use in Return Air Plenums or Exposed in Places of Assembly.): ASTM D2665.
  - 1. Fittings: PVC.
  - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

## 2.4 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Copper Pipe: ASTM B42, hard drawn, 2-1/2 inches and smaller.
  - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
  - 2. Joints: ASTM B32, alloy Sn95 solder.
- B. Ductile Iron Pipe: AWWA C151/A21.51, 3 inches and larger.
  - 1. Fittings: AWWA C110, ductile iron, standard thickness. Cement Mortar lining in conformance with AWWA C-104.
  - 2. Joints: AWWA C111/A21.11, styrene butadiene rubber (SBR) or vulcanized SBR gasket with 3/4 inch diameter rods.
  - 3. Jackets: AWWA C105 polyethylene jacket.
- C. PEX Pipe: Polyethylene cross-linked for Potable water (non-oxygen barrier). Color coded: Blue for cold domestic water and Red for hot domestic water. Complies with ASTM F876, F877, F1807, F2159, 2023, CSA B137.5.
  - 1. Fittings: PEX designed for use with Potable water piping.

## 2.5 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tubing for pipe 2 1/2 inches and smaller: ASTM B 88 (ASTM B 88M), Type L (B), Drawn (H)
  - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
  - 2. Joints: ASTM B 32, alloy Sn95 solder. Lead free.
- B. Copper Tubing for pipe 3 inches and larger: ASTM B88, Type L (B), hard drawn, rolled grooved ends
  - 1. Fittings: ASTM B584 bronze sand castings, grooved ends.
  - 2. Joints: Grooved mechanical couplings meeting ASTM F1476.
    - a. Housing Clamps: ASTM A395/A395M and ASTM A536 ductile iron, enamel coated, compatible with copper tubing sizes, to engage and lock designed to permit some angular deflection, contraction, and expansion.
    - b. Gasket: Elastomer composition for operating temperature range from -30 degrees F to 180 degrees F.
    - c. Accessories: Stainless steel bolts, nuts, and washers.
  - 3. Mechanically pressed fitting are allowed for this application.

## 2.6 PIPE FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 2 inches and Under:
  - 1. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.
  - 2. PVC Piping: PVC
  - 3. CPVC Piping: PVC
- B. Flanges for Pipe Size Over 2 inches:
  - 1. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
  - 2. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
  - 3. PVC Piping: PVC
  - 4. CPVC Piping: PVC
  - 5. Gaskets: 1/16 inch thick preformed neoprene gaskets

## 2.7 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
  - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
  - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
  - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
  - 4. Vertical Pipe Support: Steel riser clamp.
- B. Plumbing Piping - Drain, Waste, and Vent:
  - 1. Conform to ASME B31.9.
  - 2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
  - 3. Hangers for Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
  - 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
  - 5. Wall Support for Pipe Sizes to 3 inch: Cast iron hook.
  - 6. Wall Support for Pipe Sizes 4 inch and Over: Welded steel bracket and wrought steel clamp.
  - 7. Vertical Support: Steel riser clamp.
  - 8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
  - 9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- C. Plumbing Piping - Water:
  - 1. Conform to ASME B31.9.
  - 2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
  - 3. Hangers for Cold Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
  - 4. Hangers for Hot Pipe Sizes 2 to 4 inch: Carbon steel, adjustable, clevis.
  - 5. Hangers for Hot Pipe Sizes 6 inch and Larger: Adjustable steel yoke, cast iron pipe roll, double hanger.
  - 6. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.
  - 7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches and Over: Steel channels with welded supports or spacers and hanger rods, cast iron roll.
  - 8. Wall Support for Pipe Sizes Up to 3 inch: Cast iron hook.
  - 9. Wall Support for Pipe Sizes 4 inch and Larger: Welded steel bracket and wrought steel clamp.
  - 10. Wall Support for Hot Pipe Sizes 6 inch and Larger: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron pipe roll.
  - 11. Vertical Support: Steel riser clamp.

12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
  13. Floor Support for Hot Pipe Sizes to 4 inch: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.
  14. Floor Support for Hot Pipe Sizes 6 inch and Larger: Adjustable cast iron pipe roll and stand, steel screws, and concrete pier or steel support.
  15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
1. Concrete Wedge Expansion Anchors: Comply with ICC-ES AC193.
  2. Masonry Wedge Expansion Anchors: Comply with ICC-ES AC01.
  3. Concrete Screw Type Anchors: Comply with ICC-ES AC193.
  4. Masonry Screw Type Anchors: Comply with ICC-ES AC106.
  5. Concrete Adhesive Type Anchors: Comply with ICC-ES AC308.
- E. INSERTS
1. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.
- F. FLASHING
1. Metal Flashing: 26 gage thick galvanized steel.
  2. Metal Counterflashing: 22 gage thick galvanized steel.
  3. Lead Flashing:
    - a. Waterproofing: 5 lb./sq. ft sheet lead.
    - b. Soundproofing: 1 lb./sq. ft sheet lead.
  4. Flexible Flashing: 47 mil thick sheet compatible with roofing.
  5. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.
- G. SLEEVES
1. Sleeves for Pipes through Non-fire Rated Floors: 18 gage thick galvanized steel.
  2. Sleeves for Pipes through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
  3. Sealant: refer to Section 07 90 00.
- H. MECHANICAL SLEEVE SEALS
1. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.
- I. FORMED STEEL CHANNEL
1. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.
- 2.8 PIPE SLEEVE-SEAL SYSTEMS
- A. Modular Mechanical Seals:
1. Elastomer-based interlocking links continuously fill annular space between pipe and wall-sleeve, wall or casing opening.
  2. Watertight seal between pipe and wall-sleeve, wall or casing opening.
  3. Size and select seal component materials in accordance to service requirements.
  4. Glass reinforced plastic pressure end plates.
- 2.9 BALL VALVES
- A. Manufacturers:
1. Substitutions: See Section 01 60 00 - Product Requirements.

- B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze body, chrome plated brass ball, full port, teflon seats and stuffing box ring, blow-out proof stem, lever handle, solder or threaded ends with union. Lead free.

## 2.10 HORIZONTAL SWING CHECK VALVES

- A. Up to 2 Inches:
  - 1. MSS SP-80, 150, bronze body and cap, bronze swing disc with rubber seat, solder or threaded ends. Lead free.

## 2.11 SPRING LOADED CHECK VALVES

- A. Up to 2 inches:
  - 1. MSS SP 80, Class 250, bronze body, in-line spring lift check, silent closing, Buna-N disc, integral seat, threaded ends. Lead free.
- B. 2-1/2 inches and Larger:
- C. MSS SP 71, Class 125, wafer style, cast iron body, bronze seat, center guided bronze disc, stainless steel spring and screws, flanged ends.

## 2.12 PRESSURE REDUCING VALVES

- A. 2 inch and Smaller:
  - 1. MSS SP-80, bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends. Lead free.
  - 2. Pressure Reducing Pilot-Operator:
    - a. Operating Range: 5 to 50 psi.
    - b. Connected into brass or bronze pilot piping and fittings.
    - c. Fixed flow restrictor, pressure gauges, and isolation valves.
  - 3. Provide pressure gauge onto inlet side and outlet side piping of valve.
- B. 2 inch and Larger:
  - 1. ASSE 1003, cast iron body with interior lining complying with AWWA C550, bronze fitted, elastomeric diaphragm and seat disc, flanged.
  - 2. Pressure Reducing Pilot-Operator:
    - a. Operating Range: 5 to 50 psi.
    - b. Connected into brass or bronze pilot piping and fittings.
    - c. Fixed flow restrictor, strainer, pressure gauges, and isolation valves.
  - 3. Provide pressure gauge onto inlet side and outlet side piping of valve.

## 2.13 PRESSURE GAUGES

- A. Gauge: ASME B40.1, UL 393 with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.
  - 1. Case: Steel
  - 2. Bourdon Tube: Type 316 stainless steel.
  - 3. Dial Size: 3-1/2 inch diameter.
  - 4. Mid-Scale Accuracy: One percent.
  - 5. Scale: Psi.

## 2.14 PRESSURE GAUGE TAPS

- A. Needle Valve: Brass, 1/4 inch NPT for minimum 300 psi.
- B. Ball Valve: Brass, 1/4 inch NPT for 250 psi.



- C. Pulsation Damper: Pressure snubber, brass with 1/4 inch NPT connections.

## 2.15 STEM TYPE THERMOMETERS

- A. Thermometer: ASTM E1, adjustable angle, red appearing indicator, lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device.
  - 1. Size: 9 inch scale.
  - 2. Window: Clear Lexan.
  - 3. Stem: Brass, 3/4 inch NPT, 3-1/2 inch long.
  - 4. Accuracy: 2 percent.
  - 5. Calibration: Degrees F.
  - 6. Indicator shall be non-mercury.

## 2.16 HOSE BIBBS

- A. Hose Bibb, HB-1: Lead-Free, interior use, rough chrome plated brass construction, wall mounted, cold water and hot water service with hose thread spout, integral stop valves, vacuum breaker, lever handles.
- B. Hose Bibb, HB-1: Lead-Free, interior use, brass construction with integral vacuum breaker, hose connection.

## 2.17 WATER METER

- A. Provide Lead Free water meter and remote reader as recommended by water service provider. Meter to register flow in Gallons. Plumbing Contractor to install meter and reader. Install meter in accordance with AWWA M6, with isolating valves on inlet and outlet.
- B. Obtain meter from water service provider. If not possible, obtain approval of proposed meter from Director of Utility of Water Service Provider prior to water meter purchase.

## 2.18 BACKFLOW PREVENTERS

- A. Reduced Pressure Backflow Preventers, RPZ-1 (Domestic):
  - 1. Comply with ASSE 1013. Lead Free.
  - 2. Bronze body, with bronze internal parts and stainless steel springs.
  - 3. Two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve opening under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.
  - 4. Air gap per manufacturer's recommendation.
  - 5. Provide testing by State certified backflow prevention device tester, and document of Certification.

## 2.19 DIAPHRAGM-TYPE EXPANSION TANK

- A. Expansion Tank, ET-1: Construction: Welded steel, tested and stamped in accordance with ASME Section VIII; supplied with National Board Form U-1, rated for working pressure of 125 psig, with flexible EPDM diaphragm sealed into tank.
- B. Accessories: Pressure gage and air-charging fitting, tank drain; pre-charge to 40 psig.
- C. Size: as indicated on Drawing.

## 2.20 FLOOR DRAIN / FLOOR SINK

- A. Floor Drain, FD-1: ASME A112.21.1; cast iron two piece body with double drainage flange, weep holes, 1/2 inch trap primer connection, reversible clamping collar, and round adjustable nickel-bronze strainer.
- B. Floor Drain / Floor Sink Trap Primer Valve: ASSE 1018, corrosion resistant brass, piston operated, no springs or diaphragms, adjustable in line pressure, 1/2 inch inlet and outlet openings.

## 2.21 CLEANOUTS

- A. Cleanout, Interior Finished Floor Area, CO-1: cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round polished bronze scoriated cover.
- B. Cleanout, Interior Unfinished Inline Accessible Area, CO-2: cast iron body ferrule type with ABS countersunk plug.
- C. Wall Cleanout, Interior Finished Wall Area, WCO-1: cast iron body with lacquered ABS tapered threaded plug and round stainless steel wall access cover with securing screw.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

## 3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly. Protect open ends with temporary plugs or caps.
- C. Prepare piping connections to equipment with flanges or unions.

## 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- G. Provide access where valves and fittings are not exposed.
- H. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.
- I. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welding.

- J. Provide support for utility meters in accordance with requirements of utility companies.
- K. Excavate in accordance with Section 31 23 16.
- L. Backfill in accordance with Section 31 23 23.
- M. Trench - Provide 3 inches of sand for bedding material at trench bottom to provide uniform bedding for piping. Level bedding materials and install pipe on prepared bedding. Encase installed piping with 6 inches of pea gravel. Provide fill material to trench and compact to 90 percent maximum density. Route pipe in straight line.
- N. Install bell and spigot pipe with bell end upstream.
- O. Install valves with stems upright or horizontal, not inverted. See Section 22 05 23.
- P. Install water piping to ASME B31.9.
- Q. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- R. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- S. Sleeve pipes passing through partitions, walls, and floors.
- T. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- U. PVC piping is not allowed to be installed in places of assembly, plenum spaces, exit discharge corridors or stairs. Use cast iron or copper piping in these locations.
- V. Install firestopping at fire rated construction perimeters and openings containing penetrating sleeves and piping.
- W. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to fixtures to prevent hammer or install air chambers on hot and cold water supply piping to each fixture or group of fixtures (each washroom). Fabricate same size as supply pipe or 3/4 inch minimum, and minimum 18 inches long.
- X. Inserts:
  - 1. Provide inserts for placement in concrete formwork.
  - 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
  - 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
  - 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
  - 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.
- Y. Pipe Hangers and Supports:
  - 1. Install in accordance with ASME B31.9.
  - 2. Support horizontal piping as indicated.
  - 3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
  - 4. Place hangers within 12 inches of each horizontal elbow.
  - 5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
  - 6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
  - 7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

8. Provide copper plated hangers and supports for copper piping.
9. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
10. Support cast iron drainage piping at every joint.

Z. Pipe Sleeve-Seal Systems:

1. Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building.
2. Provide sealing elements of the size, quantity, and type required for the piping and sleeve inner diameter or penetration diameter.
3. Locate piping in center of sleeve or penetration.
4. Install field assembled sleeve-seal system components in annular space between sleeve and piping.
5. Tighten bolting for a watertight seal.
6. Install in accordance with manufacturer's recommendations.

AA. Equipment Bases and Supports

1. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment. Refer to Section 03 30 00.
2. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
3. Construct supports of steel members or formed steel channel. Brace and fasten with flanges bolted to structure.

AB. Flashing

1. Provide flexible flashing and metal counterflashing where piping penetrates weather or waterproofed walls, floors, and roofs.
2. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked 1 inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter-flash, and seal.
3. Flash floor drains in floors with topping over finished areas with lead, 10 inches clear on sides with minimum 36 x 36 inch sheet size. Fasten flashing to drain clamp device.
4. Seal floor, shower, and mop sink drains watertight to adjacent materials.
5. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

AC. Sleeves

1. Set sleeves in position in forms. Provide reinforcing around sleeves.
2. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
3. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
4. Where piping penetrates floor, ceiling, or wall, close off space between pipe and adjacent work with fire stopping, insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
5. Install chrome plated steel escutcheons at finished surfaces.

3.4 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- C. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- D. Install globe valves for throttling, bypass, or manual flow control services.

### 3.5 TOLERANCES

- A. Sanitary Drainage Piping: Establish invert elevations, slopes for drainage to 1/8 inch per foot minimum on mains 4 inches and larger. Install branch mains smaller than 4 inch with 1/4 inch per foot minimum.
- B. Storm Drainage Piping: Establish invert elevations, slopes for drainage to 1/8 inch per foot minimum.

### 3.6 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect water distribution system in accordance with Section 33 01 10.58.
- B. Final water samples shall be sent to a State Department of Health approved testing lab in the State of New York and sample test results shall be submitted to A/E of record.
- C. Prior to starting work, verify system is complete, flushed, and clean.
- D. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- E. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
- F. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- G. Maintain disinfectant in system for 24 hours.
- H. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- I. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- J. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

### 3.7 SERVICE CONNECTIONS

- A. Provide new water service complete with approved reduced pressure backflow preventer and water meter with by-pass valves, pressure reducing valve, and sand strainer.
- B. Test sanitary waste, vent piping and storm drainage system in accordance with Plumbing Code of the State of New York.
- C. Test backflow prevention device in accordance with ASSE 5013, by State certified backflow prevention device tester.
  - 1. Provide test results and Certification of tester.
- D. Test domestic water piping system in accordance with Plumbing Code of the State of New York.
- E. Provide new gas piping into building. Building gas service distribution piping to have pressure of [1/2] psi.
- F. Test 1/2 psi gas piping system at 10 psi for one hour in accordance with Fuel Gas Code of the State of New York and New York State SED Manual of Planning Standards.

### 3.8 SCHEDULES

- A. Pipe Hanger Spacing:
  - 1. Metal Piping:

- a. Pipe Size: 1/2 inch to 1-1/4 inch:
  - 1) Maximum Hanger Spacing: 6.5 ft.
  - 2) Hanger Rod Diameter: 3/8 inches.
- b. Pipe Size: 1-1/2 inch to 2 inch:
  - 1) Maximum Hanger Spacing: 10 ft.
  - 2) Hanger Rod Diameter: 3/8 inch.
- c. Pipe Size: 2-1/2 inch to 3 inch:
  - 1) Maximum Hanger Spacing: 10 ft.
  - 2) Hanger Rod Diameter: 1/2 inch.
- d. Pipe Size: 4 inch to 6 inch:
  - 1) Maximum Hanger Spacing: 10 ft.
  - 2) Hanger Rod Diameter: 5/8 inch.
2. Cast Iron (All Sizes) pipe length less than 10':
  - a. Maximum hanger Spacing: 5 ft.
  - b. Hanger rod diameter: 5/8 inch
3. Cast Iron (All Sizes) with 10 foot length of pipe
  - a. Maximum hanger Spacing: 10 ft.
  - b. Hanger rod diameter: 5/8 inch
4. CPVC, 1 inch and smaller
  - a. Maximum hanger Spacing: 3 ft.
  - b. Hanger rod diameter: 1/2 inch
5. CPVC, 1-1/4 inches and larger
  - a. Maximum hanger Spacing: 4 ft.
  - b. Hanger rod diameter: 1/2 inch
6. Copper Tube, 1-1/4 inches and smaller
  - a. Maximum hanger Spacing: 6 ft.
  - b. Hanger rod diameter: 1/2 inch
7. Copper Tube, 1-1/2 inches and larger
  - a. Maximum hanger Spacing: 10 ft.
  - b. Hanger rod diameter: 1/2 inch
8. PVC (All Sizes)
  - a. Maximum hanger Spacing: 4 ft.
  - b. Hanger rod diameter: 3/8 inch

END OF SECTION

SECTION 22 30 00  
PLUMBING EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Residential electric water heaters.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections.

1.3 REFERENCE STANDARDS

- A. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittals procedures.
- B. Product Data:
  - 1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
  - 2. Indicate pump type, capacity, power requirements.
  - 3. Provide electrical characteristics and connection requirements.
- C. Shop Drawings:
  - 1. Indicate heat exchanger dimensions, size of tappings, and performance data.
  - 2. Indicate dimensions of tanks, tank lining methods, anchors, attachments, lifting points, tappings, and drains.
- D. Project Record Documents: Record actual locations of components.
- E. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements for additional provisions.

1.5 QUALITY ASSURANCE

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.
- B. Accept water heaters on site in original labeled cartons. Inspect for damage.

1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

- B. Provide five year manufacturer warranty for domestic water heaters.
- C. Provide [5] year manufacturer warranty for electric tankless domestic water heaters.

## PART 2 PRODUCTS

### 2.1 WATER HEATERS

- A. Manufacturers:
  - 1. A.O. Smith Water Products Co: [www.hotwater.com/#sle](http://www.hotwater.com/#sle).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Residential Electric Water Heaters:
  - 1. Type: Automatic, electric, vertical storage.
  - 2. Minimum Efficiency Required: ASHRAE Std 90.1 I-P.
  - 3. Performance:
  - 4. Tank: Glass lined welded steel, thermally insulated with one inch thick glass fiber; encased in corrosion-resistant steel jacket; baked-on enamel finish.
  - 5. Controls: Automatic water thermostat with externally adjustable temperature range from 120 to 170 degrees F, flanged or screw-in nichrome elements, enclosed controls and electrical junction box and operating light. Wire double element units so elements do not operate simultaneously.
  - 6. Accessories:
    - a. Water Connections: Brass.
    - b. Dip Tube: Brass.
    - c. Drain valve.
    - d. Anode: Magnesium.
    - e. Temperature and Pressure Relief Valve: ASME labeled.

### 2.2 DOMESTIC PUMPS

- A. Domestic Pump, Recirculation, DP-1: UL and CSA listed, rated for 140 psig maximum working pressure, bronze or stainless steel casing, polypropylene (glass filled) impeller, stainless steel shaft, graphite bearing, EPDM gasket and aquastat
- B. Domestic Pump, Condensate - Water Heater, DP-2: UL and CSA listed, 1 gallon ABS plastic leakproof tank condensate unit for acidic application, stainless steel shaft, safety switch, steel tank cover
- C. Electrical requirements:
  - 1. As indicated on Drawing.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.
- B. Coordinate with plumbing piping and related fuel piping work to achieve operating system.
- C. Domestic Water Heater:



1. Install water heater on concrete housekeeping pad, minimum 3-1/2 inches high and 6 inches larger than water heater on each side. Refer to Section 03 30 00.
2. Maintain manufacturer's recommended clearances around and over water heaters.
3. Connect domestic hot water piping to outlet connection and connect domestic hot water recirculation piping to domestic cold water piping. Connect cold water piping to inlet connections.
4. Install the following piping accessories.
  - a. On supply:
    - 1) Thermometer well and thermometer.
    - 2) Strainer.
    - 3) Pressure gage.
    - 4) Shutoff valve.
  - b. On return:
    - 1) Thermometer well and thermometer.
    - 2) Pressure gage.
    - 3) Shutoff valve.
  - c. Install the following piping accessories on natural gas piping connections. Refer to Section 22 10 05.
    - 1) Strainer.
    - 2) Pressure gage.
    - 3) Shutoff valve.
    - 4) Pressure reducing valve.
5. Install discharge piping from relief valves and drain valves to nearest floor drain.
6. Install circulator and diaphragm expansion tank on water heater.
7. Install water heater trim and accessories furnished loose for field mounting.
8. Install electrical devices furnished loose for field mounting.
9. Install control wiring between water heater control panel and field mounted control devices.
10. Install Work in accordance with applicable Plumbing Code of the State of New York.

END OF SECTION



SECTION 22 40 00  
PLUMBING FIXTURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flush valve water closets.
- B. Wall hung urinals.
- C. Lavatories.
- D. Under-lavatory pipe supply covers.
- E. Mop sinks.

1.2 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping and Specialties.
- B. Section 22 30 00 - Plumbing Equipment.
- C. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections.

1.3 REFERENCE STANDARDS

- A. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration; 2013.
- B. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- C. ASME A112.18.1 - Plumbing Supply Fittings; 2018.
- D. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2018.
- E. ASME A112.19.3 - Stainless Steel Plumbing Fixtures; 2017.
- F. ASME A112.19.5 - Flush Valves and Spuds for Water Closets, Urinals, and Tanks; 2017.
- G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- H. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- I. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- J. NSF 372 - Drinking Water System Components - Lead Content; 2016.
- K. ARI 1010 - Self-Contained, Mechanically Refrigerated Drinking-Water Coolers

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Maintenance Data: Include fixture trim exploded view and replacement parts lists.

- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements for additional provisions.
  - 2. Flush Valve Service Kits: One for each type and size.

## 1.5 QUALITY ASSURANCE

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

## 1.6 REGULATORY REQUIREMENTS

- A. Plumbing piping, joints, faucets, etc. must comply with the requirements, and bear the label indicating the materials comply with the definition of "lead free" requirement of the Environmental Protection Agency "Reduction of Lead in Drinking Water Act".
- B. Lead Water Testing: Lead water testing shall be conducted at all Lavatories, Sinks and Drinking Fountains in accordance with Public Health Law section 1370-a and 1110, Subpart 67-4 of Title 10 (Health) of the Official Compilation of Codes, Rules and Regulations of the State of New York and the Environmental Protection Agency 3T's for Reducing Lead in Drinking Water.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

## 1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Provide standard manufacturer warranty for Plumbing Fixtures.

# PART 2 PRODUCTS

## 2.1 GENERAL REQUIREMENTS

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

## 2.2 MANUFACTURERS:

- A. Refer to Plumbing Fixture Schedule on drawing for Manufacturer, Model, Trim and Remarks.

## 2.3 FLUSH VALVE WATER CLOSETS

- A. Water Closet Bowl (WC-): ASME A112.19.2M; ADA compliant, wall mount, siphon jet, vitreous china closet bowl with elongated rim, 1-1/2 inch top spud and 1.28 gallon flush volume.
- B. Flush Valve, Manually Operated (WC-): ADA compliant, exposed chrome plated, diaphragm type with oscillating handle, escutcheon, seat bumper, integral screwdriver stop, vacuum breaker and 1.28 gallon flush volume for use with 1-1/2 inch top spud.

- C. Toilet Seats:
  - 1. Elongated solid white plastic, open front without cover, self-sustaining hinge, brass bolts.
  - 2. Elongated solid white seat and hinges, open front without cover, scalloped handhold for use with child floor mounted water closet.
- D. Water Closet Carriers:
  - 1. ASME A112.6.1M; floor mounted, adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor attachment, threaded fixture studs with nuts and washers. For handicap and non-handicap wall mount water closets.
- E. Water Closet Accessories:
  - 1. Toilet mounting flange, bowl ring, mounting hardware, bolt caps. For handicap and non-handicap floor mounted water closets.

## 2.4 WALL HUNG URINALS

- A. Urinal, (UR1-, UR-2): ASME A112.19.2; ADA compliant, wall mount, washout, vitreous china urinal with shields, integral trap, elongated 14 inch rim from finished wall, 3/4 inch back spud, steel supporting hanger and 0.50 gallon flush volume.
- B. Flush Valve, Manually Operated (UR-): ADA compliant, exposed chrome plated, diaphragm type with oscillating handle, escutcheon, integral screwdriver stop, vacuum breaker and 0.50 gallon flush volume for use with 3/4 inch top spud.
- C. Urinal Carriers:
  - 1. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor attachment, threaded fixture studs for fixture hanger, bearing studs. For handicap and non-handicap urinals.

## 2.5 LAVATORIES

- A. Lavatory, Vitreous China Wall Mount Basin (LAV-): ASME A112.19.2; ADA compliant, vitreous china wall mount, 20 x 18 inch minimum, with 4 inch high back, single hole faucet mount drilling, D-shaped basin with splash lip, front overflow and grid drain. For handicap and non-handicap lavatories. Provide offset grid drain and pipe covers for handicap lavatory.
- B. Electric Powered Sensor Faucet: ADA compliant, low lead content, tempered water connection, chrome finish, maximum 0.50 gpm flow of 60 psig, 4 inch cover plate, transformer (hard wired) and lead-free thermostatic mixing valve.
  - 1. Electrical requirements:
    - a. Refer to Plumbing Fixture Schedule on drawing.
    - b. Transformer (Hard Wired): 120V AC Input / 12V AC Output / 300 mA Output Current.
- C. Wall Mounted Carrier: ASME A112.6.1; Cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, concealed arm supports, bearing plate and studs. For handicap and non-handicap lavatories.

## 2.6 HOSE BIB BOXES

- A. Material: 316 stainless steel.
- B. Finish: Satin.
- C. Mount in wall fully recessed.
- D. Provide with NPT PVC ball valves and fittings.
- E. Provide with internal hose drain bracket and waste outlet.

## 2.7 MOP SINKS

- A. Bowl: 24 x 24 x 12 inch high molded stone, floor mounted with not less than 1 1/2 inch wide shoulder, stainless steel cap, stainless steel strainer.
  - 1. Trim: Lead-Free, recessed wall type supply with handles, spout wall brace, vacuum breaker, hose end spout, integral screwdriver stops with covering caps and adjustable threaded wall flanges.
  - 2. Accessories:
    - a. Hose clamp hanger.
    - b. Mop hanger.
    - c. Stainless Steel Wall Guards.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

### 3.2 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

### 3.3 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome-plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall supports and bolts.
- E. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.

### 3.4 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

### 3.5 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

### 3.6 CLEANING

- A. Clean plumbing fixtures and equipment.

- B. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

### 3.7 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION





SECTION 23 34 13  
AXIAL HVAC FANS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Residential ceiling fans.
- B. Propeller fans.

1.2 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

1.3 QUALITY ASSURANCE

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Loren Cook Company: [www.lorencook.com/#sle](http://www.lorencook.com/#sle).
- B. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 RESIDENTIAL CEILING FANS

- A. Construction: Aluminum blades, statically and dynamically balanced, locked to shaft, directly connected to direct-drive, reversible motor.
- B. Mounting Options: Ceiling.

2.3 PROPELLER FANS

- A. Manufacturers:
  - 1. Loren Cook Company: [www.lorencook.com/#sle](http://www.lorencook.com/#sle).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Impeller: Shaped steel or steel-reinforced aluminum blade with heavy hubs, statically and dynamically balanced, keyed and locked to shaft, directly connected to motor or provided with V-belt drive.
- C. Frame: One-piece, square steel with die-formed venturi orifice, mounting flanges, and supports, with baked enamel finish.
- D. Accessories:

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

END OF SECTION

SECTION 26 05 00  
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General requirements applicable to all components and systems included in Electric Work Prime Contract
- B. Products Installed but Not Furnished Under This Section
- C. Make all electrical connections to equipment shown on Drawings and furnished by other Prime Contractors. Obtain approved wiring diagrams and location drawings for roughing in and final connections from Prime Contractor furnishing equipment. Provide disconnect switches, push button stations, and similar components, required but not furnished with equipment as shown on Drawings.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements:
- B. Section 01 70 00 - Execution and Closeout Requirements: Additional requirements for alterations work.
- C. Section 01 78 00 - Closeout Submittals: Project record documents.

1.3 REFERENCES

- A. AIA American Institute of Architects
- B. AISC American Institute of Steel Construction
- C. ANSI American National Standards Institute
- D. ASTM American Society of Testing Materials
- E. IEEE Institute of Electric and Electronic Engineers
- F. IES Illuminating Engineering Society
- G. NBFU National Board of Fire Underwriters
- H. NEC National Electric Code
- I. NEMA National Electrical Manufacturers' Association
- J. NETA International Electrical Testing Association
- K. NFPA National Fire Protection Association
- L. UL Underwriters' Laboratories, Inc.

1.4 SYSTEM DESCRIPTIONS

- A. Design Requirements - Provide complete systems, properly tested, balanced, and ready for operation including necessary details, items and accessories although not expressly shown or specified, including (but not limited to):
  - 1. All wiring and conduit for work specified in Project Manual and shown on Drawings.

2. All electrical devices and equipment for work specified in Project Manual and shown on Drawings.
- B. Systems included, but not limited to:
  1. Electrical Distribution
  2. Electrical Connections
  3. Electric Layouts: Arrange all panels, disconnect switches, enclosed breakers, equipment, raceways, and similar components neatly, orderly and symmetrically. Provide 3/4-inch plywood backboards for all surface mounted panels, disconnect switches, enclosed breakers, and similar equipment. Arrangements shown on Drawings are diagrammatic only; provide and adjust raceways, wiring, and other components as required.
  4. Power Interruptions and Scheduled Outages: Coordinate scheduling of all power interruptions and outages with Owner. EC shall confirm with Owner prior to interruption of power, which building systems are considered critical and must remain operational during the interruption. If a scheduled power outage is to extend beyond one standard workday, EC shall provide temporary power to operate critical building systems (including, but not limited to fire alarm system, security system, building access control system, and building energy management control system).

#### 1.5 QUALITY ASSURANCE

- A. Codes and Standards: Comply with all applicable Federal, State and Local Building and Electrical Codes, Laws, Ordinances, and Regulations, and comply with all applicable NFPA, National Electrical Code and Utility Company requirements and regulations. Provide Underwriter's Laboratory Seal on all materials.
- B. Permits and Inspections: Obtain all approvals, tests, and inspections required by Architect, Engineer, Local Electrical Inspector, agent or agency specified in Project Manual, or National, State, or Local Codes and Ordinances.
- C. Schedule electrical inspection by a third party inspection agency, such as New York State Board of Fire Underwriters or equivalent, acceptable to the local authority having jurisdiction, and submit final inspection certificate to Architect.
- D. Furnish all materials and labor necessary for tests and pay all costs associated with tests and inspections.
- E. Conduct all tests under load for load balancing and where required by Codes, Regulations, Ordinances, or Technical Specification.
- F. Electrical Components, Devices, and Accessories: UL Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Take all reasonable precautions to store materials and products to protect finishes and not permit dust and dirt to penetrate equipment.
- B. Replace all equipment damaged beyond reasonable repair as required by Architect.
- C. Refinish any equipment with marks, stains, scratches, dents, etc., as required by Architect.

#### 1.7 COORDINATION OF WORK

- A. New Construction
  1. Openings, Chases, Recesses, Sleeves, Lintels and Bucks (required for admission of Electric Work Prime Contract systems and components): Coordinate requirements with

- General Work Prime Contractor for inclusion in General Work Prime Contract. Furnish all necessary information (e.g. locations and sizes) to General Work Prime Contractor in ample time for installation of systems and components included in Electric Work Prime Contract.
2. Anchor Bolts: Deliver to General Work Prime Contractor all anchor bolts required for Electric Work Prime Contract construction that are to be installed in construction included in General Work Prime Contract.
  3. Locate settings, check locations as installation in General Work Prime Contract progresses, and provide templates or holding fixtures as required to maintain proper accuracy.
- B. Existing Construction: Unless otherwise specified, employ General Work Prime Contractor for all cutting, patching, repairing and replacing of general work required for installation of systems and components included in Electric Work Prime Contract. Secure approval before cutting.
1. Anchor Bolts: Deliver to General Work Prime Contractor all anchor bolts required for Electric Work Prime Contract construction that are to be installed in construction included in General Work Prime Contract. Provide templates or holding fixtures as required to maintain proper accuracy.
  2. Rough Openings in Roofs: Refer to Section 01 70 00 - Execution and Closeout Requirements.

## 1.8 ALTERATION PROCEDURES

- A. In locations where existing non-TCLP compliant fluorescent lamps are to be removed, all removals and disposal shall be in strict accordance with Section 01 35 17 - Alteration Project Procedures, and Section 01 74 19 - Construction Waste Management and Disposal; Landfill diversion proposals; Waste Disposal Reports shall be done as part of Electrical Work Prime Contract.
- B. In locations where existing devices are indicated to be disconnected and removed and existing circuit is not scheduled to be reused:
1. Remove circuit conductors back to source.
  2. Modify panel directory for that circuit.
  3. Remove all existing exposed and accessible conduit
  4. Provide blank cover plate over existing recessed junction boxes or back boxes. Paint cover plates in finished areas to match existing room finish.
  5. Patch and paint existing walls where disturbed by the electrical demolition. Refer to Section 01 35 17 - Alteration Project Procedures for additional requirements for patching and painting.
- C. In locations where existing devices are to remain in place, ensure circuits feeding such devices remain operational. Modify existing circuits as required to allow new construction to occur and to maintain all necessary circuitry to existing devices.
- D. In locations where entire existing system is being removed or modified:
1. Refer to individual system specification sections for Documentation and Testing Requirements prior to any alteration work on any system.
  2. Take all necessary measures to ensure that down time will not compromise safety
  3. Notify Owner, Architect and all other Prime Contractors not less than 2 weeks prior to interruptions in service.
  4. Coordinate work schedule to minimize duration of system outage during hours when building is occupied.
  5. Refer to Section 01 30 00 - Administrative Requirements for additional information and requirements.

## 1.9 SUBMITTALS

- A. Comply with requirements of Section 01 30 00 - Submittal Procedures and as modified below. Refer to submittal listing in each section for specific items required.
- B. Factory-Finished Surfaces: On all submittals, indicate standard factory color. Where more than one color is available, selection made by Architect from manufacturer's full range of colors.
- C. Contract Closeout Submittals: Comply with requirements of Section 01 78 00, including submission of operating and maintenance instructions as item in "Electric Work Instructions" manual described in that section.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.1 CUTTING AND PATCHING

- A. Furnish and install all sleeves, inserts, panels, raceways, boxes, etc., ahead of general construction work and maintain Contractor personnel at Site during installation of general construction work to be responsible for and to maintain these items in position.
- B. Unless otherwise noted elsewhere in Contract Documents, bear expense of all cutting, patching, repairing or replacing of work of other trades made necessary by any fault, error or tardiness on part of Electrical Work Prime Contract or damage done by Electric Work Prime Contract. Employ and pay Prime Contractor whose work is involved.
- C. Do not cut waterproofed floors or walls for admission of any equipment or materials and do not pierce any structural members without written permission.

### 3.2 DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEMS

- A. Thoroughly demonstrate and instruct Owner's designated representative in care and operation of all electrical systems and equipment furnished and installed in Electric Work Prime Contract.
- B. System Operator: Maintain competent operator at building for at least 2 days in 2 consecutive weeks after Owner takes occupancy of major parts of building to operate systems and equipment in presence of Owner's representative.
- C. Factory Representative: In addition to demonstration and instruction specified above, provide technically qualified factory representatives from manufacturers of major equipment, to train Owner's representatives in care and operation of applicable products as specified in applicable technical sections of Division 26.
- D. Coordinate and schedule time and place of all training through the Architect at the Owner's convenience.
- E. Submit letters attesting to satisfactory completion of all instructions, including date of completion of instruction, names of persons in attendance and signature of Owner's authorized representative

- F. Architect's representative must be present when Owner's representatives participate in instruction.
- G. The following equipment and systems are included:
  - 1. Emergency generator
  - 2. Lighting dimming systems
  - 3. Fire alarm system

### 3.3 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment that remain or that are to be reused.
- B. Provide full inspection of exposed finishes.
- C. Remove burrs, dirt, and construction debris.
- D. Repair damaged surfaces including chips, scratches, and abrasions. Damp Rag clean all electrical equipment, panels, boxes, and accessories.

END OF SECTION





SECTION 26 05 05  
SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical demolition.

1.2 RELATED REQUIREMENTS

- A. Section 01 70 00 - Execution and Closeout Requirements: Additional requirements for alterations work.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Demolition drawings are based on casual field observation and existing record documents.
- C. Report discrepancies to Architect before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- E. Disconnect and remove abandoned panelboards and distribution equipment.
- F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- H. Repair adjacent construction and finishes damaged during demolition and extension work.
- I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

#### 3.4 CLEANING AND REPAIR

- A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.
- B. Clean and repair existing materials and equipment that remain or that are to be reused.
- C. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION

SECTION 26 05 19  
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Single conductor building wire.
- B. Metal-clad cable.
- C. Wire and cable for 600 volts and less.
- D. Wiring connectors.
- E. Electrical tape.
- F. Heat shrink tubing.
- G. Oxide inhibiting compound.
- H. Wire pulling lubricant.
- I. Cable ties.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 05 - Selective Demolition for Electrical: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- B. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
- C. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011 (Reapproved 2017).
- D. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010 (Reapproved 2014).
- E. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2014).
- F. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2017.
- G. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2013.

- H. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- I. NECA 120 - Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC); 2012.
- J. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2009.
- K. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
- L. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- N. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- O. UL 267 - Outline of Investigation for Wire-Pulling Compounds; Most Recent Edition, Including All Revisions.
- P. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- Q. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- R. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.
- S. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.
- T. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
  - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
  - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- C. Manufactured Wiring System Shop Drawings: Provide plan views indicating proposed system layout with components identified; indicate branch circuit connections.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

## 1.6 QUALITY ASSURANCE

- A. Comply with all requirements of the Energy Conservation Construction Code in the State of New York, including but not limited to US Department of Energy, IECC 2018, and ASHRAE 90.1, including all updates, revisions and amendments.
- B. Comply with requirements of NFPA 70.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

# PART 2 PRODUCTS

## 2.1 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Concealed Dry Interior Locations: Use only building wire with Type THHN/THWN insulation in raceway or metal clad cable.
- E. Exposed Dry Interior Locations: Use only building wire with Type THHN/THWN insulation in raceway.
- F. Above Accessible Ceilings: Use only building wire with Type THHN/THWN insulation in raceway or metal clad cable.
- G. Wet or Damp Interior Locations: Use only building wire with Type THHN/THWN insulation in raceway.
- H. Exterior Locations: Use only building wire with Type THHN/THWN insulation in raceway.
- I. Underground Installations: Use only building wire with Type THHN/THWN insulation in raceway.
- J. Use solid conductors for all 12 AWG circuits. Use stranded conductors only for 10 AWG and larger.
- K. Use conductor not smaller than 16 AWG for control circuits.
- L. Use 10 AWG stranded conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- M. Use 10 AWG stranded conductors for 20 ampere, 277 volt branch circuits longer than 150 feet.

## 2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Provide new conductors and cables manufactured not more than one year prior to installation.
- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- E. Comply with NEMA WC 70.
- F. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- G. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- H. Conductors for Grounding and Bonding: Also comply with Section 26 05 26.
- I. Conductor Material:
  - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
  - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
  - 3. Tinned Copper Conductors: Comply with ASTM B33.
- J. Minimum Conductor Size:
  - 1. Branch Circuits: 12 AWG.
    - a. Exceptions:
      - 1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
      - 2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
      - 3) 20 A, 277 V circuits longer than 150 feet: 10 AWG, for voltage drop.
- K. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- L. Conductor Color Coding:
  - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
  - 2. Color Coding Method: Integrally colored insulation.
    - a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
  - 3. Color Code:
    - a. 480Y/277 V, 3 Phase, 4 Wire System:
      - 1) Phase A: Brown.
      - 2) Phase B: Orange.
      - 3) Phase C: Yellow.
      - 4) Neutral/Grounded: Gray.
    - b. 208Y/120 V, 3 Phase, 4 Wire System:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Phase C: Blue.
      - 4) Neutral/Grounded: White.
    - c. 240/120 V, 1 Phase, 3 Wire System:
      - 1) Phase A: Black.
      - 2) Phase B: Red.

- 3) Neutral/Grounded: White.
- d. Equipment Ground, All Systems: Green.

## 2.3 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
  - 1. Copper Building Wire:
    - a. Cerro Wire LLC: [www.cerrowire.com/#sle](http://www.cerrowire.com/#sle).
    - b. Encore Wire Corporation: [www.encorewire.com/#sle](http://www.encorewire.com/#sle).
    - c. General Cable Technologies Corporation: [www.generalcable.com/#sle](http://www.generalcable.com/#sle).
    - d. Industrial Wire & Cable, Inc: [www.iewc.com](http://www.iewc.com).
    - e. Southwire Company: [www.southwire.com/#sle](http://www.southwire.com/#sle).
    - f. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Description: Single conductor insulated wire.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
  - 1. Copper Building Wire: Type THHN/THWN.

## 2.4 METAL-CLAD CABLE

- A. Manufacturers:
  - 1. AFC Cable Systems Inc: [www.afcweb.com/#sle](http://www.afcweb.com/#sle).
  - 2. Encore Wire Corporation: [www.encorewire.com/#sle](http://www.encorewire.com/#sle).
  - 3. Southwire Company: [www.southwire.com/#sle](http://www.southwire.com/#sle).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN or THHN/THWN.
- E. Provide dedicated neutral conductor for each phase conductor.
- F. Grounding: Full-size integral equipment grounding conductor.
- G. Armor: Steel, interlocked tape.
- H. Provide PVC jacket applied over cable armor for exterior installations, or where indicated or required for environment of installed location.

## 2.5 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Connectors for Grounding and Bonding: Comply with Section 26 05 26.
- C. Wiring Connectors for Splices and Taps:
  - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
  - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors; split bolt type.
    - a. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.

- D. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- E. Wiring Connectors for Terminations:
  - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
  - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
  - 3. Copper Conductors 6 AWG and larger: Use mechanical connectors where connectors are required.
  - 4. Stranded Conductors: Use crimped terminals for connections to terminal screws.
- F. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- G. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
- H. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
  - 1. Manufacturers:
    - a. 3M: [www.3m.com/#sle](http://www.3m.com/#sle).
    - b. Ideal Industries, Inc: [www.idealindustries.com/#sle](http://www.idealindustries.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- I. Mechanical Connectors: Provide bolted type or set-screw type.
  - 1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- J. Compression Connectors: Provide circumferential type crimp configuration.
  - 1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- K. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
  - 1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.6 ACCESSORIES

- A. Electrical Tape:
  - 1. Manufacturers:
    - a. 3M: [www.3m.com/#sle](http://www.3m.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
  - 3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight;



- conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
  5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
  6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.
- B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
1. Manufacturers:
    - a. 3M: [www.3m.com/#sle](http://www.3m.com/#sle).
    - b. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Ideal Industries, Inc: [www.idealindustries.com/#sle](http://www.idealindustries.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Wire Pulling Lubricant:
1. Manufacturers:
    - a. 3M: [www.3m.com/#sle](http://www.3m.com/#sle).
    - b. Ideal Industries, Inc: [www.idealindustries.com/#sle](http://www.idealindustries.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Listed and labeled as complying with UL 267.
  3. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
  4. Suitable for use at installation temperature.
- E. Cable Ties: Material and tensile strength rating suitable for application.
1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

### 3.3 INSTALLATION

- A. Circuiting Requirements:
  - 1. Unless dimensioned, circuit routing indicated is diagrammatic.
  - 2. When circuit destination is indicated without specific routing, determine exact routing required.
  - 3. Include circuit lengths required to install connected devices within 10 ft of location indicated.
  - 4. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
  - 5. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is permitted, under the following conditions:
    - a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
    - b. Increase size of conductors as required to account for ampacity derating.
    - c. Size raceways, boxes, etc. to accommodate conductors.
  - 6. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
  - 7. Provide oversized neutral/grounded conductors where indicated and as specified below.
    - a. Provide 200 percent rated neutral for feeders fed from K-rated transformers.
    - b. Provide 200 percent rated neutral for feeders serving panelboards with 200 percent rated neutral bus.
- B. Install products in accordance with manufacturer's instructions.
- C. Perform work in accordance with NECA 1 (general workmanship).
- D. Install metal-clad cable (Type MC) in accordance with NECA 120.
- E. Installation in Raceway:
  - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
  - 2. Pull all conductors and cables together into raceway at same time.
  - 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
  - 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- F. Exposed Cable Installation (only where specifically permitted):
  - 1. Route cables parallel or perpendicular to building structural members and surfaces.
  - 2. Protect cables from physical damage.
- G. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- H. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.

1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.
- I. Terminate cables using suitable fittings.
  1. Metal-Clad Cable (Type MC):
    - a. Use listed fittings.
    - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
- J. Install conductors with a minimum of 12 inches of slack at each outlet.
- K. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- L. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- M. Make wiring connections using specified wiring connectors.
  1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
  2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
  3. Do not remove conductor strands to facilitate insertion into connector.
  4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminants. Do not use wire brush on plated connector surfaces.
  5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
  6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- N. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
  1. Dry Locations: Use electrical tape.
    - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
  2. Damp Locations: Use insulating covers specifically designed for the connectors.
    - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
  3. Wet Locations: Use heat shrink tubing.
- O. Insulate ends of spare conductors using vinyl insulating electrical tape.
- P. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.
- Q. Identify conductors and cables in accordance with Section 26 05 53. Identify each conductor with its circuit number or other designation indicated.
- R. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.

- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is only required for services and feeders. The resistance test for parallel conductors listed as optional is not required.
- D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 26 05 26  
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground rod electrodes.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2007.
- C. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Verify exact locations of underground metal water service pipe entrances to building.
  - 2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
  - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
  - 1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.
- C. Project Record Documents: Record actual locations of grounding electrode system components and connections.

- D. Certificate of Compliance: Indicate approval of installation by authority having jurisdiction.

## 1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

# PART 2 PRODUCTS

## 2.1 GROUNDING AND BONDING REQUIREMENTS

- A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
- B. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- E. Grounding System Resistance:
  - 1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
  - 2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
- F. Grounding Electrode System:
  - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
    - a. Provide continuous grounding electrode conductors without splice or joint.
    - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
  - 2. Metal Underground Water Pipe(s):
    - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet at an accessible location not more than 5 feet from the point of entrance to the building.
    - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.

- c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
  - 3. Concrete-Encased Electrode:
    - a. Provide connection to concrete-encased electrode consisting of not less than 20 feet of steel reinforcing bars embedded within concrete foundation or footing that is in direct contact with earth in accordance with NFPA 70.
  - 4. Ground Ring:
    - a. Where location is not indicated, locate ground ring conductor at least 24 inches outside building perimeter foundation.
    - b. Provide connection from ground ring conductor to:
      - 1) Perimeter columns of metal building frame.
      - 2) Ground rod electrodes located at service entrance.
  - 5. Ground Rod Electrode(s):
    - a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
    - b. Space electrodes not less than 10 feet from each other and any other ground electrode.
    - c. Where location is not indicated, locate electrode(s) at least 5 feet outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.
  - 6. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
- G. Bonding and Equipment Grounding:
  - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
  - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
  - 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
  - 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
  - 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
  - 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
  - 7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
    - a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
    - b. Metal gas piping.
  - 8. Provide bonding for interior metal air ducts.
  - 9. Provide bonding for metal building frame.
  - 10. Provide bonding for metal siding not effectively bonded through attachment to metal building frame.
  - 11. Provide bonding and equipment grounding for pools and fountains and associated equipment in accordance with NFPA 70.

## 2.2 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
  - 1. Provide products listed, classified, and labeled as suitable for the purpose intended.

2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 05 26:
  1. Use insulated copper conductors unless otherwise indicated.
    - a. Exceptions:
      - 1) Use bare copper conductors where installed underground in direct contact with earth.
      - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
  2. Wire: Stranded Copper.
- C. Connectors for Grounding and Bonding:
  1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
  2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
  3. Unless otherwise indicated, use bronze mechanical connectors for accessible connections.
    - a. Exceptions:
      - 1) Use exothermic welded connections for connections to metal building frame.
  4. Manufacturers - Mechanical and Compression Connectors:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Copperweld: [www.copperweld.com](http://www.copperweld.com).
    - c. Erico International: [www.erico.com](http://www.erico.com).
    - d. O-Z Gedney: [www.emerson.com](http://www.emerson.com).
    - e. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
    - f. Substitutions: See Section 01 60 00 - Product Requirements.
  5. Manufacturers - Exothermic Welded Connections:
    - a. Copperweld: [www.copperweld.com](http://www.copperweld.com).
    - b. O-Z Gedney: [www.emerson.com](http://www.emerson.com).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Ground Rod Electrodes:
  1. Comply with NEMA GR 1.
  2. Material: Copper.
  3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.
  4. Manufacturers:
    - a. Copperweld: [www.copperweld.com](http://www.copperweld.com).
    - b. Thomas & Betts
    - c. Substitutions: See Section 01 60 00 - Product Requirements.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.

#### 3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.



- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
  - 1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches below finished grade.
- D. Make grounding and bonding connections using specified connectors.
  - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
  - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
  - 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
  - 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
  - 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 26 05 53.

### 3.3 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.13.
- D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.
- F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION



SECTION 26 05 29  
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 33.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
- B. Section 26 05 33.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
- C. Section 26 51 00 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

1.3 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- D. MFMA-4 - Metal Framing Standards Publication; 2004.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
  - 2. Coordinate work to provide additional framing and materials required for installation.
  - 3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
  - 4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
  - 5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
  - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.
- C. Evaluation Reports: For products specified as requiring evaluation and recognition by ICC Evaluation Service, LLC (ICC-ES), provide current ICC-ES evaluation reports upon request.
- D. Installer's qualification statement.
- E. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

## 1.6 QUALITY ASSURANCE

- A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

# PART 2 PRODUCTS

## 2.1 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
  - 1. Comply with the following. Where requirements differ, comply with most stringent.
    - a. NFPA 70.
    - b. Requirements of authorities having jurisdiction.
  - 2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
  - 3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
  - 4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
  - 5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
  - 6. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
  - 7. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
    - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
    - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel or approved equivalent unless otherwise indicated.
    - c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.

- d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
  - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
  - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
  - 1. Manufacturers:
    - a. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Metal Channel/Strut Framing Systems:
  - 1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
  - 2. Comply with MFMA-4.
  - 3. Channel Material:
    - a. Indoor Dry Locations: Use zinc-plated steel.
    - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
  - 4. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
  - 5. Minimum Channel Dimensions: 1-5/8 inch wide by 13/16 inch high.
- E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
  - 1. Minimum Size, Unless Otherwise Indicated or Required:
    - a. Equipment Supports: 1/2-inch diameter.
    - b. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch diameter.
    - c. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch diameter.
    - d. Trapeze Support for Multiple Conduits: 3/8-inch diameter.
    - e. Outlet Boxes: 1/4-inch diameter.
    - f. Luminaires: 1/4-inch diameter.
- F. Anchors and Fasteners:
  - 1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
  - 2. Concrete: Use expansion anchors or screw anchors.
  - 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
  - 4. Hollow Masonry: Use toggle bolts.
  - 5. Hollow Stud Walls: Use toggle bolts.
  - 6. Steel: Use beam clamps or machine bolts.
  - 7. Sheet Metal: Use sheet metal screws.
  - 8. Wood: Use wood screws.
  - 9. Powder-actuated fasteners are permitted only as follows:
    - a. Use only threaded studs; do not use pins.
  - 10. Hammer-driven anchors and fasteners are not permitted.
  - 11. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
    - a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
    - b. Comply with MFMA-4.
    - c. Channel Material: Use galvanized steel.
    - d. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch minimum base metal thickness.
  - 12. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install hangers and supports in accordance with NECA 1.
- C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
- D. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- E. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- F. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- H. Equipment Support and Attachment:
  - 1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
  - 2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
  - 3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
    - a. Minimum standoff: 1 inch.
  - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
  - 5. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
  - 6. Install surface-mounted cabinets and panelboards with minimum of four anchors.
  - 7. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- I. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.
- J. Secure fasteners in accordance with manufacturer's recommended torque settings.
- K. Remove temporary supports.

### 3.3 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Inspect support and attachment components for damage and defects.

- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION





SECTION 26 05 33.13  
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Stainless steel rigid metal conduit (RMC).
- C. Galvanized steel intermediate metal conduit (IMC).
- D. Stainless steel intermediate metal conduit (IMC).
- E. PVC-coated galvanized steel rigid metal conduit (RMC).
- F. Flexible metal conduit (FMC).
- G. Liquidtight flexible metal conduit (LFMC).
- H. Galvanized steel electrical metallic tubing (EMT).
- I. Stainless steel electrical metallic tubing (EMT).
- J. Rigid polyvinyl chloride (PVC) conduit.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete encasement of conduits.
- B. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Cable assemblies consisting of conductors protected by integral metal armor.
- C. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- D. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- E. Section 26 05 33.16 - Boxes for Electrical Systems.
- F. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2015.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2015.
- C. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit (EIMC); 2005.
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
- F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

- G. NEMA RN 1 - Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit; 2018.
- H. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2013.
- I. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2016.
- J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.
- L. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- M. UL 6A - Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel; Current Edition, Including All Revisions.
- N. UL 360 - Liquid-Tight Flexible Steel Conduit; Current Edition, Including All Revisions.
- O. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.
- P. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- Q. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
- R. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.
- S. UL 797A - Electrical Metallic Tubing - Aluminum and Stainless Steel; Current Edition, Including All Revisions.
- T. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
  - 2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
  - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
  - 4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
  - 5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
  - 1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.
- C. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2-inch (53 mm) trade size and larger.

## 1.6 QUALITY ASSURANCE

- A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.
- B. Work shall be inspected by a local Authority Having Jurisdiction (AHJ). Contractor shall provide certificate of inspection prior to final payment request.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

# PART 2 PRODUCTS

## 2.1 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
  - 1. Under Slab on Grade: Use galvanized steel rigid metal conduit.
  - 2. Exterior, Direct-Buried: Use rigid PVC conduit.
  - 3. Exterior, Embedded Within Concrete: Use rigid PVC conduit.
  - 4. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless steel intermediate metal conduit (IMC), or schedule 80 rigid PVC conduit where emerging from underground.
  - 5. Where rigid polyvinyl (PVC) conduit larger than 2-inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit (RMC) elbows, stainless steel rigid metal conduit (RMC) elbows, galvanized steel intermediate metal conduit (IMC) elbows, stainless steel intermediate metal conduit (IMC) elbows, PVC-coated galvanized steel rigid metal conduit (RMC) elbows, or concrete-encased PVC elbows for bends.
- D. Embedded Within Concrete:
  - 1. Within Slab on Grade: Use rigid PVC conduit.
  - 2. Within Slab Above Ground: Use rigid PVC conduit.
  - 3. Within Concrete Walls Above Ground: Use rigid PVC conduit.
  - 4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT) where emerging from concrete.
- E. Concealed Within Masonry Walls: Use electrical metallic tubing (EMT).
- F. Concealed Within Hollow Stud Walls: Use electrical metallic tubing (EMT).
- G. Concealed Above Accessible Ceilings: Use electrical metallic tubing (EMT).
- H. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless

steel intermediate metal conduit (IMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).

- I. Exposed, Interior, Not Subject to Physical Damage: Use electrical metallic tubing (EMT).
- J. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
  - 1. Locations subject to physical damage include, but are not limited to:
    - a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
- K. Exposed, Exterior: Use galvanized steel rigid metal conduit.
- L. Flexible Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit (FMC).
  - 1. Maximum Length: 6 feet.
- M. Flexible Connections to Vibrating Equipment:
  - 1. Dry Locations: Use flexible metal conduit (FMC).
  - 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
  - 3. Maximum Length: 6 feet unless otherwise indicated.
  - 4. Vibrating equipment includes, but is not limited to:
    - a. Transformers.
    - b. Motors.
- N. Fished in Existing Walls, Where Necessary: Use flexible metal conduit (FMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).

## 2.2 CONDUIT - GENERAL REQUIREMENTS

- A. Comply with NFPA 70.
- B. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling mandrel through them.
- C. Provide conduit, fittings, supports, and accessories required for complete raceway system.
- D. Provide products listed, classified, and labeled as suitable for purpose intended.
- E. Minimum Conduit Size, Unless Otherwise Indicated:
  - 1. Branch Circuits: 3/4 inch (21 mm) trade size.
  - 2. Branch Circuit Homeruns: 3/4-inch trade size.
  - 3. Flexible Connections to Luminaires: 1/2 inch (16 mm) trade size.
  - 4. Underground, Interior: 3/4-inch trade size.
  - 5. Underground, Exterior: 3/4 inch (21 mm) trade size.
- F. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

## 2.3 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Manufacturers:
  - 1. Allied Tube & Conduit, a division of Atkore International: [www.alliedeg.com/#sle](http://www.alliedeg.com/#sle).
  - 2. Picoma: [www.picoma.com](http://www.picoma.com).
  - 3. Wheatland Tube, a division of Zekelman Industries: [www.wheatland.com/#sle](http://www.wheatland.com/#sle).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- C. Fittings:

1. Manufacturers:
2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
3. Material: Use steel.
4. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

#### 2.4 STAINLESS STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC stainless steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6A.
- B. Fittings:
  1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6A.
  2. Material: Use stainless steel with corrosion resistance equivalent to conduit.
  3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

#### 2.5 GALVANIZED STEEL INTERMEDIATE METAL CONDUIT (IMC)

- A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- B. Fittings:
  1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.
  2. Material: Use steel or malleable iron.
  3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

#### 2.6 STAINLESS STEEL INTERMEDIATE METAL CONDUIT (IMC)

- A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- B. Fittings:
  1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.

#### 2.7 PVC-COATED GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit with external polyvinyl chloride (PVC) coating complying with NEMA RN 1 and listed and labeled as complying with UL 6.
- B. Exterior Coating: Polyvinyl chloride (PVC), nominal thickness of 40 mil, 0.040 inch.
- C. PVC-Coated Boxes and Fittings:
  1. Manufacturer: Same as manufacturer of PVC-coated conduit to be installed.
  2. Nonhazardous Locations: Use boxes and fittings listed and labeled as complying with UL 514A, UL 514B, or UL 6.
  3. Material: Use steel or malleable iron.
  4. Exterior Coating: Polyvinyl chloride (PVC), minimum thickness of 40 mil, 0.040 inch.
- D. PVC-Coated Supports: Furnish with exterior coating of polyvinyl chloride (PVC), minimum thickness of 15 mil, 0.015 inch.

## 2.8 FLEXIBLE METAL CONDUIT (FMC)

- A. Manufacturers:
  - 1. AFC Cable Systems, Inc: [www.afcweb.com/#sle](http://www.afcweb.com/#sle).
  - 2. Electri-Flex Company: [www.electriflex.com/#sle](http://www.electriflex.com/#sle).
  - 3. International Metal Hose: [www.metalhose.com/#sle](http://www.metalhose.com/#sle).
- B. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.
- C. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 2. Material: Use steel or malleable iron.

## 2.9 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Manufacturers:
  - 1. AFC Cable Systems, Inc: [www.afcweb.com/#sle](http://www.afcweb.com/#sle).
  - 2. Electri-Flex Company: [www.electriflex.com/#sle](http://www.electriflex.com/#sle).
  - 3. International Metal Hose: [www.metalhose.com/#sle](http://www.metalhose.com/#sle).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- C. Fittings:
  - 1. Manufacturers:
    - a. Bridgeport Fittings, LLC: [www.bptfittings.com/#sle](http://www.bptfittings.com/#sle).
    - b. Emerson Electric Co; O-Z/Gedney: [www.emerson.com/#sle](http://www.emerson.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 3. Material: Use aluminum.

## 2.10 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
  - 1. Allied Tube & Conduit: [www.alliedeg.com/#sle](http://www.alliedeg.com/#sle).
  - 2. Nucor Tubular Products: [www.nucortubular/#sle](http://www.nucortubular/#sle).
  - 3. Wheatland Tube Company: [www.wheatland.com/#sle](http://www.wheatland.com/#sle).
- B. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- C. Fittings:
  - 1. Manufacturers:
    - a. Bridgeport Fittings, LLC: [www.bptfittings.com/#sle](http://www.bptfittings.com/#sle).
    - b. Emerson Electric Co; O-Z/Gedney: [www.emerson.com/#sle](http://www.emerson.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 3. Material: Use steel.
  - 4. Connectors and Couplings: Use set-screw type.
    - a. Do not use indenter type connectors and couplings.

## 2.11 STAINLESS STEEL ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT stainless steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797A.
- B. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 2. Connectors and Couplings: Use compression/gland or set-screw type.

## 2.12 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Manufacturers:
  - 1. Cantex Inc: [www.cantexinc.com/#sle](http://www.cantexinc.com/#sle).
  - 2. JM Eagle: [www.jmeagle.com/#sle](http://www.jmeagle.com/#sle).
  - 3. Picoma: [www.picoma.com](http://www.picoma.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 80 unless otherwise indicated; rated for use with conductors rated 90 degrees C, schedule 40 not permitted.
- C. Fittings:
  - 1. Manufacturer: Same as manufacturer of conduit to be connected.
  - 2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

## 2.13 ACCESSORIES

- A. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
- B. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.
- C. Sealing Compound for Hazardous/Classified Location Sealing Fittings: Listed for use with particular fittings to be installed.
- D. Sealing Systems for Concrete Penetrations:
  - 1. Sleeves: Provide water stop ring or cement coating that bonds to concrete to prevent water infiltration.
  - 2. Rate for minimum of 40 psig; suitable for sealing around conduits to be installed.
- E. Bore Spacers: Nonmetallic; designed for maintaining conduit/duct spacing for installation within casing; furnished with roller wheels to facilitate installation, openings to facilitate grout flow, and holes for stabilization cable; suitable for casing and conduit/duct arrangement to be installed.
  - 1. Products:
    - a. Advance Products & Systems, LLC; Bore Spacers: [www.apsonline.com/#sle](http://www.apsonline.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.

- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Where conduit is installed on an existing wall, paint conduit to match the wall finish.
- C. Install conduit in accordance with NECA 1.
- D. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- E. Install intermediate metal conduit (IMC) in accordance with NECA 101.
- F. Install PVC-coated galvanized steel rigid metal conduit (RMC) using only tools approved by manufacturer.
- G. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
- H. Conduit Routing:
  - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
  - 2. When conduit destination is indicated without specific routing, determine exact routing required.
  - 3. Conceal conduits unless specifically indicated to be exposed.
  - 4. Conduits in the following areas may be exposed, unless otherwise indicated:
    - a. Electrical rooms.
    - b. Mechanical equipment rooms.
    - c. Within joists in areas with no ceiling.
  - 5. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
  - 6. Arrange conduit to maintain adequate headroom, clearances, and access.
  - 7. Arrange conduit to provide no more than the equivalent of three 90 degree bends between pull points.
  - 8. Route conduits above water and drain piping where possible.
  - 9. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
  - 10. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
  - 11. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
    - a. Heaters.
    - b. Hot water piping.
    - c. Flues.
  - 12. Group parallel conduits in same area on common rack.
- I. Conduit Support:
  - 1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 05 29.
  - 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
  - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
  - 4. Use conduit strap to support single surface-mounted conduit.
    - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.



5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.
  6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
  7. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
  8. Use of spring steel conduit clips for support of conduits is not permitted.
  9. Use of wire for support of conduits is not permitted.
- J. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
  2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
  3. Use suitable adapters where required to transition from one type of conduit to another.
  4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
  5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
  6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
  7. Secure joints and connections to provide mechanical strength and electrical continuity.
- K. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
  2. Make penetrations perpendicular to surfaces unless otherwise indicated.
  3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
  4. Conceal bends for conduit risers emerging above ground.
  5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
  6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
- L. Embedment Within Structural Concrete Slabs (only where approved by Structural Engineer):
1. Secure conduits to prevent floating or movement during pouring of concrete.
- M. Concrete Encasement: Where conduits not otherwise embedded within concrete are indicated to be concrete-encased, provide minimum concrete cover of 3 inches on all sides unless otherwise indicated; see Section 03 30 00.
- N. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
  2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
  3. Where conduits are subject to earth movement by settlement or frost.
- O. Conduit Sealing:
1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
    - a. Where conduits enter building from outside.
    - b. Where service conduits enter building from underground distribution system.
    - c. Where conduits enter building from underground.
    - d. Where conduits may transport moisture to contact live parts.

2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
  - a. Where conduits pass from outdoors into conditioned interior spaces.
  - b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- P. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.
- Q. Provide grounding and bonding; see Section 26 05 26.
- R. Identify conduits; see Section 26 05 53.

### 3.3 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Where coating of PVC-coated galvanized steel rigid metal conduit (RMC) contains cuts or abrasions, repair in accordance with manufacturer's instructions.
- D. Correct deficiencies and replace damaged or defective conduits.

### 3.4 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

### 3.5 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 05 33.16  
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.
- C. Boxes and enclosures for integrated power, data, and audio/video.
- D. Floor boxes.
- E. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- C. Section 26 05 33.13 - Conduit for Electrical Systems:
  - 1. Conduit bodies and other fittings.
  - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 26 27 26 - Wiring Devices:
  - 1. Wall plates.
  - 2. Floor box service fittings.
  - 3. Additional requirements for locating boxes for wiring devices.

1.3 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- E. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- I. UL 508A - UL Standard for Safety Industrial Control Panels; 2018.

- J. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
  2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
  4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
  5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
  6. Coordinate the work with other trades to preserve insulation integrity.
  7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
  8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground boxes/enclosures.
- C. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Keys for Lockable Enclosures: Two of each different key.

#### 1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

### PART 2 PRODUCTS

#### 2.1 BOXES

- A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.

2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
  3. Provide products listed, classified, and labeled as suitable for the purpose intended.
  4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
  5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
  2. Use cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
  3. Use cast aluminum boxes where exposed galvanized steel rigid metal conduit is used.
  4. Use suitable concrete type boxes where flush-mounted in concrete.
  5. Use suitable masonry type boxes where flush-mounted in masonry walls.
  6. Use raised covers suitable for the type of wall construction and device configuration where required.
  7. Use shallow boxes where required by the type of wall construction.
  8. Do not use "through-wall" boxes designed for access from both sides of wall.
  9. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
  10. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
  11. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
  12. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
  13. Wall Plates: Comply with Section 26 27 26.
  14. Manufacturers:
    - a. Cooper Crouse-Hinds, a division of Eaton Corporation: [www.cooperindustries.com/#sle](http://www.cooperindustries.com/#sle).
    - b. Hubbell Incorporated; Bell Products: [www.hubbell-rtb.com/#sle](http://www.hubbell-rtb.com/#sle).
    - c. Hubbell Incorporated; RACO Products: [www.hubbell-rtb.com/#sle](http://www.hubbell-rtb.com/#sle).
    - d. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
    - e. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
  2. NEMA 250 Environment Type, Unless Otherwise Indicated:
    - a. Indoor Clean, Dry Locations: Type 1, painted steel.
    - b. Outdoor Locations: Type 4, painted steel.
  3. Junction and Pull Boxes Larger Than 100 cubic inches:
    - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
    - b. Boxes 6 square feet and Larger: Provide sectionalized screw-cover or hinged-cover enclosures.
  4. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
  5. Manufacturers:
    - a. Cooper B-Line, a division of Eaton Corporation: [www.cooperindustries.com/#sle](http://www.cooperindustries.com/#sle).
    - b. Hoffman, a brand of Pentair Technical Products: [www.hoffmanonline.com/#sle](http://www.hoffmanonline.com/#sle).
    - c. Hubbell Incorporated; Wiegmann Products: [www.hubbell-wiegmann.com/#sle](http://www.hubbell-wiegmann.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.

- D. Floor Boxes:
  - 1. Description: Floor boxes compatible with floor box service fittings provided in accordance with Section 26 27 26; with partitions to separate multiple services; furnished with all components, adapters, and trims required for complete installation.
  - 2. Metallic Floor Boxes: Fully adjustable (with integral means for leveling adjustment prior to and after concrete pour).
  - 3. Manufacturer: Refer to floor box schedule on drawings for additional information.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide separate boxes for emergency power and normal power systems.
- E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
- H. Box Locations:
  - 1. Unless dimensioned, box locations indicated are approximate.
  - 2. Locate boxes as required for devices installed under other sections or by others.
    - a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 26 27 26.
  - 3. Locate boxes so that wall plates do not span different building finishes.
  - 4. Locate boxes so that wall plates do not cross masonry joints.
  - 5. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
  - 6. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
  - 7. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches horizontal separation.
  - 8. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
    - a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.

- b. Do not install flush-mounted boxes with area larger than 16 square inches or such that the total aggregate area of openings exceeds 100 square inches for any 100 square feet of wall area.
    - 9. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 05 33.13.
    - 10. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
      - a. Concealed above accessible suspended ceilings.
      - b. Within joists in areas with no ceiling.
      - c. Electrical rooms.
      - d. Mechanical equipment rooms.
  - I. Box Supports:
    - 1. Secure and support boxes in accordance with NFPA 70 and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
    - 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
    - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
    - 4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.
  - J. Install boxes plumb and level.
  - K. Flush-Mounted Boxes:
    - 1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
    - 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
    - 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
  - L. Install boxes as required to preserve insulation integrity.
  - M. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
  - N. Close unused box openings.
  - O. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
  - P. Provide grounding and bonding in accordance with Section 26 05 26.
  - Q. Identify boxes in accordance with Section 26 05 53.
- 3.3 CLEANING
- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.
- 3.4 PROTECTION
- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION





SECTION 26 05 53  
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Underground warning tape.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- B. Section 26 27 26 - Wiring Devices: Device and wallplate finishes; factory pre-marked wallplates.

1.3 REFERENCE STANDARDS

- A. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2017.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. NFPA 70E - Standard for Electrical Safety in the Workplace; 2018.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
  - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
  - 2. Do not install identification products until final surface finishes and painting are complete.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation and installation of product.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

## 1.7 FIELD CONDITIONS

- A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

## PART 2 PRODUCTS

### 2.1 IDENTIFICATION APPLICATIONS

- A. Identification for Equipment:
  - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
  - 2. In addition to identifying data specific to individual pieces of equipment listed, each equipment identification nameplate or label shall include a date of installation in a MM/YYYY format.
    - a. Switchgear:
      - 1) Identify ampere rating.
      - 2) Identify voltage and phase.
      - 3) Use identification nameplate to identify load(s) served for each branch device. Identify spares and spaces.
    - b. Switchboards:
      - 1) Identify ampere rating.
      - 2) Identify voltage and phase.
      - 3) Use identification nameplate to identify load(s) served for each branch device. Identify spares and spaces.
    - c. Panelboards:
      - 1) Identify ampere rating.
      - 2) Identify voltage and phase.
      - 3) Identify power source and circuit number. Include location.
      - 4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
      - 5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces.
      - 6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
    - d. Transformers:
      - 1) Identify kVA rating.
      - 2) Identify voltage and phase for primary and secondary.
      - 3) Identify power source and circuit number. Include location.
      - 4) Identify load(s) served. Include location.
    - e. Enclosed switches, circuit breakers, and motor controllers:
      - 1) Identify voltage and phase.
      - 2) Identify power source and circuit number. Include location when not within sight of equipment.
      - 3) Identify load(s) served. Include location.
  - 3. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70, including but not limited to the following.

- a. Service equipment.
- 4. Arc Flash Hazard Warning Labels: Use warning labels to identify arc flash hazards for electrical equipment, such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized.
  - a. Minimum Size: 3.5 by 5 inches.
  - b. Legend: Include orange header that reads "WARNING", followed by the word message "Arc Flash and Shock Hazard; Appropriate PPE Required; Do not operate controls or open covers without appropriate personal protection equipment; Failure to comply may result in injury or death; Refer to NFPA 70E for minimum PPE requirements" or approved equivalent.
  - c. Service Equipment: Include the following information in accordance with NFPA 70, 110.16.
    - 1) Nominal system voltage.
    - 2) Available fault current.
    - 3) Clearing time of service overcurrent protective device(s).
    - 4) Date label applied.
- B. Identification for Conductors and Cables:
  - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
  - 2. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
    - a. At each source and load connection.
    - b. Within boxes when more than one circuit is present.
    - c. Within equipment enclosures when conductors and cables enter or leave the enclosure.
    - d. In cable tray, at maximum intervals of 20 feet.
  - 3. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.
  - 4. Use underground warning tape to identify direct buried cables.
- C. Identification for Devices:
  - 1. Wiring Device and Wallplate Finishes: Comply with Section 26 27 26.
  - 2. Use identification label to identify fire alarm system devices.
  - 3. Use identification label to identify serving branch circuit for all receptacles.
- D. Identification for Luminaires:
  - 1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

## 2.2 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
  - 1. Manufacturers:
    - a. Brimar Industries, Inc: [www.brimar.com/#sle](http://www.brimar.com/#sle).
    - b. Kolbi Pipe Marker Co: [www.kolbipipemarkers.com/#sle](http://www.kolbipipemarkers.com/#sle).
    - c. Seton Identification Products: [www.seton.com/#sle](http://www.seton.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Materials: Conform to ASTM D709
    - a. Indoor Clean, Dry Locations: Use plastic nameplates.
    - b. Outdoor Locations: Use plastic nameplates suitable for exterior use.
  - 3. Plastic Nameplates: Three-layer laminated acrylic with beveled edges; minimum thickness of 1/8 inch; engraved text.
    - a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
    - b. Color: Black letters on white background.

4. Letter Size: Use 1/4 inch letters for identifying grouped equipment and loads.
  5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
1. Manufacturers:
    - a. Brady Corporation: [www.bradyid.com/#sle](http://www.bradyid.com/#sle).
    - b. Brother International Corporation: [www.brother-usa.com/#sle](http://www.brother-usa.com/#sle).
    - c. Panduit Corp: [www.panduit.com/#sle](http://www.panduit.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
  3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
    - a. Use 3/16 inch black letters on clear background. Use only for identification of individual wall switches and receptacles, control device stations

## 2.3 WIRE AND CABLE MARKERS

- A. Manufacturers:
1. Brady Corporation: [www.bradyid.com/#sle](http://www.bradyid.com/#sle).
  2. Seton Identification Products: [www.seton.com](http://www.seton.com).
- B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth type markers suitable for the conductor or cable to be identified.
- C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- D. Legend: Power source and circuit number or other designation indicated.
- E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- F. Minimum Text Height: 1/8 inch.
- G. Color: Black text on white background unless otherwise indicated.

## 2.4 UNDERGROUND WARNING TAPE

- A. Manufacturers:
1. Brady Corporation: [www.bradyid.com/#sle](http://www.bradyid.com/#sle).
  2. Seton Identification Products: [www.seton.com/#sle](http://www.seton.com/#sle).
  3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Materials: Use foil-backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
- C. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection.
- D. Legend: Type of service, continuously repeated over full length of tape.
- E. Color:
1. Tape for Buried Power Lines: Black text on yellow background.
  2. Tape for Buried Communication, Alarm, and Signal Lines: Black text on orange background.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Clean and degrease surfaces to receive adhesive products according to manufacturer's instructions.

### 3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
  - 1. Surface-Mounted Equipment: Enclosure front.
  - 2. Flush-Mounted Equipment: Inside of equipment door.
  - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
  - 4. Elevated Equipment: Legible from the floor or working platform.
  - 5. Branch Devices: Adjacent to device.
  - 6. Interior Components: Legible from the point of access.
  - 7. Conductors and Cables: Legible from the point of access.
  - 8. Devices: Outside face of cover.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- F. Install underground warning tape above buried lines with one tape per trench at 6 inch(es) below finished grade.
  - 1. At paved areas, install 3 inches below pavement section.

### 3.3 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION



SECTION 26 05 83  
WIRING CONNECTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical connections to equipment.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 26 05 33.13 - Conduit for Electrical Systems.
- C. Section 26 05 33.16 - Boxes for Electrical Systems.
- D. Section 26 27 26 - Wiring Devices.

1.3 REFERENCE STANDARDS

- A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2015).
- B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2016.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
  - 2. Determine connection locations and requirements.
- B. Sequencing:
  - 1. Install rough-in of electrical connections before installation of equipment is required.
  - 2. Make electrical connections before required start-up of equipment.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide wiring device manufacturer's catalog information showing dimensions, configurations, and construction.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.

- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
  - 1. Colors: Comply with NEMA WD 1.
  - 2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
  - 3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
- B. Wiring Devices: As specified in Section 26 27 26.
- C. Flexible Conduit: As specified in Section 26 05 33.13.
- D. Wire and Cable: As specified in Section 26 05 19.
- E. Boxes: As specified in Section 26 05 33.16.

### 2.2 EQUIPMENT CONNECTIONS

- A. Refer to equipment Schedules on drawing for specific requirements for each piece of equipment.:

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

### 3.2 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.



- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION



SECTION 26 09 23  
LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Vacancy sensors.
- B. Outdoor photo controls.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- C. Section 26 05 33.16 - Boxes for Electrical Systems.
- D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. 47 CFR 15 - Radio Frequency Devices; current edition.
- B. ANSI C136.10 - American National Standard for Roadway and Area Lighting Equipment - Locking-Type Photocontrol Devices and Mating Receptacles - Physical and Electrical Interchangeability and Testing; 2010.
- C. ANSI C136.24 - American National Standard for Roadway and Area Lighting Equipment - Nonlocking (Button) Type Photocontrols; 2004 (R2010).
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- E. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 773 - Plug-in, Locking Type Photocontrols for Use with Area Lighting; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the placement of wall switch vacancy sensors with actual installed door swings.
  - 2. Coordinate the placement of vacancy sensors with millwork, furniture, equipment or other potential obstructions to motion detection coverage installed under other sections or by others.
  - 3. Coordinate the placement of photo sensors for daylighting controls with windows, skylights, and luminaires to achieve optimum operation. Coordinate placement with ductwork, piping, equipment, or other potential obstructions to light level measurement installed under other sections or by others.
  - 4. Notify Architect/Engineer of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

- B. Sequencing:
  - 1. Do not install lighting control devices until final surface finishes and painting are complete.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
  - 1. Vacancy Sensors: Include detailed motion detection coverage range diagrams.
- C. Operation and Maintenance Data: Include detailed information on device programming and setup.

## 1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

## 1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

## 1.8 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

## 1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

# PART 2 PRODUCTS

## 2.1 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.

## 2.2 VACANCY SENSORS

- A. Manufacturers:
  - 1. Hubbell Incorporated: [www.hubbell.com/#sle](http://www.hubbell.com/#sle).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
  - 3. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.
- B. All Vacancy Sensors:
  - 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.

2. Sensor Technology:
    - a. Passive Infrared/Ultrasonic Dual Technology Vacancy Sensors: Designed to detect vacancy using a combination of both passive infrared and ultrasonic technologies.
  3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.
  4. Operation: Unless otherwise indicated, load to be manual on and automatic off when no occupant presence is detected during an adjustable turn-off delay time interval.
  5. Dual Technology Vacancy Sensors: Field configurable turn-on and hold-on activation with settings for activation by either or both sensing technologies.
  6. Passive Infrared Lens Field of View: Field customizable by addition of factory masking material, adjustment of integral blinders, or similar means to block motion detection in selected areas.
  7. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.
  8. Sensitivity: Field adjustable.
  9. Adaptive Technology: Field selectable; capable of self-adjusting sensitivity and time delay according to conditions.
  10. Load Rating for Line Voltage Vacancy Sensors: As required to control the load indicated on drawings.
  11. Provide with auxiliary relay: SPDT dry contacts.
- C. Wall Switch Vacancy Sensors:
1. All Wall Switch Vacancy Sensors:
    - a. Description: Vacancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.
    - b. Unless otherwise indicated or required to control the load indicated on drawings, provide line voltage units with self-contained relay.
    - c. Operation: Operates only as vacancy sensor (manual-on/automatic-off) in accordance with California Title 24 requirements.
    - d. Finish: Match finishes specified for wiring devices in Section 26 27 26, unless otherwise indicated. Cover plate shall be stainless steel to match other wiring devices.
    - e. Provide with auxiliary relay: SPDT dry contact
  2. Passive Infrared/Ultrasonic Dual Technology Wall Switch Vacancy Sensors: Capable of detecting motion within an area of 900 square feet.
- D. Ceiling Mounted Vacancy Sensors:
1. All Ceiling Mounted Vacancy Sensors:
    - a. Description: Low profile vacancy sensors designed for ceiling installation.
    - b. Unless otherwise indicated or required to control the load indicated on drawings, provide low voltage units, for use with separate compatible accessory power packs.
    - c. Finish: White unless otherwise indicated.
    - d. Provide with auxiliary relay: SPDT dry contact
  2. Passive Infrared/Ultrasonic Dual Technology Ceiling Mounted Vacancy Sensors:
    - a. Standard Range Sensors: Capable of detecting motion within an area of 1000 at a mounting height of 9 feet, with a field of view of 360 degrees.
      - 1) Products:
        - (a) Hubbell NXOS series.
        - (b) Substitutions: See Section 01 60 00 - Product Requirements.
- E. Power Packs for Low Voltage Vacancy Sensors:
1. Description: Plenum rated, self-contained low voltage class 2 transformer and relay compatible with specified low voltage vacancy sensors for switching of line voltage loads.
  2. Provide quantity and configuration of power and slave packs with all associated wiring and accessories as required to control the load indicated on drawings.
  3. Input Supply Voltage: Dual rated for 120/277 V ac.

4. Load Rating: As required to control the load indicated on drawings.

## 2.3 OUTDOOR PHOTO CONTROLS

- A. Manufacturers:
  1. Intermatic, Inc: [www.intermatic.com/#sle](http://www.intermatic.com/#sle).
  2. Tork, a division of NSI Industries LLC: [www.tork.com/#sle](http://www.tork.com/#sle).
  3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Stem-Mounted Outdoor Photo Controls:
  1. Description: Direct-wired photo control unit with threaded conduit mounting stem and field-adjustable swivel base, listed and labeled as complying with UL 773A.
  2. Housing: Weatherproof, impact resistant polycarbonate.
  3. Photo Sensor: Cadmium sulfide.
  4. Provide external sliding shield for field adjustment of light level activation.
  5. Light Level Activation: 1 to 5 footcandles turn-on and 3 to 1 turn-off to turn-on ratio with delayed turn-off.
  6. Voltage: As required to control the load indicated on the drawings.
  7. Failure Mode: Fails to the on position.
  8. Load Rating: As required to control the load indicated on the drawings.
- C. Locking Receptacle-Mounted Outdoor Photo Controls
  1. Description: Plug-in locking type photo control unit complying with ANSI C136.10 for mounting on a compatible receptacle, listed and labeled as complying with UL 773.
  2. Housing: Weatherproof, impact resistant UV stabilized polypropylene, color to be selected.
  3. Photo Sensor: Cadmium sulfide.
  4. Light Level Activation: 1 to 3 footcandles turn-on and 1.5 to 1 turn-off to turn-on ratio with instant turn-on and delayed turn-off.
  5. Voltage: As required to control the load indicated on the drawings.
  6. Failure Mode: Fails to the on position.
  7. Load Rating: As required to control the load indicated on the drawings.
  8. Surge Protection: 160 joule metal oxide varistor.
- D. Button Type Outdoor Photo Controls
  1. Description: Direct-wired photo control unit complying with ANSI C136.24 with weatherproof gasketed wall plate where required or indicated, listed and labeled as complying with UL 773A.
  2. Housing: Weather resistant polycarbonate.
  3. Photo Sensor: Cadmium sulfide.
  4. Light Level Activation: 1 to 3 footcandles turn-on and 3 to 1 turn-off to turn-on ratio with delayed turn-off.
  5. Voltage: As required to control the load indicated on the drawings.
  6. Failure Mode: Fails to the on position.
  7. Load Rating: As required to control the load indicated on the drawings.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that the service voltage and ratings of lighting control devices are appropriate for the service voltage and load requirements at the location to be installed.
- G. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

### 3.3 INSTALLATION

- A. Install lighting control devices in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of lighting control devices provided under this section.
  - 1. Mounting Heights: Unless otherwise indicated, as follows:
    - a. Wall Switch Vacancy Sensors: 48 inches above finished floor.
  - 2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
  - 3. Locate wall switch vacancy sensors on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
- C. Install lighting control devices in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Install lighting control devices plumb and level, and held securely in place.
- F. Provide required supports in accordance with Section 26 05 29.
- G. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- H. Identify lighting control devices in accordance with Section 26 05 53.
- I. Vacancy Sensor Locations:
  - 1. Location Adjustments: Locations indicated are diagrammatic and only intended to indicate which rooms or areas require devices. Provide quantity and locations as required for complete coverage of respective room or area based on manufacturer's recommendations for installed devices.
  - 2. Locate ultrasonic and dual technology passive infrared/ultrasonic vacancy sensors a minimum of 4 feet from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.

- J. Outdoor Photo Control Locations:
  - 1. Where possible, locate outdoor photo controls with photo sensor facing north. If north facing photo sensor is not possible, install with photo sensor facing east, west, or down.
  - 2. Locate outdoor photo controls so that photo sensors do not face artificial light sources, including light sources controlled by the photo control itself.
- K. Install outdoor photo controls so that connections are weatherproof. Do not install photo controls with conduit stem facing up in order to prevent infiltration of water into the photo control.
- L. Unless otherwise indicated, install power packs for lighting control devices above accessible ceiling or above access panel in inaccessible ceiling near the sensor location.
- M. Where indicated, install separate compatible wall switches for manual control interface with lighting control devices or associated power packs.
- N. Unless otherwise indicated, install switches on load side of power packs so that switch does not turn off power pack.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect each lighting control device for damage and defects.
- C. Test vacancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area.
- D. Test outdoor photo controls to verify proper operation, including time delays where applicable.
- E. Correct wiring deficiencies and replace damaged or defective lighting control devices.

### 3.5 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust vacancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
- C. Adjust position of directional vacancy sensors and outdoor motion sensors to achieve optimal coverage as required.
- D. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology vacancy sensor lenses to block undesired motion detection.
- E. Adjust external sliding shields on outdoor photo controls under optimum lighting conditions to achieve desired turn-on and turn-off activation as indicated or as directed by Architect.

### 3.6 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

### 3.7 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. See Section 01 79 00 - Demonstration and Training, for additional requirements.



- C. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.
- D. Training: Train Owner's personnel on operation, adjustment, programming, and maintenance of lighting control devices.
  - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
  - 2. Provide minimum of two hours of training.
  - 3. Instructor: Qualified contractor familiar with the project and with sufficient knowledge of the installed lighting control devices.
  - 4. Location: At project site.

END OF SECTION



SECTION 26 21 00  
LOW-VOLTAGE ELECTRICAL SERVICE ENTRANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical service requirements.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- C. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- D. Section 26 05 33.13 - Conduit for Electrical Systems.
- E. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 26 24 16 - Panelboards: Service entrance equipment.
- G. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.

1.3 REFERENCE STANDARDS

- A. IEEE C2 - National Electrical Safety Code; 2017.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. No later than two weeks following date of the Agreement, notify Utility Company of anticipated date of service.
- B. Coordination:
  - 1. Verify the following with Utility Company representative:
    - a. Utility Company requirements, including division of responsibility.
    - b. Exact location and details of utility point of connection.
    - c. Utility easement requirements.
    - d. Utility Company charges associated with providing service.
  - 2. Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for electrical service and associated equipment.
  - 3. Coordinate arrangement of service entrance equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- C. Arrange for Utility Company to provide permanent electrical service. Prepare and submit documentation required by Utility Company.
- D. Utility Company charges associated with providing permanent service to be paid by Owner.

- E. Preinstallation Meeting: Convene one week prior to commencing work of this section to review service requirements and details with Utility Company representative.
- F. Scheduling:
  - 1. Arrange for inspections necessary to obtain Utility Company approval of installation.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

#### 1.6 QUALITY ASSURANCE

- A. Comply with the following:
  - 1. IEEE C2 (National Electrical Safety Code).
  - 2. NFPA 70 (National Electrical Code).
  - 3. The requirements of the Utility Company.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- B. Store products indoors in a clean, dry space having a uniform temperature to prevent condensation (including outdoor rated products which are not weatherproof until completely and properly installed). Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle products carefully to avoid damage to internal components, enclosure, and finish.

### PART 2 PRODUCTS

#### 2.1 ELECTRICAL SERVICE REQUIREMENTS

- A. Provide new electrical service consisting of all required conduits, conductors, equipment, metering provisions, supports, accessories, etc. as necessary for connection between Utility Company point of supply and service entrance equipment.
- B. Products Furnished by Contractor: Comply with Utility Company requirements.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that ratings and configurations of service entrance equipment are consistent with the indicated requirements.
- C. Verify that conditions are satisfactory for installation prior to starting work.

#### 3.2 PREPARATION

- A. Verify and mark locations of existing underground utilities.

### 3.3 INSTALLATION

- A. Install products in accordance with manufacturer's instructions and Utility Company requirements.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances and required maintenance access.
- D. Provide required support and attachment components in accordance with Section 26 05 29.
- E. Provide grounding and bonding for service entrance equipment in accordance with Section 26 05 26.
- F. Identify service entrance equipment, including main service disconnect(s) in accordance with Section 26 05 53.

### 3.4 PROTECTION

- A. Protect installed equipment from subsequent construction operations.

END OF SECTION



SECTION 26 24 16  
PANELBOARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Power distribution panelboards.
- B. Lighting and appliance panelboards.
- C. Overcurrent protective devices for panelboards.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e (Amended 2017).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- E. NEMA PB 1 - Panelboards; 2011.
- F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
- G. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
- H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 67 - Panelboards; Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
- M. UL 869A - Reference Standard for Service Equipment; Current Edition, Including All Revisions.
- N. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

- O. UL 1699 - Arc-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
  - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  - 3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
  - 4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
  - 5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.
- D. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Panelboard Keys: Two of each different key.

#### 1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.



## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Schneider Electric; Square D Products: [www.schneider-electric.us/#sle](http://www.schneider-electric.us/#sle).
- B. Source Limitations: Furnish panelboards and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

### 2.2 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
  - 1. Altitude: Less than 6,600 feet.
  - 2. Ambient Temperature:
    - a. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.
- C. Short Circuit Current Rating:
  - 1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- D. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
- E. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- F. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- G. Bussing: Sized in accordance with UL 67 temperature rise requirements.
  - 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
  - 2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- H. Conductor Terminations: Suitable for use with the conductors to be installed.
- I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
  - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
    - a. Indoor Clean, Dry Locations: Type 1.
    - b. Outdoor Locations: Type 3R.
  - 2. Boxes: Galvanized steel unless otherwise indicated.
    - a. Provide wiring gutters sized to accommodate the conductors to be installed.
  - 3. Fronts:
    - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
    - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
    - c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.
  - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.

- J. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

## 2.3 POWER DISTRIBUTION PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
  - 1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
  - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
  - 1. Phase and Neutral Bus Material: Copper.
  - 2. Ground Bus Material: Copper.
- D. Circuit Breakers:
  - 1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.
  - 2. Provide thermal magnetic circuit breakers unless otherwise indicated.
- E. Enclosures:
  - 1. Provide surface-mounted enclosures unless otherwise indicated.
  - 2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
  - 3. Provide metal circuit directory holder mounted on inside of door.

## 2.4 LIGHTING AND APPLIANCE PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
  - 1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
  - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
  - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
  - 2. Phase and Neutral Bus Material: Copper.
  - 3. Ground Bus Material: Copper.
    - a. Provide insulated ground bus where indicated.
- D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.
- E. Enclosures:
  - 1. Provide surface-mounted or flush-mounted enclosures as indicated.
  - 2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
  - 3. Provide metal circuit directory holder mounted on inside of door.

## 2.5 OVERCURRENT PROTECTIVE DEVICES

### A. Molded Case Circuit Breakers:

1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
2. Interrupting Capacity:
  - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
    - 1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
    - 2) 14,000 rms symmetrical amperes at 480 VAC.
  - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
3. Conductor Terminations:
  - a. Provide mechanical lugs unless otherwise indicated.
  - b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
  - a. Provide field-adjustable magnetic instantaneous trip setting for circuit breaker frame sizes 225 amperes and larger.
5. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.
  - a. Provide the following field-adjustable trip response settings:
    - 1) Long time pickup, adjustable by setting dial.
    - 2) Long time delay.
    - 3) Short time pickup and delay.
    - 4) Ground fault pickup and delay where ground fault protection is indicated.
6. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
7. Provide the following circuit breaker types where indicated:
  - a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
  - b. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Combination type listed as complying with UL 1699.
8. Provide type HACR for air conditioning equipment circuits.
9. Do not use tandem circuit breakers.
10. Provide the following features and accessories where indicated or where required to complete installation:
  - a. Shunt Trip: Provide coil voltage as required for connection to indicated trip actuator.
  - b. Handle Pad-Lock Provision: For locking circuit breaker handle in OFF position.

## 2.6 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Factory test panelboards according to NEMA PB 1.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.

- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 26 05 29.
- F. Install panelboards plumb.
- G. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- H. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.
- I. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling.
- J. Provide grounding and bonding in accordance with Section 26 05 26.
- K. Install all field-installed branch devices, components, and accessories.
- L. Height: 6 feet to top of panelboard; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.
- M. Provide filler plates to cover unused spaces in panelboards.
- N. Identify panelboards in accordance with Section 26 05 53.
- O. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

### 3.3 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Perform field inspection and testing in accordance with Section 01 40 00.
- C. Inspect and test in accordance with NETA ATS, except Section 4.
- D. Fusible Switches: Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.
- E. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers. Tests listed as optional are not required.
- F. Test GFCI circuit breakers to verify proper operation.
- G. Test AFCI circuit breakers to verify proper operation.
- H. Test shunt trips to verify proper operation.

- I. Correct deficiencies and replace damaged or defective panelboards or associated components.

### 3.4 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of panelboard fronts.
- C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

### 3.5 CLEANING

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION



SECTION 26 27 26  
WIRING DEVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Wall switches.
- B. Receptacles.
- C. Wall plates.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 33.16 - Boxes for Electrical Systems.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 09 23 - Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors, in-wall time switches, and in-wall interval timers.

1.3 REFERENCE STANDARDS

- A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2017h.
- B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); 2017g.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
- E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2015).
- F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2016.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.
- I. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.
- J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.
- K. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
  - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.

3. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

B. Sequencing:

1. Do not install wiring devices until final surface finishes and painting are complete.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.1 WIRING DEVICE APPLICATIONS

- A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
- B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
- C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.
- D. Provide GFCI protection for receptacles installed within 6 feet of sinks.
- E. Provide GFCI protection for receptacles installed in kitchens.
- F. Provide GFCI protection for receptacles serving electric drinking fountains.

2.2 WIRING DEVICE FINISHES

- A. Provide wiring device finishes as described below unless otherwise indicated.
- B. Wiring Devices, Unless Otherwise Indicated: color selection by architect with stainless steel wall plate.

2.3 WALL SWITCHES

- A. Manufacturers:
  1. Hubbell Incorporated: [www.hubbell.com/#sle](http://www.hubbell.com/#sle).



2. Leviton Manufacturing Company, Inc: [www.leviton.com/#sle](http://www.leviton.com/#sle).
  3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- C. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

## 2.4 RECEPTACLES

- A. Manufacturers:
1. Hubbell Incorporated: [www.hubbell.com/#sle](http://www.hubbell.com/#sle).
  2. Leviton Manufacturing Company, Inc: [www.leviton.com/#sle](http://www.leviton.com/#sle).
  3. Lutron Electronics Company, Inc; Designer Style: [www.lutron.com/#sle](http://www.lutron.com/#sle).
  4. Pass & Seymour, a brand of Legrand North America, Inc: [www.legrand.us/#sle](http://www.legrand.us/#sle).
  5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
  2. NEMA configurations specified are according to NEMA WD 6.
- C. Convenience Receptacles:
1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
  2. Weather Resistant Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as weather resistant type complying with UL 498 Supplement SD suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.
- D. GFCI Receptacles:
1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
    - a. Provide test and reset buttons of same color as device.
  2. Standard GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.
  3. Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SD suitable for installation in damp or wet locations.

## 2.5 WALL PLATES

- A. Wall Plates: Comply with UL 514D.
1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
  2. Size: Standard.
  3. Screws: Metal with slotted heads finished to match wall plate finish.
- B. Basis of Design: Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.
1. Material type and color to be selected and approved by Owner and Architect.

- C. Weatherproof Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed. Hubbell #WP8M or approved equal.
- D. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type. Hubbell #WP26M or approved equal.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

### 3.3 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of wiring devices provided under this section.
  - 1. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
  - 2. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
  - 3. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
  - 4. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

- E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.
- F. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- G. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- H. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- I. Install wall switches with OFF position down.
- J. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- K. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- L. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
- M. Identify wiring devices in accordance with Section 26 05 53.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect each wiring device for damage and defects.
- C. Operate each wall switch with circuit energized to verify proper operation.
- D. Test each receptacle to verify operation and proper polarity.
- E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- F. Correct wiring deficiencies and replace damaged or defective wiring devices.

### 3.5 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust presets for wall dimmers according to manufacturer's instructions as directed by Architect.

### 3.6 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION



SECTION 26 51 00  
INTERIOR LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Interior luminaires.
- B. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- B. Section 26 05 33.16 - Boxes for Electrical Systems.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 27 26 - Wiring Devices: Manual wall switches and wall dimmers.

1.3 REFERENCE STANDARDS

- A. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.
- B. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.
- C. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2012.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
  - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
  - 3. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.

- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- E. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

#### 1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

#### 1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

### PART 2 PRODUCTS

#### 2.1 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

#### 2.2 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

- G. Recessed Luminaires:
  - 1. Ceiling Compatibility: Comply with NEMA LE 4.
  - 2. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.

## 2.3 ACCESSORIES

- A. Chain hang pendant luminaires in utilitarian spaces.
- B. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

### 3.3 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- D. Provide required support and attachment in accordance with Section 26 05 29.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Suspended Ceiling Mounted Luminaires:
  - 1. Do not use ceiling tiles to bear weight of luminaires.
  - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
  - 3. Secure surface-mounted and recessed luminaires to ceiling support channels or framing members or to building structure.
  - 4. Secure pendant-mounted luminaires to building structure.
  - 5. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.

6. In addition to ceiling support wires, provide two galvanized steel safety wire(s), minimum 12 gauge, connected from opposing corners of each recessed luminaire to building structure.
  7. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
  - G. Recessed Luminaires:
    1. Install trims tight to mounting surface with no visible light leakage.
    2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
  - H. Suspended Luminaires:
    1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
    2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
    3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet between supports.
    4. Install canopies tight to mounting surface.
  - I. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
  - J. Install accessories furnished with each luminaire.
  - K. Bond products and metal accessories to branch circuit equipment grounding conductor.
- 3.4 FIELD QUALITY CONTROL
- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
  - B. Inspect each product for damage and defects.
  - C. Operate each luminaire after installation and connection to verify proper operation.
  - D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.
- 3.5 ADJUSTING
- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
  - B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.
- 3.6 CLEANING
- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.
- 3.7 CLOSEOUT ACTIVITIES
- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
  - B. Just prior to Substantial Completion, replace all lamps that have failed.
- 3.8 PROTECTION
- A. Protect installed luminaires from subsequent construction operations.



3.9 ATTACHMENTS

- A. Luminaire schedule located on contract drawings.

END OF SECTION



SECTION 26 56 00  
EXTERIOR LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Exterior luminaires.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- C. Section 26 05 33.16 - Boxes for Electrical Systems.
- D. Section 26 09 23 - Lighting Control Devices.
  - 1. Includes automatic controls for lighting including outdoor photo controls.

1.3 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2006.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 1598 - Luminaires; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
  - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
  - 2. Provide photometric calculations where luminaires are proposed for substitution upon request.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

### 1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

## PART 2 PRODUCTS

### 2.1 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

### 3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

### 3.3 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires in accordance with NECA/IESNA 501.
- D. Provide required support and attachment in accordance with Section 26 05 29.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Pole-Mounted Luminaires:
  - 1. Grounding:
    - a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.
  - 2. Install separate service conductors, 12 AWG copper, from each luminaire down to handhole for connection to branch circuit conductors.
- G. Install accessories furnished with each luminaire.
- H. Bond products and metal accessories to branch circuit equipment grounding conductor.
- I. Install lamps in each luminaire.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

### 3.5 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

### 3.6 CLEANING

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

### 3.7 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. See Section 01 79 00 - Demonstration and Training, for additional requirements.

### 3.8 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION



SECTION 28 46 00  
FIRE DETECTION AND ALARM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fire alarm system design and installation, including all components, wiring, and conduit.

1.2 RELATED REQUIREMENTS

- A. Section 07 84 00 - Firestopping: Materials and methods for work to be performed by this installer.

1.3 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Corrigendum 2012).
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. NFPA 72 - National Fire Alarm and Signaling Code; Most Recent Edition Cited by Referring Code or Reference Standard.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Evidence of designer qualifications.
- C. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:
  - 1. Copy (if any) of list of data required by authority having jurisdiction.
  - 2. NFPA 72 "Record of Completion", filled out to the extent known at the time.
  - 3. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7-5-2.2(9), and complete listing of software required.
  - 4. System zone boundaries and interfaces to fire safety systems.
  - 5. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.
  - 6. Circuit layouts; number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
  - 7. List of all devices on each signaling line circuit, with spare capacity indicated.
  - 8. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.
  - 9. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.

10. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
  11. Certification by the manufacturer of the control unit that the system design complies with Contract Documents.
  12. Certification by Contractor that the system design complies with Contract Documents.
- D. Evidence of installer qualifications.
- E. Evidence of instructor qualifications; training lesson plan outline.
- F. Evidence of maintenance contractor qualifications, if different from installer.
- G. Inspection and Test Reports:
1. Submit inspection and test plan prior to closeout demonstration.
  2. Submit documentation of satisfactory inspections and tests.
  3. Submit NFPA 72 "Inspection and Test Form," filled out.
- H. Operating and Maintenance Data: See Section 01 78 00 for additional requirements; revise and resubmit until acceptable; have one set available during closeout demonstration:
1. Complete set of specified design documents, as approved by authority having jurisdiction.
  2. Additional printed set of project record documents and closeout documents, bound or filed in same manuals.
  3. Contact information for firm that will be providing contract maintenance and trouble call-back service.
  4. List of recommended spare parts, tools, and instruments for testing.
  5. Replacement parts list with current prices, and source of supply.
  6. Detailed troubleshooting guide and large scale input/output matrix.
  7. Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.
  8. Detailed but easy to read explanation of procedures to be taken by non-technical administrative personnel in the event of system trouble, when routine testing is being conducted, for fire drills, and when entering into contracts for remodeling.
- I. Project Record Documents: See Section 01 78 00 for additional requirements; have one set available during closeout demonstration:
1. Complete set of floor plans showing actual installed locations of components, conduit, and zones.
  2. "As installed" wiring and schematic diagrams, with final terminal identifications.
  3. "As programmed" operating sequences, including control events by device, updated input/output chart, and voice messages by event.
- J. Closeout Documents:
1. Certification by manufacturer that the system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.
  2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.

## 1.5 QUALITY ASSURANCE

- A. Designer Qualifications: NICET Level III or IV (3 or 4) certified fire alarm technician or registered fire protection engineer, employed by fire alarm control panel manufacturer, Contractor, or installer, with experience designing fire alarm systems in the jurisdictional area of the authorities having jurisdiction.
- B. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.



1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
  2. Installer Personnel: At least 2 years of experience installing fire alarm systems.
  3. Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.
- C. Maintenance Contractor Qualifications: Same entity as installer or different entity with specified qualifications.
- D. Instructor Qualifications: Experienced in technical instruction, understanding fire alarm theory, and able to provide the required training; trained by fire alarm control unit manufacturer.

## 1.6 WARRANTY

- A. Provide control panel manufacturer's warranty that system components other than wire and conduit are free from defects and will remain so for 1 year after date of Substantial Completion.
- B. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Fire Alarm Control Units and Accessories:
1. Honeywell Security & Fire Solutions/Notifier: [www.notifier.com/#sle](http://www.notifier.com/#sle).
  2. Provide control units made by the same manufacturer.
- B. Initiating Devices and Notification Appliances:
1. Honeywell Security & Fire Solutions/Notifier: [www.notifier.com/#sle](http://www.notifier.com/#sle).
  2. Provide initiating devices and notification appliances made by the same manufacturer, where possible.
- C. Substitutions: See Section 01 60 00 - Product Requirements.
1. For other acceptable manufacturers of control units specified, submit product data showing equivalent features and compliance with Contract Documents.
  2. For substitution of products by manufacturers not listed, submit product data showing features and certification by Contractor that the design will comply with Contract Documents.

### 2.2 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide a new automatic fire detection and alarm system:
1. Provide all components necessary, regardless of whether shown in Contract Documents or not.
  2. Protected Premises: Entire building shown on drawings.
  3. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
    - a. ADA Standards.
    - b. The requirements of the local authority having jurisdiction.
    - c. Applicable local codes.
    - d. Contract Documents (drawings and specifications).

- e. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
- 4. Evacuation Alarm: Multiple smoke zones; allow for evacuation notification of any individual zone or combination of zones, in addition to general evacuation of entire premises.
- 5. Voice Notification: Provide emergency voice/alarm communications with multichannel capability; digital.
- 6. General Evacuation Zones: Each smoke zone is considered a general evacuation zone unless otherwise indicated, with alarm notification in all zones on the same floor, on the floor above, and the floor below.
- 7. Program notification zones and voice messages as directed by Owner.
- 8. Fire Command Center: Location indicated on drawings.
- 9. Fire Alarm Control Unit: New, located at fire command center.
- B. Supervising Stations and Fire Department Connections:
  - 1. Public Fire Department Notification: By on-premises supervising station.
  - 2. On-Premises Supervising Station: Existing proprietary station operated by Owner, located at \_\_\_\_\_.
  - 3. Means of Transmission to On-Premises Supervising Station: Directly connected noncoded system.
- C. Circuits:
  - 1. Initiating Device Circuits (IDC): Class B, Style A.
  - 2. Signaling Line Circuits (SLC) Within Single Building: Class B, Style 0.5.
  - 3. Notification Appliance Circuits (NAC): Class B, Style W.
- D. Power Sources:
  - 1. Primary: Dedicated branch circuits of the facility power distribution system.
  - 2. Secondary: Storage batteries.
  - 3. Capacity: Sufficient to operate entire system for period specified by NFPA 72.
  - 4. Each Computer System: Provide uninterruptible power supply (UPS).

## 2.3 FIRE SAFETY SYSTEMS INTERFACES

- A. Supervision: Provide supervisory signals in accordance with NFPA 72 for the following:
- B. Alarm: Provide alarm initiation in accordance with NFPA 72 for the following:

## 2.4 COMPONENTS

- A. General:
  - 1. Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.
  - 2. Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.
- B. Fire Alarm Control Units: Analog, addressable type; listed, classified, and labeled as suitable for the purpose intended.
- C. Initiating Devices:
  - 1. Addressable Systems:
    - a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.
    - b. Provide suitable addressable interface modules as indicated or as required for connection to conventional (non-addressable) devices and other components that provide a dry closure output.
- D. Notification Appliances:

- E. Circuit Conductors: Copper or optical fiber; provide 200 feet extra; color code and label.
- F. Surge Protection: In accordance with IEEE C62.41.2 category B combination waveform and NFPA 70; except for optical fiber conductors.
- G. Locks and Keys: Deliver keys to Owner.
- H. Instruction Charts: Printed instruction chart for operators, showing steps to be taken when a signal is received (normal, alarm, supervisory, and trouble); easily readable from normal operator's station.
  - 1. Frame: Stainless steel or aluminum with polycarbonate or glass cover.
  - 2. Provide one for each control unit where operations are to be performed.
  - 3. Obtain approval of Owner prior to mounting; mount in location acceptable to Owner.
  - 4. Provide extra copy with operation and maintenance data submittal.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and Contract Documents.
- B. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.
- C. Obtain Owner's approval of locations of devices, before installation.
- D. Install instruction cards and labels.

#### 3.2 INSPECTION AND TESTING FOR COMPLETION

- A. Notify Owner 7 days prior to beginning completion inspections and tests.
- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
- G. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

#### 3.3 OWNER PERSONNEL INSTRUCTION

- A. Provide the following instruction to designated Owner personnel:
  - 1. Hands-On Instruction: On-site, using operational system.
  - 2. Classroom Instruction: Owner furnished classroom, on-site or at other local facility.
- B. Administrative: One-hour session(s) covering issues necessary for non-technical administrative staff; classroom:
  - 1. Initial Training: 1 session pre-closeout.

- C. Basic Operation: One-hour sessions for attendant personnel, security officers, and engineering staff; combination of classroom and hands-on:
  - 1. Initial Training: 1 session pre-closeout.
- D. Furnish the services of instructors and teaching aids; have copies of operation and maintenance data available during instruction.

### 3.4 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
  - 1. Be prepared to conduct any of the required tests.
  - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
  - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
  - 4. Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
  - 5. Repeat demonstration until successful.

### 3.5 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- B. Perform routine inspection, testing, and preventive maintenance required by NFPA 72, including:
  - 1. Maintenance of fire safety interface and supervisory devices connected to fire alarm system.
  - 2. Repairs required, unless due to improper use, accidents, or negligence beyond the control of the maintenance contractor.
  - 3. Record keeping required by NFPA 72 and authorities having jurisdiction.
- C. Provide trouble call-back service upon notification by Owner:
  - 1. Provide on-site response within 2 hours of notification.
  - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
  - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- D. Provide a complete description of preventive maintenance, systematic examination, adjustment, cleaning, inspection, and testing, with a detailed schedule.
- E. Maintain a log at each fire alarm control unit, listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced. Submit duplicate of each log entry to Owner's representative upon completion of site visit.
- F. Comply with Owner's requirements for access to facility and security.

END OF SECTION

SECTION 31 05 13  
SOILS FOR EARTHWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

1.2 RELATED REQUIREMENTS:

- A. Section 31 05 16 - Aggregates for Earthwork.
- B. Section 31 22 00 - Grading.
- C. Section 31 23 16 - Excavation.
- D. Section 31 23 16.13 - Trenching.
- E. Section 31 23 23 - Fill.
- F. Section 31 37 00 - Riprap.
- G. Section 32 92 19 - Seeding.
- H. Section 32 92 23 - Sodding.
- I. Section 32 93 00 - Plants.

1.3 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2018.
- B. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- C. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).

1.4 SUBMITTALS

- A. Section 01 30 00 - Administrative Requirements: Submittal Procedures
- B. Samples: Submit, in air-tight containers, 10 lbs sample of each type of fill to testing laboratory.
- C. Materials Source: Submit name of imported materials source.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Furnish each subsoil and topsoil material from a single source throughout the Work.
- B. Perform Work in accordance with Department of Transportation Standards in the State of New York.

## PART 2 PRODUCTS

### 2.1 SUBSOIL MATERIALS

- A. Excavated and re-used material or imported select borrow.
- B. Graded.
- C. Free of lumps larger than 3 inch, rocks larger than 2 inch, and debris.
- D. Conforming to ASTM D 2487.

### 2.2 TOPSOIL MATERIALS

- A. On-site Topsoil:
  - 1. Excavated and re-used material.
  - 2. Graded.
  - 3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
    - a. Screening: Single screened.
  - 4. Conforming to ASTM D 2487.
- B. Imported Topsoil
  - 1. Imported borrow.
  - 2. Friable loam.
  - 3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
    - a. Screening: Double screened.
  - 4. Acidity range (pH) of 5.5 to 7.5
  - 5. Containing minimum of 4 percent and maximum of 25 percent organic matter.
  - 6. Conforming to ASTM D 2487.
  - 7. Limit decaying matter to 5 percent of total content by volume.

### 2.3 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and analysis of soil material.
- B. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D 698, ASTM D 1557, and AASHTO T 180.
- C. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D 698, ASTM D 1557, and AASHTO T 180.
- D. When tests indicate materials do not meet specified requirements, change material and retest.
- E. Furnish materials of each type from the same source throughout the Work.

## PART 3 EXECUTION

### 3.1 EXCAVATION

- A. Excavate subsoil and topsoil from areas designated. Strip topsoil to full depth of topsoil in designated areas.
- B. Stockpile excavated material meeting requirements for subsoil and topsoil materials.

- C. Remove excess excavated materials, subsoil, and topsoil not intended for reuse from site.
- D. Remove excavated materials not meeting requirements for subsoil and topsoil materials from site.

### 3.2 STOCKPILING

- A. Stockpile materials on site as designated by Architect.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Stockpile topsoil 8 feet high maximum.
- E. Prevent intermixing of soil types or contamination.
- F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- G. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching until disposed of.

### 3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.
- B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION





SECTION 31 05 16  
AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coarse aggregate materials.
- B. Fine aggregate materials.
- C. Blended aggregate materials.

1.2 RELATED REQUIREMENTS

- A. Section 31 05 13 - Soils for Earthwork.
- B. Section 31 22 00 - Grading.
- C. Section 31 23 16 - Excavation.
- D. Section 31 23 16.13 - Trenching.
- E. Section 31 23 23 - Fill.
- F. Section 31 37 00 - Riprap.
- G. Section 33 14 16 - Water Utility Distribution Piping.
- H. Section 33 31 13 - Site Sanitary Sewerage Gravity Piping.
- I. Section 33 42 11 - Site Storm Utility Drainage Piping.
- J. Section 33 41 00 - Subdrainage.

1.3 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2018.
- B. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- D. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- E. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).

1.4 SUBMITTALS

- A. Section 01 30 00 - Administrative Requirements: Submittal Procedures.
- B. Samples: Submit, in air-tight containers, 10 lb sample of each type of fill to testing laboratory.
- C. Materials Source: Submit name of imported materials suppliers.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

## 1.5 QUALITY ASSURANCE

- A. Furnish each aggregate material from a single source throughout the Work.
- B. Perform Work in accordance with NYSDOT standards.

## PART 2 PRODUCTS

### 2.1 COURSE AGGREGATE MATERIALS

- A. CRUSHED STONE
  - 1. Crushed stone shall be a mixture of 50% No. 1 & 2 crushed stone meeting all requirements in Section 703-02 of the NYSDOT Standard Specification.
- B. GRANULAR FILL
  - 1. Granular fill shall meet all requirements specified for Type 4 Subbase in Section 304-2.02 of the NYSDOT Standard Specification.
- C. GRAVEL (STRUCTURAL) FILL
  - 1. Gravel fill shall meet all requirements for Type 3 Subbase in Section 304-2.02 of the NYSDOT Standard Specification.

### 2.2 FINE AGGREGATE MATERIALS

- A. CUSHION SAND

Cushion sand shall consist of clean, hard, durable, uncoated particles, free from lumps of clay and all deleterious substances. It shall meet the following gradation requirements and shall be approved by the Engineer before use.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
1/4 inch	100
No. 50	0-35
No. 100	0-10

### 2.3 BLENDED AGGREGATE MATERIAL

- A. CRUSHER RUN
  - 1. Crusher run shall meet all requirements for Type 2 subbase in Section 304-2.02 of the NYSDOT Standard Specification.
- B. SELECT NATIVE FILL

General: On-site material shall be considered select fill if it is free from organic materials and debris, meets the following gradation and soundness requirements, and is approved by the Architect.

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
4 inch	100
No. 40	0-70
No. 200	0-15

Soundness: Less than 30 percent magnesium sulfate soundness loss.

- C. UNCLASSIFIED FILL

On-site material used as unclassified fill shall be free of stones larger than 8 inches in the largest dimension, shall be free of organic materials and debris, and shall be approved by the Architect.

## 2.4 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and inspection services.
- B. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D 698, ASTM D 1557, ASTM D 4318, ASTM C 136, and AASHTO T 180.
- C. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D698, ASTM D 1557, ASTM D 4318, ASTM C 136, and AASHTO T 180.
- D. When tests indicate materials do not meet specified requirements, change material and retest.

## PART 3 EXECUTION

### 3.1 EXCAVATION

- A. Excavate aggregate materials from on-site locations as indicated on drawings or designated by Architect as specified in Section 31 23 16 - Excavation.
- B. Stockpile excavated material meeting requirements for coarse aggregate and fine aggregate materials.
- C. Remove excess excavated, coarse aggregate, and fine aggregate materials not intended for reuse from site.
- D. Remove excavated materials not meeting requirements for coarse aggregate and fine aggregate materials from site.

### 3.2 STOCKPILING

- A. Stockpile materials on site at locations indicated or designated by Architect.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching until disposed of.

### 3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.
- B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION



SECTION 31 10 00  
SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal or protection of designated trees, shrubs, and other plant life.
- B. Removal of existing surface debris.
- C. Removing designated paving, curbs.
- D. Demolition and removal of above grade improvements.
- E. Disconnecting, capping or sealing, and removal/abandoned utilities.
- F. Excavating of subsoil and topsoil.

1.2 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 10 00 - Summary: Sequencing and staging requirements.
- C. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 57 13 - Temporary Erosion and Sediment Control.
- E. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- F. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- G. Section 02 41 00 - Selective Structural Demolition: Removal of built elements and utilities.
- H. Section 31 22 00 - Grading: Topsoil removal.
- I. Section 31 22 00 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- J. Section 31 23 23 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.
- K. Section 32 93 00 - Plants: Relocation of existing trees, shrubs, and other plants.
- L. Section 32 93 00 - Plants: Pruning of existing trees to remain.

1.3 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
- B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.

- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in locations indicated.

#### 1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.
- B. Historical items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to the Owner, which may be encountered during demolition, remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Owner.
- C. The Contractor is responsible for cutting all marked trees to log length and stock piling the logs for the property owner on site at property owners designated location.

#### 1.5 PROJECT CONDITIONS

- A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.
- B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
  - 1. Protect improvements on adjoining properties and on Owner's property.
  - 2. Restore damaged improvements to their original condition, as acceptable to property owners.
- C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to remain at drip line.
- D. Salvageable Improvements: Carefully remove items indicated to be salvaged, and store on Owner's premises where indicated or directed.
- E. If indicated, Buildings to be demolished or relocated will be vacated and their use discontinued before start of Work.
- F. If indicated, Owner assumes no responsibility for actual condition of buildings to be demolished or relocated.
- G. Owner will maintain conditions existing at time of inspection for bidding purpose as far as practical.
- H. Storage or sale of removed items or materials on-site will not be permitted.
- I. Explosives: Use of explosives will not be permitted.

#### 1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
  - 1. Vegetation removal limits.
  - 2. Areas for temporary construction and field offices.

- C. Schedule of demolition activities indicating the following:
  - 1. The Owner reserves the right to claim any material scheduled for demolition. No demolition materials are to be removed from job site without approval of the Construction Manager.
  - 2. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
  - 3. Dates for shutoff, capping, and continuation of utility services.
- D. Inventory of items to be removed and salvaged.
- E. Inventory of items to be removed by Owner.
- F. Photographs and videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by demolition operations.
- G. Record drawings at Project closeout according to Division 1 Section "Contract Closeout."
  - 1. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

#### 1.7 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed demolition Work similar to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Clearing Firm: Company specializing in the type of work required.
  - 1. Minimum of 3 years of documented experience.

#### 1.8 SCHEDULING

- A. Arrange demolition schedule so as not to interfere with Owner's on-site operations.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. Fill Material: As specified in Section 31 23 23 - Fill and Backfill.
- B. Herbicides: Not allowed.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.
- C. Identify salvage area for placing removed materials.
- D. Verify that utilities have been disconnected and capped.

- E. Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.
- F. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- G. Survey the condition of the building to determine whether removing any element might result in a structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during demolition or relocation.
- H. Perform surveys as the Work progresses to detect hazards resulting from demolition activities.

### 3.2 INITIAL PREPARATION

- A. Call Local Utility One Call Center @ 811 in the State of New York, not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.

### 3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping as specified in Section 01 50 00 - Temporary Facilities and Controls.
- C. Protect bench marks, survey control points, and existing structures from damage or displacement.

### 3.4 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.
- C. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.
- D. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving structures to be demolished.
- E. Owner will arrange to shut off indicated utilities when requested by Contractor.
- F. Utility Requirements: Refer applicable specification sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

### 3.5 PREPARATION

- A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations.
- B. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.



- C. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area.
- E. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
- F. Protect existing site improvements, appurtenances, and landscaping to remain.
- G. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of buildings to be demolished or related and adjacent buildings to remain.
- H. Strengthen or add new supports when required.

### 3.6 POLLUTION CONTROLS

- A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
- B. Do not create hazardous or objectionable conditions, such as ice, flooding, and pollution, when using water.
- C. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- D. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.
- E. Clean adjacent buildings and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before start of demolition.

### 3.7 CLEARING

- A. General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions as required to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. "Removal" includes digging out and off-site disposing of stumps, roots, and branches.
- B. Cut minor roots and branches of trees indicated to remain in a clean and careful manner, where such roots and branches obstruct installation of new construction.
- C. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 1/2" inch in diameter, and without weeds, roots, and other objectionable material.
- D. Do not remove wet topsoil.
- E. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.
  - 1. Do not remove topsoil from site.
- F. Remove heavy growths of grass from areas before stripping.
- G. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root system.

- H. Stockpile topsoil in storage piles. Construct storage piles on site to a depth not exceeding 8 feet and protect from erosion. Cover storage piles, if required, to prevent wind erosion.
- I. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
- J. Place fill material in horizontal layers not exceeding 6 inches loose depth, and thoroughly compact to a density equal to adjacent original ground.
- K. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction.
- L. Clear areas required for access to site and execution of Work to minimum depth of 12 inches.
- M. Clear undergrowth and deadwood, without disturbing subsoils.
- N. Removed timber and stumps that are unwanted by the Owner or landowner shall be properly disposed of.

### 3.8 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Remove paving, walks and curbs as indicated on Drawings. Neatly saw cut edges at right angle to surface and at right angles to adjoining structures. Saw cut concrete pavement as indicated at locations shown on drawings nearest to existing joint.
- C. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.
- D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- E. Do not burn or bury materials on site. Leave site in clean condition.

### 3.9 DEMOLITION

- A. Building Demolition: Demolish buildings completely and remove all building debris from the site. Use methods required to complete Work within limitations of governing regulations and as follows:
  - B. Locate demolition equipment throughout the building and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  - C. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
  - D. Demolish concrete and masonry in small sections.
  - E. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  - F. Break up and remove concrete slab on grade, unless or shown to remain on drawings.
- G. Below-Grade Construction: Demolish foundation walls and other below-grade construction, as follows:
  - H. Unless directed otherwise completely remove below-grade construction, including foundation walls and footings, and concrete slabs.
  - I. Break up and remove below-grade concrete slabs, unless indicated to remain.

- J. Filling Below-Grade Areas: Completely fill below-grade areas and voids resulting from demolition of buildings and pavements with soil materials as required.
- K. Damages: Promptly repair damages to adjacent facilities caused by demolition operations.

### 3.10 SITE CLEARING

- A. Comply with other requirements specified in Section 01 70 00.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

### 3.11 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

### 3.12 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds.
- B. Do not remove or damage vegetation beyond the limits indicated on drawings.
  - 1. 40 feet outside the building perimeter.
  - 2. 10 feet each side of surface walkways, patios, surface parking, and utility lines less than 12 inches in diameter.
  - 3. 15 feet each side of roadway curbs and main utility trenches.
  - 4. 25 feet outside perimeter of pervious paving areas that must not be compacted by construction traffic.
  - 5. Exception: Specific trees and vegetation indicated on drawings to be removed.
  - 6. Exception: Selective thinning of undergrowth specified elsewhere.
- C. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
  - 1. At vegetation removal limits.
  - 2. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
  - 3. Around other vegetation to remain within vegetation removal limits.
  - 4. See Section 01 50 00 for fence construction requirements.
- D. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.
- E. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
  - 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
  - 2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
  - 3. Existing Stumps: Treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
  - 4. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.

- F. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

### 3.13 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 22 00  
GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal and storage of topsoil.
- B. Removal and storage of subsoil.
- C. Rough grading cutting, filling, rough contouring, compacting, and finished grading the site for site structures, building pads, and trenches.
- D. Finish grading.

1.2 RELATED REQUIREMENTS

- A. Section 31 10 00 - Site Clearing.
- B. Section 31 05 13 - Soils for Earthwork.
- C. Section 31 05 16 - Aggregates for Earthwork.
- D. Section 31 23 16 - Excavation.
- E. Section 31 23 16.13 - Trenching: Trenching and backfilling for utilities.
- F. Section 31 23 23 - Fill: Filling and compaction.
- G. Section 32 92 19 - Seeding: Finish ground cover.
- H. Section 32 92 23 - Sodding: Finish ground cover.
- I. Section 32 93 00 - Plants: Topsoil in beds and pits.

1.3 SUBMITTALS

- A. Materials Source: Submit name of imported materials source.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with State of New York, Highway Department standards.
- B. Perform work in accordance with Department of Transportation Standards in the State of New York.
- C. Maintain one copy of all construction documents on site.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Topsoil: See Section 31 23 23.
- B. Topsoil: See Section 31 05 13 - Soils for Earthwork.

- C. Other Fill Materials: See Section 31 23 23.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. See Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that survey bench mark and intended elevations for the Work are as indicated.
- C. Verify the absence of standing or ponding water.

### 3.2 PREPARATION

- A. Call Local Utility One Call Center @ 811 in the State of New York, not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Stake and flag locations of known utilities.
- D. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- E. Notify utility company to remove and relocate utilities.
- F. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- G. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
- H. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- I. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

### 3.3 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil .
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. See Section 31 23 23 for filling procedures.
- G. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.
- H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

- I. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

### 3.4 SOIL REMOVAL AND STOCKPILING

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Stockpile subsoil to be re-used on site; remove remainder from site.
- C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

### 3.5 FINISH GRADING

- A. Before Finish Grading:
  - 1. Verify building and trench backfilling have been inspected.
  - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 4 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 6 inches.
- E. Place topsoil in areas where seeding are indicated.
- F. Place topsoil where required to level finish grade.
- G. Place topsoil to thickness as indicated.
- H. Place topsoil during dry weather.
- I. Remove roots, weeds, rocks, and foreign material while spreading.
- J. Near plants spread topsoil manually to prevent damage.
- K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- L. Lightly compact placed topsoil.
- M. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

### 3.6 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

### 3.7 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

### 3.8 FIELD QUALITY CONTROL

- A. See Section 31 23 23 for compaction density testing.
- B. Perform laboratory material tests in accordance with Department of Transportation Standards in the State of New York.
- C. Perform in place compaction tests in accordance with Department of Transportation Standards in the State of New York.
  - 1. Density Tests.
  - 2. Moisture Tests.
- D. When tests indicate work does not meet specified requirements, remove work, replace and retest.

### 3.9 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION



SECTION 31 23 16  
EXCAVATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Excavating for footings, pile caps, slabs-on-grade, paving, site structures, and landscaping.
- B. Trenching for utilities outside the building to utility main connections.
- C. Soil densification

1.2 RELATED REQUIREMENTS

- A. Section 01 57 13 - Temporary Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.
- C. Section 02 41 00 - Selective Structural Demolition: Shoring and underpinning existing structures.
- D. Section 31 10 00 - Site Clearing: Vegetation and existing debris removal.
- E. Section 31 05 13 - Soils for Earthwork: Stockpiling excavated materials.
- F. Section 31 05 16 - Aggregates for Earthwork: Stockpiling excavated materials.
- G. Section 31 22 00 - Grading: Soil removal from surface of site.
- H. Section 31 22 00 - Grading: Grading.
- I. Section 31 23 16.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- J. Section 31 23 23 - Fill: Fill materials, backfilling, and compacting.
- K. Section 31 37 00 - Riprap.
- L. Section 33 14 16 - Water Utility Distribution Piping
- M. Section 33 71 19 - Electrical Underground Ducts, Ductbanks, and Manholes
- N. Section 33 41 00 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.3 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicated soil densification grid for each size and configuration footing requiring soils densification.

- C. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

## 1.5 QUALITY ASSURANCE

- A. Perform work in accordance with Department of Transportation Standards in the State of New York.
- B. Fill Material Tests: A sieve analysis, loss on ignition, and magnesium sulfate soundness test shall be taken for each type of material from each source of material. Tests will be in accordance with appropriate ASTM methods. Tests shall be taken by an approved independent laboratory and results submitted directly to the Architect before such material is used for fill. Material which fails to meet the specified requirements shall be removed from the site. Payment for tests shall be as described in General Requirements.

## PART 2 PRODUCTS

### 2.1 NOT USED

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.

### 3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 10 00 for clearing, grubbing, and removal of existing debris.
- C. See Section 31 22 00 for topsoil removal.
- D. Protect utilities that remain and protect from damage.
- E. Call Local Utility One Call Center @ 811 in the State of New York, not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- F. Notify utility company to remove and relocate utilities.
- G. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- H. Protect plants, lawns, and other features to remain.
- I. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

### 3.3 GENERAL EXCAVATION

- A. Excavate to accommodate building foundations, slab on grade, and paving, construction operations and site structures.
- B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Preparation for Piling Work: Excavate to working elevations. Coordinate special requirements for piling.
- D. Do not interfere with 45 degree bearing splay of foundations.
- E. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard measured by volume.
- F. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- G. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 23 23 and Section 31 23 16.13.
- H. Repair or replace any items indicated to remain damaged by excavation.

### 3.4 SUBGRADE PREPARATION

- A. See Section 31 23 23 for subgrade preparation at general excavations.
- B. See Section 31 23 16.13 for subgrade preparation at utility trenches.

### 3.5 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.
- B. Install underground warning tape at buried utilities according to Sections 33 14 16 and 33 71 19.
- C. See Section 31 23 23 for fill, backfill, and compaction requirements at general excavations.
- D. See Section 31 23 16.13 for fill, backfill, and compaction requirements at utility trenches.
- E. See Section 31 22 00 for rough and final grading and topsoil replacement requirements.

### 3.6 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, re-landscaped, or regraded, marked areas, entire site, without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on site to depth not exceeding 8 feet and protect from erosion. Stockpile material on impervious material 36 mil Hypalon material and cover over with same material, until disposal.
- D. Do not remove topsoil from site.

### 3.7 SUBSOIL EXCAVATION

- A. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.

- B. When excavating through roots, perform Work by hand and cut roots with sharp axe.
- C. Remove excess subsoil not intended for reuse, from site.
- D. Benching Slopes: Horizontally bench existing slopes greater than 1: 4 to key placed fill material to slope to provide firm bearing.
- E. Stability: Replace damaged or displaced subsoil as specified for fill.

### 3.8 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection of load-bearing excavated surfaces by Architect before placement of foundations.

### 3.9 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.
- F. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earth operations.

END OF SECTION

SECTION 31 23 16.13  
TRENCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Excavation trenches for utilities outside the buildings to utility main connections.
- B. Compacted fill from top of utility bedding to subgrade elevations.
- C. Backfilling and compaction.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 31 05 13 - Soils for Earthwork: Soils for fill.
- C. Section 31 05 16 - Aggregates for Earthwork: Aggregates for fill
- D. Section 31 22 00 - Grading: Site grading.
- E. Section 31 23 16 - Excavation: Building and foundation excavating.
- F. Section 31 23 16.26 - Rock Removal: Removal of rock during excavating.
- G. Section 31 23 23 - Fill: Backfilling at building and foundations.
- H. Section 33 41 00 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.3 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.
- C. Utility: Any buried pipe, duct, conduit, or cable.

1.4 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.
- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2018.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).

- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017.
- I. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- J. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2017a.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Samples: 10 pound sample of each type of fill; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- E. Compaction Density Test Reports.
- F. Product Data: Submit data for geo-textile fabric indicating fabric and construction.
- G. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where designated.
  - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
  - 2. Prevent contamination.
  - 3. Protect stockpiles from erosion and deterioration of materials.

#### 1.7 QUALITY ASSURANCE

- A. Perform work in accordance with Department of Transportation Standards in the State of New York.

#### 1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### 1.9 COORDINATION

- A. See Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify work associated with lower elevation utilities is complete before placing higher elevation utilities.

## PART 2 PRODUCTS

### 2.1 FILL MATERIALS

- A. See Section 31 23 23 - Fill.
- B. See Section 31 05 13 - Soils for Earthwork.
- C. See Section 31 05 16 - Aggregates for Earthwork.

### 2.2 ACCESSORIES

- A. Geotextile: Non-biodegradable, woven.

### 2.3 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

### 3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 22 00 for additional requirements.
- C. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect.

### 3.3 TRENCHING

- A. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches wide enough to allow inspection of installed utilities.
- E. Hand trim excavations. Remove loose matter.
- F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.

- G. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard measured by volume. See Section 31 23 16.26 for removal of larger material.
- H. Remove excavated material that is unsuitable for re-use from site.
- I. Stockpile excavated material to be re-used in area designated in Section 31 22 00.
- J. Remove excess excavated material from site.
- K. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- L. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect.
- M. Do not advance open trench more than 100 feet ahead of installed pipe.
- N. Excavate bottom of trenches maximum of 2 feet wider than outside diameter of pipe or as indicated on plans.
- O. Excavate trenches to depth indicated on drawings. Provide uniform and continuous bearing and support for bedding material and pipe utilities.
- P. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this section or as required by OSHA.
- Q. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Architect/Engineer until suitable material is encountered. Notify Architect/Engineer, and request instructions prior to excavation.
- R. Cut out soft areas of sub-grade not capable of compaction in place. Backfill with approved fill material and compact to density equal to or greater than requirements for subsequent backfill material.
- S. Correct over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Architect/Engineer.

### 3.4 PREPARATION FOR UTILITY PLACEMENT

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

### 3.5 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.



- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
  - 1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- J. Reshape and re-compact fills subjected to vehicular traffic.
- K. Place geotextile fabric over bedding fill prior to placing subsequent fill materials.
- L. Place fill material in continuous layers and compact in accordance with schedule at end of this section.
- M. Employ placement method that does not disturb or damage foundation perimeter drainage, utilities in trench, and other below grade improvements.
- N. Do not leave open trenching at end of working day.
- O. Protect open trenches at all times during installation of trenching.

### 3.6 BEDDING AND FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.

### 3.7 TOLERANCES

- A. See Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.
- C. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

### 3.8 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"), AASHTO T 180, or ASTM D698 ("standard Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- E. Frequency of Tests: 1 for every 50 feet of trench.

### 3.9 CLEANING

- A. Leave unused materials in a neat, compact stockpile.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 31 23 19  
DEWATERING

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Dewatering system.
- B. System operation and maintenance.
- C. Water disposal.

1.2 RELATED SECTIONS:

- A. Section 31 23 16 - Excavation
- B. Section 31 23 16.13 - Trenching
- C. Section 32 11 23 - Aggregate Base Courses
- D. Section 33 05 61 - Concrete Manholes
- E. Section 33 31 13 - Site Sanitary Sewerage Gravity Piping

1.3 REFERENCES STANDARDS

- A. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.

1.4 DEFINITIONS

- A. Dewatering includes the following:
  - 1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations trenches.
  - 2. Disposing of removed water.

1.5 SYSTEM DESCRIPTION

- A. Provide dewatering system to permit Work to be completed on dry and stable subgrade.
  - 1. Install wells to dewater and relieve hydrostatic pressure within strata.
- B. Furnish standby equipment stored at Project site and ready for immediate use upon failure of dewatering equipment. Provide the following standby equipment:
  - 1. Dewatering Centrifugal Pumps;
  - 2. Dewatering Turbine Pumps;
  - 3. Pump Power Units;
  - 4. Dewatering Jet Eductor Pressure Pumps;
  - 5. Portable Electric Generators;

1.6 PERFORMANCE REQUIREMENTS

- A. Design dewatering systems to:
  - 1. Lower water table within areas of excavation to elevation minimum 2 feet below bottom of excavation to permit Work to be completed on dry and stable subgrade.
  - 2. Relieve hydrostatic pressures in confined water bearing strata below excavation to eliminate risk of uplift or other instability of excavation.

3. Prevent damage to adjacent properties, buildings, structures, utilities, and facilities from construction operations.
4. Prevent loss of fines, quick condition, or softening of foundation subgrade.
5. Maintain stability of sides and bottoms of excavations and trenches.

#### 1.7 SUBMITTALS

- A. Section 01 30 00 - Administrative Requirements: For submittals procedures.
- B. Shop Drawings: Signed and sealed by professional engineer.
  1. Indicate dewatering system layout, well depths, well screen lengths, dewatering pump locations, pipe sizes and capacities, grades, filter sand gradations, surface water control devices, valves, and water disposal method and location.
  2. Indicate primary and standby power system location and capacity.
  3. Indicate layout and depth of monitoring wells and flow measuring devices for system performance measurement.
  4. Include detailed description of dewatering and monitoring system installation procedures and maintenance of equipment.
  5. Include description of emergency procedures to follow when problems arise.
- C. Product Data: Submit data for each of the following:
  1. Dewatering Pumps: Indicate sizes, capacities, priming method, motor characteristics.
- D. Design Data: Signed and sealed by professional engineer.
  1. Indicate design values, analyses, and calculations to support design.
  2. Include description and profile of geology, soil, and groundwater conditions.
- E. Field Reports: Test and monitoring reports as specified in Field Quality Control article.

#### 1.8 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations and depths of capped wells and piping abandoned in place.

#### 1.9 QUALITY ASSURANCE

- A. Comply with authorities having jurisdiction for the following:
  1. Drilling and abandoning of wells used for dewatering systems.
  2. Water discharge and disposal from pumping operations.
- B. Obtain permit from EPA under National Pollutant Discharge Elimination System (NPDES), and/or New York State Department of Environmental Conservation (NYSDEC), State Pollutant Discharge Elimination System (SPDES), General permit for storm water discharge from construction sites.
- C. The Contractor may be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) to gain approval from the NYSDEC for dewatering discharge.
- D. Installer: Company specializing in performing work of this section documented experience and responsible for design, operation, and maintenance of dewatering system.
  1. Assume sole responsibility for dewatering and surface water control systems and for loss or damage resulting from partial or complete failure of protective measures and settlement or resultant damage caused by ground water control operations.
- E. Design, install, and monitor operation of dewatering under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of New York.

#### 1.10 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements.
- B. Convene minimum one week prior to commencing work of this section.

#### 1.11 COORDINATION

- A. Section 01 30 00 - Administrative Requirements.
- B. Coordinate work to permit the following construction operations to be completed on dry stable substrate.
  - 1. Excavation for structures specified in Section 31 23 16.
  - 2. Trenching specified in Section 31 23 16.13

### PART 2 PRODUCTS

#### 2.1 DEWATERING EQUIPMENT

- A. Select dewatering equipment to meet specified performance requirements.

#### 2.2 MONITORING EQUIPMENT

- A. Flow Measurement: Furnish devices as follows, if required by permit:
  - 1. Pitometer installed on discharge of pipe of from each well.
  - 2. Pitometer installed to measure flow from entire dewatering system.

#### 2.3 ACCESSORIES

- A. Valves and Fittings: Furnish valves and fittings to isolate each well from header pipe and to prevent loss of pump prime.
- B. Grout: Mixture of portland cement and bentonite clay or sand suitable for sealing abandoned wells and piping.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements.
- B. Call Local Utility One Call Center @ 811 in the State of New York, not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.

#### 3.2 PREPARATION

- A. Protect existing adjacent buildings, structures, and improvements from damage caused by dewatering operations.

### 3.3 DEWATERING SYSTEM

- A. Install dewatering system in accordance with shop drawings, and industry standards.
- B. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.
- C. Install self jetting well points in sizes indicated by driving and jetting to depth indicated.
- D. While drilling and installing well keep bore hole filled with natural or organic drilling fluid. Bentonite clay drilling fluid is not permitted.
- E. Attach well screen to riser pipe. Attach centralizers to riser pipe at maximum 20 feet spacing to keep screen and riser centered in bore hole. Insert well screen and riser pipe into well to elevation indicated.
- F. Install sand filter surrounding well screen and to minimum 2 feet above top of well screen.
- G. Develop wells by over pumping to remove clay, silt, and sand from well screen and immediate vicinity of bore hole.
- H. Test well for proper water flow through well screen and pumping rate for dewatering system operation. Repeat development until well meets performance requirements.
- I. Cover and seal top of well until pump is installed.
- J. Install pumps in accordance with manufacturer's instructions.

### 3.4 SYSTEM OPERATION AND MAINTENANCE

- A. Operate dewatering system continuously until backfilling is complete.
- B. Provide 24-hour supervision of dewatering system by personnel skilled in operation, maintenance, and replacement of system components.
- C. Conduct daily observation of dewatering system and monitoring system. Make required repairs and perform scheduled maintenance.
- D. Fill fuel tanks before tanks reach 25 percent capacity.
- E. Start emergency generators at least twice each week to check operating condition.
- F. When dewatering system cannot control water within excavation, notify Architect/Engineer and stop excavation work.
  - 1. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
  - 2. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.
- G. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.
- H. Correct unanticipated pressure conditions affecting dewatering system performance.
- I. Do not discontinue dewatering operations without Architect/Engineer's approval.

### 3.5 WATER DISPOSAL

- A. Discharge water into drainage channels and settling basins.

### 3.6 SYSTEM REMOVAL

- A. Remove dewatering system after dewatering operations are discontinued.
- B. Cut off and cap abandoned wells minimum 36 inches below completed subgrade elevation.
- C. Fill abandoned piping with grout.
- D. Repair damage caused by dewatering and surface water control systems or resulting from failure of systems to protect property.
- E. Submit a Notice of Termination (NOT) to NYSDEC

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Monitor ground water discharge for contamination while performing pumping in vicinity of potentially contaminated sites. Sample and test water weekly for contaminants.
- C. Survey existing adjacent buildings, structures, and improvements weekly to detect movement in comparison to original elevations during dewatering operations.
  - 1. Notify Architect/Engineer immediately of measured movement.
- D. Submit initial installation reports including the following:
  - 1. Installation and development reports and pumps.
  - 2. Initial dewatering flow rates.
- E. Submit weekly monitoring reports including the following:
  - 1. Dewatering flow rates.
  - 2. Test reports of discharge water analysis.
  - 3. Maintenance records for dewatering and surface water control systems.

END OF SECTION





SECTION 31 23 23

FILL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Filling, backfilling, and compacting for building volume below grade, footings, slabs-on-grade, paving, and utilities within the building.
- B. Proof Rolling of filled and excavated roadways.
- C. Backfilling and compacting for utilities outside the building to utility main connections.
- D. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.2 RELATED REQUIREMENTS

- A. Section 01 57 13 - Temporary Erosion and Sediment Control: Slope protection and erosion control.
- B. Section 03 30 00 - Cast-in-Place Concrete.
- C. Section 31 05 13 - Soils for Earthwork: Soils for fill
- D. Section 31 05 16 - Aggregated for Earthwork: Aggregate for fill
- E. Section 31 22 00 - Grading: Removal and handling of soil to be re-used.
- F. Section 31 22 00 - Grading: Site grading.
- G. Section 31 23 16 - Excavation: Removal and handling of soil to be re-used.
- H. Section 31 23 16.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- I. Section 31 37 00 - Riprap.
- J. Section 32 14 13 - Precast Concrete Unit Paving: Leveling bed placement under pavers.
- K. Section 32 14 16 - Brick Unit Paving: Leveling bed placement under pavers.
- L. Section 32 14 40 - Stone Paving: Leveling bed placement under pavers.
- M. Section 33 41 00 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.3 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: 6 inches below finish grade elevations indicated on drawings, unless otherwise indicated.

1.4 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.

- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2018.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- D. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- E. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- F. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- G. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- H. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- I. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017.
- J. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- K. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2017a.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Soil Samples: 10 pounds sample of each type of fill; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.
- E. Compaction Density Test Reports.
- F. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- G. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

## 1.6 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design of structural fill under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State of New York.

# PART 2 PRODUCTS

## 2.1 FILL MATERIALS

- A. General Fill - Fill Type on site soil : If it conforming to State of New York DOT type 4 standard.

- B. Concrete for Fill: As specified in Section 03 30 00.
- C. Topsoil: See Section 31 22 00.
- D. Satisfactory soil materials are defined as those complying with ASTM D 2487 soil classification groups GW, GP, GM, SM, SW, and SP.
- E. Unsatisfactory soil materials are defined as those complying with ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
- F. Subsoil Fill: as specified in Section 31 05 13.
- G. Structural Fill: as specified in Section 31 05 13 and 31 05 16.
- H. Granular Fill: as specified in Section 31 05 16.
- I. Drainage Fill: Material shall consist of crushed stone, sand, gravel or screened gravel. The soundness of the material shall be tested and shall have a loss not exceeding 20 percent by weight after four (4) cycles of Magnesium Sulphate Soundness Test (NYS DOT 605-202, Under drain Filter Type 1 as follows:

<u>U.S. Sieve No.</u>	<u>Percent Passing by Weight</u>
1 inch	100
1/2 inch	30-100
1/4 inch	0-30
No. 10	0-10
No. 20	0-5

- J. Backfill Material: Naturally or artificially graded mixture of sand, natural or crushed stone or gravel conforming to NYS DOT Item 304-2.02, Type 4 as follows:

<u>U.S. Sieve No.</u>	<u>Percent Passing by Weight</u>
2 inch	100
1/4 inch	30-65
No. 40	5-40
No. 200	0-10

## 2.2 ACCESSORIES

- A. Geotextile Fabric: Non-biodegradable, woven, fabric ; 500X manufactured by Mirafi , or approved equal.
- B. Filter Fabric: Non-biodegradable, non-woven, fabric; Mirafi 140N, or approved equal.
- C. Geotextile Fabric for Perforated Drain Pipe: Non-biodegradable, non-woven, fabric; Mirafi 140N, or approved equal.

## 2.3 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 22 00 for additional requirements.
- D. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- E. Verify structural ability of unsupported walls to support imposed loads by the fill.
- F. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.
- G. Verify areas to be filled are not compromised with surface or ground water.

### 3.2 PREPARATION

- A. Scarify subgrade surface to a depth of 8 inches.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural fill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Compact subgrade to density requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.
- E. The subgrade and subbase shall be proof rolled. Contact engineer or owners representative 24 hours before testing. If subgrade stabilization or undercutting is designed for the project, then proof rolling shall be used to verify the undercut replacement material stability.
- F. Proof rolling deflections and soil conditions that are observed during construction determine if the plan subgrade treatment must be adjusted. Adjustment of subgrade treatment to fit field conditions is essential and is the responsibility of the contractor.
- G. Provide subgrade corrections prior to proof rolling
- H. When rutting and deflection occur under wheels of 10-wheel dump truck engineer or representative will require corrective action.
- I. Improve subbase or subgrade by undercutting wet material, aeration of wet soil or use of additional subbase material. Compact material and proof roll again.
- J. If needed, make the correction by excavating and disposing of soft grade, and replacing it with NYSDOT type 4 subbase material.
- K. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.
- L. The proof rolling should be done immediately after the subgrade compaction operation, when the moisture content of the subgrade soil is near optimum or at the moisture content that achieved compaction. This minimizes the chances of the subgrade becoming too wet or too dry for an effective proof rolling evaluation. If the subgrade is too wet, the material will displace and rut. If the subgrade is too dry, a dry hard surface crust may carry the proof roller over an undesirable soft wet underlying material without rutting or deflection, and the soft subgrade may not be detected.

- M. Proof rolling may be done either before or after pipe underdrains are installed. If done after underdrains are installed, rolling should not be done directly over the underdrains. Proof rolling must be performed at least 1-½ feet (0.5 meters) away from the underdrains because of the potential damage to the underdrains.

### 3.3 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- G. Subsoil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Structural Fill: Place and compact material in equal continuous layers not exceeding 6 inches compacted depth.
- I. Slope grade away from building minimum 2 percent slope for minimum distance of 5 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- 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. Correct areas that are over-excavated.
  - 1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 95 percent of maximum dry density.
  - 2. Other areas: Use structural fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.
- M. Compaction Density Unless Otherwise Specified or Indicated:
  - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
- N. Reshape and re-compact fills subjected to vehicular traffic.
- O. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- P. Remove surplus backfill materials from site.
- Q. Leave fill material stockpile areas free of excess fill materials.

### 3.4 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

- C. Top Surface of Filling Within Building Areas: Plus or minus 1/2 inch from required elevations.

### 3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Soil Fill Materials:
- C. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D3017, or ASTM D6938. Contractor shall be responsible for providing compaction testing as part of their base bid contract. Slab testing shall be every 100 square feet of area or every 50-ft of trench excavation.
- D. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"), ASTM D 1557 ("modified Proctor"), or AASHTO T 180.
- E. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- F. Frequency of Tests: 1 test for every truck load of material delivered.
- G. Proof roll compacted fill at surfaces that will be under slabs-on-grade, pavers, and paving.

### 3.6 CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

### 3.7 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 31 25 00  
EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for permanent erosion control structures indicated on drawings.
- B. Section 31 23 23 - Fill: Filling and compaction.
- C. Section 32 01 90 - Operation and Maintenance of Planting: Post-occupancy maintenance.
- D. Section 32 11 23 - Aggregate Base Courses: Aggregate base course.
- E. Section 32 92 19 - Seeding: Permanent turf for erosion control.
- F. Section 32 92 23 - Sodding: Permanent turf for erosion control.
- G. Section 32 93 00 - Plants: Permanent plantings for erosion control.

1.2 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.
- B. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- C. ASTM D7322/D7322M - Standard Test Method for Determination of Erosion Control Product (ECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions; 2017.
- D. ASTM D8298/D8298M - Standard Test Method for Determination of Erosion Control Products (ECP) Performance in Protecting Slopes from Continuous Rainfall-Induced Erosion Using a Tilted Bed Slope; 2020.
- E. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; 1995.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

#### 3.2 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

#### 3.3 FIELD QUALITY CONTROL

- A. Provide analysis of topsoil fill; see Section 01 40 00.

#### 3.4 MAINTENANCE

- A. See Section 32 01 90 for post-occupancy maintenance.
- B. Provide maintenance of seeded areas for three months from Date of Substantial Completion.
- C. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.
- D. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- E. Immediately reseed areas that show bare spots.
- F. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- G. Repair deficiencies immediately.

#### 3.5 CLEAN UP

- A. Clean out sediment control structures that are to remain as permanent measures.

END OF SECTION



SECTION 31 37 00  
RIPRAP

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Riprap placed loose.
- B. Riprap in sacks.

1.2 RELATED REQUIREMENTS

- A. Section 31 23 23 - Fill: Aggregate requirements.

1.3 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Department of Transportation Standards in the State of New York.
- B. Maintain one copy of all construction documents on site.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Riprap: Provide in accordance with Department of Transportation Standards in the State of New York.
- B. Aggregate: Granular fill, see Section 31 23 23.
- C. Bags: Woven jute.
- D. Binder: Portland cement.
- E. Geotextile Fabric: Non-biodegradable, woven , meeting Department of Transportation Standards in the State of New York.

2.2 BAGGED RIPRAP

- A. Mix riprap, cement and aggregate dry. Limit quantity of cement to 10 percent of dry mixed materials by volume.
- B. Fill bags with dry ingredients to 70 percent capacity and close by sewing or stapling to a straight seam.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Do not place riprap bags over frozen or spongy subgrade surfaces.

#### 3.2 PLACEMENT

- A. Place geotextile over substrate, lap edges and ends.
- B. Place riprap at culvert pipe ends, embankment slopes, and as indicated.
- C. Place into position. Knead, ram, or pack filled bags to fit with the contour of adjacent material and other bags previously placed.
- D. Place bags in a staggered pattern. Remove foreign matter from bag surfaces.
- E. Installed Thickness: 5 inch average.
- F. Place rock evenly and carefully over bagged riprap to minimize voids, do not tear bag fabric, place bags and rock in one consistent operation to preclude disturbance or displacement of substrate.
- G. After placement, spray with water to moisten the bagged mix. Maintain moist for 24 hours.

#### 3.3 SCHEDULES

- A. Culvert Pipe Ends: Bagged, placed one layer thick, 6 inch average thickness, concealed with topsoil fill.
- B. Sloped Grade At Retaining Wall: Individual riprap units, 6 inch thickness; placed prior to finish topsoil.

END OF SECTION

SECTION 32 01 90  
OPERATION AND MAINTENANCE OF PLANTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Maintain plants in manner that promotes health, growth, color and appearance, to quality levels specified; replace dead, dying, and damaged plants at no extra cost to Owner.
  - 1. It is Contractor's responsibility to determine type and quantity of soil amendments and fertilizer required.
- B. Maintain newly planted landscape plants, including turf (playfields), trees, shrubs, hedges, ground cover, perennials, flowering bulbs, and annuals.
- C. Maintain established landscape plants, including trees, shrubs, hedges, ground cover, perennials, flowering bulbs, and naturalized wildflowers.
- D. Clean up landscaped areas.
- E. Maintenance Period
  - 1. The date of installation to the date upon which the new planting are accepted as complete by Architect.
  - 2. Start Date: Project Date of Substantial Completion.

1.2 RELATED REQUIREMENTS

- A. Section 01 57 13 - Temporary Erosion and Sediment Control.
- B. Section 31 22 00 - Grading.
- C. Section 32 92 19 - Seeding.
- D. Section 32 92 23 - Sodding.
- E. Section 32 93 00 - Plants.

1.3 REFERENCE STANDARDS

- A. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices; 2017.
- B. ANSI Z133.1 - American National Standard For Arboricultural Operations - Pruning, Repairing, Maintaining, And Removing Trees, And Cutting Brush - Safety Requirements; 2012.
- C. ASTM D4972 - Standard Test Method for pH of Soils; 2018.

1.4 PROPOSAL SUBMITTALS

- A. Submit complete maintenance plan, showing:
  - 1. Irrigation volume and frequency.
  - 2. Fertilizer type, quantity, and schedule of application.
  - 3. Soil amendment type, quantity, and schedule of application.
  - 4. Personnel assigned, including supervisor.
  - 5. Inspection procedures, diagnostics, and remedies.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Installer Qualifications: As specified.

## PART 2 PRODUCTS

### 2.1 FERTILIZERS AND SOIL AMENDMENTS

- A. Fertilizers: Free flowing granular organic type containing nitrogen, phosphorus, and potassium, plus trace minerals and micro-nutrients; controlled release type is preferred.
  - 1. Determine type and quantity based on soil analysis.
  - 2. Turf Fertilizer: As specified in Section 32 92 19.
- B. Soil Amendments: Type and quantity as required to achieve specified results, based on soil analysis.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. If soil analysis has not already been performed, take sufficient samples to obtain a comprehensive analysis; perform analysis in accordance with ASTM D4972.

### 3.2 LANDSCAPE MAINTENANCE - GENERAL

- A. Protect existing vegetation, pavements, and facilities from damage due to maintenance activities; restore damaged items to original condition or replace, at no extra cost to Owner.
- B. General Cleanup: Remove debris from all landscape areas at least once a week and from turf areas before each mowing.
  - 1. Debris consists of trash, rubbish, dropped leaves, downed branches and limbs of all sizes, dead vegetation, rocks, and other material not belonging in landscaped areas.
  - 2. Remove debris from site and dispose of properly.
- C. Watering, Soil Erosion, and Sedimentation Control: Comply with federal, state, local, and other regulations in force; prevent over-watering, run-off, erosion, puddling, and ponding.
  - 1. Site grading and planting have been designed to resist erosion once fully grown, with temporary measures in place during establishment period.
  - 2. Repair temporary erosion control mechanisms provided by others.
  - 3. Repair eroded areas and replant, when caused by inadequate maintenance.
  - 4. Prevent sediment from entering storm drains.
- D. Trees: Exercise care to avoid girdling trees; provide protective collars if necessary; remove protective collars at end of maintenance period.
- E. Fertilizing: Apply fertilizer only when necessary.
- F. Drainage Channels: Remove obstructions in gutters, catch basins, storm drain inlets, yard drains, swales, ditches, and overflows.
  - 1. Remove grates from catch basins to clean.
  - 2. Prevent encroachment of other vegetation on turfed surface drainage channels.

- G. Health Maintenance: Inspect all plants regularly for health:
  - 1. Eradicate diseases and damaging pests, regardless of severity or speed of effect.
  - 2. Treat accidental injuries and abrasions.
  - 3. If a plant is unhealthy but not yet dead, according to specified definitions, determine reason(s) and take remedial action immediately.
  - 4. Remove dead plants immediately upon determining that they are dead.
- H. Pesticide and Herbicide Application: Comply with manufacturer's instructions and recommendations and applicable regulations.
  - 1. Obtain Owner's approval prior to each application.
  - 2. Apply in manner to prevent injury to personnel and damage to property due to either direct spray or drifting, both on and off Owner's property.
  - 3. Use backflow preventers on hose bibbs used for mixing water; prevent spills.
  - 4. Inspect equipment daily before application; repair leaks, clogs, wear, and damage.
  - 5. Do not dispose of excess mixed material, unmixed material, containers, residue, rinse water, or contaminated articles on site; dispose of off site in legal manner.
  - 6. Rinse water may be used as mix water for next batch of same formulation.
  - 7. Contractor is responsible for all recordkeeping, submissions, and reports required by laws and regulations.
- I. Replanting: Perform replacement and replanting immediately upon removal of dead plant.

### 3.3 TURF MAINTENANCE

- A. Maintain turf in manner required to produce turf that is healthy, uniform in color and leaf texture, and free from weeds and other undesirable growth.
  - 1. Grass Density - Lawns: 20 plants per square foot, minimum.
  - 2. Bare Spots - Lawns: 2 percent of total area, maximum; 6 inches square, maximum.
  - 3. Keep turf relatively free of thatch, woody plant roots, diseases, nematodes, soil-borne insects, stones larger than 1 inch in diameter, and other materials detrimental to grass growth.
  - 4. Limit broadleaf weeds and patches of foreign grass to a maximum of 2 percent of the total area.
  - 5. When new grass is planted in existing turf areas, quality will be evaluated when grass is 1 inch high.
- B. Mowing: During growing season(s) mow turf to uniform height, in manner that prevents scalping, rutting, bruising, and uneven or rough cutting.
  - 1. Prior to mowing clean all debris and leaves from turf surface.
  - 2. Schedule frequency of mowing so that no more than one-quarter to one-third of grass leaf length is removed during a cutting.
  - 3. Make each successive mowing at approximately 45 degrees to the previous mowing, if practical.
  - 4. Cool Season Grasses:
    - a. Reduce mowing height in fall and spring.
    - b. Use rotary type mowers; mulcher type mowers may be used.
  - 5. Warm Season Grasses:
    - a. Increase mowing height slightly as fall approaches.
    - b. Use reel type mowers; do not use mulcher mowers.
- C. Summer Mowing Height for Lawns:
- D. Trimming: Immediately after each mowing, neatly trim perimeter of each turf area and around obstructions within turf area; match height and appearance of adjacent turf.
  - 1. Adjacent to Pavements: Cut edges of turf to form a distinct, uniform turf edge.
  - 2. Adjacent to Planting Beds and Permanently Mulched Areas: Cut edges of turf to form a distinct, uniform turf edge.

- 3. Around Other Trees and Poles: Where no planting bed or mulched area exists, trimming with string trimmer is acceptable.
- 4. At Fences: Trim on both sides of fence.
- E. Fertilizer: Apply as recommended by manufacturer and at rate indicated by soil analysis.
  - 1. Cool Season Grasses: Apply at least once, in Fall before first frost; do not apply high nitrogen fertilizer during Summer; Spring application is optional but must be reduced in quantity.
- F. Reseeding: Comply with requirements of Section 32 92 19.
- G. Resodding: Comply with requirements of Section 32 92 23.

### 3.4 PLANTING BED MAINTENANCE

- A. Planting beds include all planted areas except turf.
- B. Begin maintenance immediately after plants have been installed; inspect at least once a week and perform needed maintenance promptly.
- C. Keep planting beds free of pests; remove weeds and grass by hand before reaching 1 inch height.
- D. Do not allow climbing, twining, or creeping plants to encroach into other species.
- E. Replace mulch as required and remove debris.

### 3.5 TREE AND SHRUB MAINTENANCE

- A. Trees will be considered dead when main leader has died back or when 25 percent or more of crown has died; except as otherwise indicated for palm trees.
- B. Shrubs will be considered dead when 25 percent or more of plant has died.
- C. Inspect woody plants for health by scraping up to 1/16 inch square area of bark; no green cambium layer below bark shall be evidence of death.
- D. Adjust stakes, guys and turnbuckles, ties, and trunk wrap as required to promote growth and avoid girdling.
- E. Pruning: Unless otherwise indicated, prune only to maintain balanced natural shape; follow recommendations of ANSI A300 and ANSI Z133.1 and best local practices for species involved.
- F. Shrubs: Prune at least once during maintenance period at best time to influence ultimate shape and size for the particular species.
  - 1. Prune to balance the plant's form and according to its natural growth characteristics.
  - 2. Remove water shoots, suckers, and branches not complying with desired shape and size.
- G. Hedges: Trim to encourage growth into voids and gaps.

### 3.6 CLEANING

- A. Remove fallen deciduous leaves in Fall; removal may wait until all leaves have fallen.
- B. Clean adjacent pavements of plant debris and other debris generated by maintenance activities.
- C. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner; Owner's trash collection facilities may be used.

- D. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner.
  - 1. Biodegradable Debris: Owner will designate a compost pile on site where biodegradable debris may be deposited; branches and bark are not considered biodegradable.
  - 2. Branches and Bark: Owner will designate a wood chip storage area; machine-chip all branch and bark debris.
  - 3. Non-Biodegradable Debris: Owner's trash collection facilities may be used.

### 3.7 CLOSEOUT ACTIVITIES

- A. 10 days prior to end of maintenance period, submit request for final inspection.
- B. Final inspection will be conducted by Architect.

END OF SECTION





SECTION 32 11 23  
AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aggregate base course.
- B. Paving aggregates.

1.2 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Preparation of site for base course.
- B. Section 31 23 16.13 - Trenching: Compacted fill over utility trenches under base course.
- C. Section 31 23 23 - Fill: Topsoil fill at areas adjacent to aggregate base course.
- D. Section 31 23 23 - Fill: Compacted fill under base course.
- E. Section 32 12 16 - Asphalt Paving: Finish and binder asphalt courses.
- F. Section 32 13 13 - Concrete Paving: Finish concrete surface course.
- G. Section 32 14 13 - Precast Concrete Unit Paving.
- H. Section 32 14 16 - Brick Unit Paving.
- I. Section 32 14 40 - Stone Paving.
- J. Section 32 15 00 - Aggregate Surfacing.
- K. Section 33 41 00 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.3 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.
- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2018.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.

- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017.
- I. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).
- J. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2017a.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. Coarse Aggregate: Coarse aggregate, conforming to Department of Transportation Standards in the State of New York.
- B. Fine Aggregate : Sand; conforming to Department of Transportation Standards in the State of New York.
- C. Geotextile: Nonbiodegradable, woven.

#### 2.2 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for general requirements for testing and analysis of aggregate materials.
- B. Where aggregate materials are specified using ASTM D2487 classification, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

#### 3.2 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

### 3.3 INSTALLATION

- A. Place aggregate in maximum 4 inch layers and roller compact to specified density.
- B. Level and contour surfaces to elevations and gradients indicated.
- C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

### 3.4 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation From Design Elevation: Within 1/2 inch.

### 3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for general requirements for field inspection and testing.
- B. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.
- C. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- E. Frequency of Tests: 1 per 2500 sq. ft. or as required by the Engineer.
- F. Proof roll compacted aggregate at surfaces that will be under slabs-on-grade.

### 3.6 CLEANING

- A. Leave unused materials in a neat, compact stockpile.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION



SECTION 32 12 16  
ASPHALT PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aggregate base course.
- B. Single course bituminous concrete paving.
- C. Double course bituminous concrete paving.
- D. Surface sealer.

1.2 RELATED REQUIREMENTS

- A. Section 09 91 13 - Exterior Painting: Pavement markings.
- B. Section 31 05 16 - Aggregates for Earthwork
- C. Section 31 22 00 - Grading: Preparation of site for paving and base.
- D. Section 31 23 23 - Fill: Compacted subgrade for paving.
- E. Section 32 17 23 - Pavement Markings.

1.3 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices for requirements applicable to this section. Measurement and payment will be as follows:
- B. Asphalt Pavement Mix (Base Course): By the ton. Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.
- C. Asphalt Pavement Mix (Binder Course): By the ton. Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.
- D. Asphalt Pavement Mix (Wearing Course): By the ton. Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.
- E. Seal Coat: By the square yard. Includes preparing surfaces and applying.

1.4 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; 2017.
- B. AI MS-2 - Asphalt Mix Design Methods; 2015.
- C. AI MS-19 - Basic Asphalt Emulsion Manual; 2008.
- D. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.

- E. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction; 2009a.
- F. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017.
- G. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).

#### 1.5 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene pre-installation meeting a minimum of one week prior to commencing work of this section. Attendance by Architect/ Engineer, Construction Manager, Owner, and Contractor.
- C. Schedule a proof roll of subbase prior to asphalt installation.

#### 1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Submit proposed mix design of each class of mix for review prior to beginning of Work.
  - 1. Each mix design shall be certified and signed by the respective State Department of Transportation within two years preceding submittal.
- C. Product Data: Provide product data on each additional product required, including, but not limited to primer, tack coat, and joint sealant.
- D. Asphalt Pavement Workplan: Indicate paving pass width, paving directions, site access, and coordination of timing with other installations.

#### 1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with Department of Transportation Standards in the State of New York.
- B. Mixing Plant: Conform to Department of Transportation Standards in the State of New York.
- C. Obtain materials from same source throughout.

#### 1.8 FIELD CONDITIONS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen, and as further provided:

TEMPERATURE REQUIREMENTS	
Nominal Compacted Lift Thickness	Surface Temperature Minimum
No greater than 1 inch	50 degrees F.
1 inch through 3 inches	45 degrees F.
Greater than 3 inches	40 degrees F.

- C. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

## 1.9 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum 10 years documented experience.

## PART 2 PRODUCTS

### 2.1 REGULATORY REQUIREMENTS

- A. Comply with applicable code for paving work on public property.

### 2.2 MATERIALS

- A. Asphalt Cement: Conforming to Department of Transportation Standards in the State of New York.
- B. Aggregate for Base Course: Conforming to Department of Transportation Standards in the State of New York.
- C. Aggregate for Binder Course: Conforming to Department of Transportation Standards in the State of New York.
- D. Aggregate for Wearing Course: Conforming to Department of Transportation Standards in the State of New York.
- E. Fine Aggregate: Sand in conformance with Department of Transportation Standards in the State of New York.
- F. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.
- G. Primer: Homogeneous, medium curing, liquid asphalt in accordance with Department of Transportation Standards in the State of New York.
- H. Tack Coat: Homogeneous and Emulsified asphalt conforming to Department of Transportation Standards in the State of New York.
- I. Joint Sealant: Asphalt joint sealant meeting ASTM D6690 Type II or IV requirements.
- J. Seal Coat: AI MS-19, Seal Master LV concentrate pavement sealer. Manufactured by SealMaster, 800-395-7325, [www.sealmaster.net](http://www.sealmaster.net) or approved equal.
- K. Reclaimed Asphalt Pavement (RAP): Processed material obtained by milling or full depth removal of existing asphalt concrete pavements.

### 2.3 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Base Course: State of New York Highways standards: Superpave 37.5mm Base.
- C. Binder Course: State of New York Highways standards: Superpave 25mm Binder.
- D. Wearing Course: State of New York Highways standards: Superpave 9.5mm Top Course.
- E. Submit proposed mix design of each class of mix for review prior to beginning of work.

## 2.4 SOURCE QUALITY CONTROL

- A. Test mix design and samples in accordance with AI MS-2.
- B. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.

## 2.5 EQUIPMENT

- A. Hauling Equipment
  - 1. Trucks used for hauling asphalt shall have clean, smooth, tight metal beds.
    - a. Any debris from previous loads hauled shall be removed.
  - 2. The inside of the truck box shall be coated with a Department of Transportation approved release agent.
    - a. Petroleum products, (including but not limited to fuel oil, diesel fuel, kerosene, and gasoline) or solvents shall not be used.
  - 3. Trucks shall be equipped with waterproof covers that totally cover the asphalt load, the front of which is attached to prevent wind from entering under tarp during transport.
- B. Pavers
  - 1. Units shall be self-propelled and include receiving hopper, transfer system, and activated screed.
  - 2. Units shall provide automatic slope control.
  - 3. Units shall be equipped with screed heaters and joint pre-heaters.
- C. Rollers
  - 1. Rollers shall be of vibratory or static steel wheel design, of sufficient weight to adequately provide compaction rate specified.
  - 2. Furnish the following minimum roller quantities per project:
    - a. Total Rollers: Two.
    - b. Total Rollers: Three, when tonnage is 300 tons per day or greater.
    - c. In every instance, one of the required rollers shall be of a Vibratory Wheel design.
  - 3. Equipment shall be free from oil leaks.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that compacted subgrade is dry and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.
- D. Verify gutter drainage grilles and frames manhole frames and curbing are installed in correct position and elevation.

### 3.2 AGGREGATE BASE COURSE

- A. See Section 32 11 23 - Aggregate Base Courses.

### 3.3 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions and in conformance with Department of Transportation Standards in the State of New York.



1. Primer shall be placed on aggregate base in all Department of Transportation right-of-ways.
- B. Apply primer on aggregate base or subbase at uniform rate of 1/2 gal/sq yd.
- C. Apply primer to contact surfaces of curbs, gutters.
- D. Use clean sand to blot excess primer.

### 3.4 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with manufacturer's instructions.
- B. Apply tack coat in accordance with Department of Transportation Standards in the State of New York.
  1. Apply tack coat between all pavement layers within Department of Transportation right-of-ways.
  2. Apply tack coat between pavement layers when:
    - a. Pavement is exposed to traffic.
    - b. Pavement is exposed to dirt and dust.
    - c. Forty eight hours have passed between courses.
- C. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of .03 to .10 gallons per square yard.
- D. Apply tack coat to all contact surfaces of curbs, gutters, manholes, and adjacent pavement edges.
- E. Paving shall not commence until tack coat emulsion has broken or is tacky to the touch.

### 3.5 PREPARATION – SURFACE SEALER

- A. Surface must be clean and free of all loose material and dirt.
- B. Pavement surface repairs shall be made with suitable hot or cold asphalt mix.
- C. Cracks shall be filled with hot or cold pour filler.
- D. Treat all grease, oil, gasoline spots or stains with SealMaster Petro Seal or Prep Seal, or approved equal.

### 3.6 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with Department of Transportation Standards in the State of New York.
- B. Place asphalt within 24 hours of applying primer or tack coat.
- C. Install gutter drainage grilles and frames in correct position and elevation.
- D. Place asphalt wearing course to thickness as identified on construction drawings.
- E. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
  1. Compaction should occur when asphalt course is between 150 and 185 degrees F.
- F. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

### 3.7 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Place asphalt binder course within 24 hours of applying primer or tack coat.

- B. Place asphalt wearing course within two hours of placing and compacting binder course.
- C. Install gutter drainage grilles and frames in correct position and elevation.
- D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
  - 1. Compaction should occur when asphalt course is between 150 and 185 degrees F.
- E. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

### 3.8 SEAL COAT

- A. Shall be applied by either pressurized spray application equipment or self propelled squeegee equipment. \*Pressurized spray equipment shall be capable of spraying pavement sealer with sand added, maintain continuous agitation or mixing capabilities to maintain homogenous consistency of pavement sealer throughout the application process.\* Self-propelled squeegee equipment shall have at least 2 squeegee or brush devices(one behind the other).
- B. Hand squeegee and brushes shall be acceptable in areas where practicality prohibits the use of mechanized equipment.
- C. Limitations: Shall not be applied when temperatures are expected to drop below 50 degrees F at anytime within a 24 hour period after application. When indicated to be applied over new asphalt surfaces, such surfaces shall be allowed to cure a minimum of four weeks under ideal weather conditions (70 degrees F) before application of surface sealer.
- D. Mixing procedures for optimum results shall conform to product specifications.
- E. Apply a minimum of 2 coats.
- F. Apply at a rate of .11 to .13 gallon per square yard, (70-82 square feet per gallon) per coat.

### 3.9 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- C. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
- D. Variation from True Elevation: Within 1/2 inch.

### 3.10 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for quality control.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with Department of Transportation Standards in the State of New York.

### 3.11 CLOSEOUT ACTIVITIES

- A. See Section 01 70 00 - Execution and Closeout Requirements
- B. Documentation: Provide copies of Truck Loading Slips (bill of lading) for each load of each design mix of asphalt material used on site.

### 3.12 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 3 days or until surface temperature is less than 140 degrees F.

- B. Surface Sealer drying time: 8 hours max.

END OF SECTION



SECTION 32 12 17  
ASPHALT PAVING JOINT SEALANTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Asphalt and concrete paving crack sealants
- B. Hot pour mastics

1.2 RELATED REQUIREMENTS

- A. Section 32 12 16 - Asphalt Paving
- B. Section 32 13 13 - Concrete Paving

1.3 PRICE AND PAYMENT PROCEDURES

- A. Unit Prices: See Section 01 22 00 - Unit Prices, for additional unit price requirements.

1.4 REFERENCE STANDARDS

- A. ASTM D113 - Standard Test Method for Ductility of Asphalt Materials; 2017
- B. ASTM D3111 - Standard Test Method for Flexibility Determination of Hot-Melt Adhesives by Mandrel Bend Test Method
- C. ASTM D36 - Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
- D. ASTM D5078 - Standard Specification for Crack Filler, Hot Applied, for Asphalt Concrete and Portland Cement Concrete Paving.(Reapproved 2016)
- E. ASTM D5329 - Standard Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphalt Pavements and Portland Cement Concrete Pavements; 2016
- F. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements; 2015

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate work of this section with Owner, Architect, and all other trades involved in the project.
  - 1. Ensure work of this section is scheduled and carried out so as not to limit access to site.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's product data sheets, performance criteria and installation instructions.
- C. Manufacturer's Instructions: Indicate preparation requirements, application limitations, and environmental conditions required for installation.

- D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

#### 1.7 QUALITY ASSURANCE

- A. Perform work in accordance with Department of Transportation Standards in the State of New York in DOT Right-of-Ways.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.
- D. Obtain materials from same source throughout project.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products specified herein to project site in manufacturer's unopened, undamaged packaging..
- B. Store products under cover and elevated above grade, and as recommended by manufacturer.
  - 1. Prevent damage due to moisture, temperature extremes, or contaminants.

#### 1.9 FIELD CONDITIONS

- A. See Section 01 60 00 - Product Requirements,
- B. Ensure all application limitations including manufacturer's, temperature, and weather are within specified limits.

#### 1.10 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year manufacturer warranty for each product.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Maxwell Products, Inc.: [www.maxwellproducts.com](http://www.maxwellproducts.com).
- B. P&T Products, Inc.: [www.p-tproductsinc.com](http://www.p-tproductsinc.com).
- C. Substitutions: See Section 01 60 00 - Product Requirements.

#### 2.2 MATERIALS

- A. Joint Sealants for parking lots and non-DOT right-of-ways.
  - 1. Polymer modified crack and joint sealant
  - 2. Conforming to ASTM D5078
  - 3. Basis of Design Product: Elastoflex 650 by Maxwell Products.
    - a. Or approved equal
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

- B. Joint Sealants for DOT right-of-ways.
  - 1. Polymer modified crack and joint sealant
  - 2. Conforming to ASTM D6690 Type I
  - 3. Basis of Design Product: Elastoflex 410 by Maxwell Products.
    - a. Or approved equal
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Hot Pour Mastic for wide cracks or surface repair:
  - 1. Basis of Design Product: GAP B by Maxwell Products.
    - a. Or approved equal
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that all areas to receive work of this section are available, and conditions are favorable for work to proceed.

### 3.2 PREPARATION

- A. Prepare cracks for sealing on the same day they are to be sealed. Install suitable traps or devices on the compressed air equipment to prevent moisture and oil from contaminating the joint surfaces. Maintain these devices and see that they are functioning properly.
- B. Hot Air Lance: In order to thoroughly clean and dry cracks of dust, dirt, foreign material, sand and any other extraneous materials immediately prior to sealing joints. Using compressed air no lower than 90 cfm to 185 cfm, the operator shall blow dry the affected cracks to receive the hot pour sealant. To clean and ensure a dry condition, a hot air lance capable of reaching temperatures ranging from a low end 600 degrees F to 2,000 degrees F shall be used. Do not burn, or scorch the adjoining pavement when using a hot air lance.
  - 1. The hot air lance preparation shall not exceed 200 yards in front of the sealing operation. The compressor delivering the pressurized air shall have functional water and oil separators to ensure no moisture is injected into the cracks.

### 3.3 SEALANT MELTING

- A. Heat and melt the sealant in a melter constructed either as a double boiler filled with a heat-transfer medium between the inner and outer shells, or with internal tubes or coils carrying the sealant through a heated oil bath and into a heated double wall hopper. The melter will be equipped with separate thermometers to indicate the temperature of the heat transfer medium and the sealant material, positive temperature controls and with a mechanical agitator and recirculating pumping of sealant to assure a homogeneous blend of the sealant. Maintain the sealant temperature inside the tank at the manufacturer's recommended pouring temperature as indicated on the material packaging of the sealant.
- B. To ensure proper sealant application temperature check the discharge of the sealant with a non-contact infrared thermometer. Discharge the sealant at a temperature between the manufacturer's recommended pouring and safe heating temperatures indicated on the material packaging.
- C. Sealing is not permitted if the melter and discharge temperatures do not meet with the requirements described above. Circulate the sealant from the discharge hose and the melter to maintain the proper sealant pouring temperature.

- D. Do not use sealant material heated beyond the safe heating temperature. If the manufacturer's recommendations allow the sealant to be reheated or heated in excess of six hours, recharge the melter with fresh material amounting to at least 20 percent of the volume of the material remaining in the melter.

### 3.4 PLACING JOINT SEALANT

- A. Sealing is to be done when ambient air temperature is at or above 40F. Seal the routed crack by placing the applicator wand in or directly over the recess and carefully discharge the sealant. Strike-off the sealant flush with the pavement surface so that only a narrow thin film of material measuring no wider than 2 inches wide and 1/16 inch thick is allowed on the pavement surface after sealing the reservoir. Properly sealed joints shall be watertight.
- B. A low pressure, light spray of water or a manufacturer recommended barrier spray may be used to accelerate cooling of the sealant and allow traffic on it without tracking. Blotting the sealant with fine aggregate is not allowed.
- C. Remove and dispose sealant in excess of the specified thin "film" dimensions or that has not bonded to both sides of the reservoir.

### 3.5 WIDE CRACKS AND PATCHING

- A. Cracks wider than one inch, small potholes and other pavement imperfections as outlined by the Engineer are to be repaired and filled with the hot pour mastic.
- B. Preparing the repair areas is the same process used for crack sealing as outlined above. Equipment used for the heating of the mastic shall conform with the same standards outlined for crack sealing with the exception of having any activity requiring the recirculation or pumping of the material. Due to the high abrasive content of the aggregate no pumping can be used. A gravity discharge directly into the repair area or a box screen applicator shall be used to fill and repair the pavement. To install a proper filled and waterproof repair heated flat stock steel shall be used to ensure the material overbids the repair by 2 inches on all sides. The hot steel plate shall be used to smooth the surface of the mastic.
- C. When manufacturers require a primer prior to installation or a finishing stone topping, it shall be applied in accordance with the materials installation instructions supplied by the manufacturer.
- D. No traffic shall be allowed on top of the mastic repair unit the temperature cools to ensure no damage to the repair or oncoming traffic.

### 3.6 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.

### 3.7 PROTECTION

- A. Protect installed joint sealants and patches from subsequent construction operations.
- B. Protect sealed areas from vehicular and pedestrian traffic until products have set sufficiently to prevent tracking of sealants.

END OF SECTION



SECTION 32 13 13  
CONCRETE PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete sidewalks, stair steps, integral curbs, gutters, median barriers, parking areas, and roads.

1.2 RELATED REQUIREMENTS

- A. Section 03 10 00 - Concrete Forming and Accessories.
- B. Section 03 20 00 - Concrete Reinforcing.
- C. Section 03 30 00 - Cast-in-Place Concrete.
- D. Section 07 92 00 - Joint Sealant: Sealing joints.
- E. Section 09 91 13 - Exterior Painting: Pavement markings.
- F. Section 31 22 00 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.
- G. Section 31 23 23 - Fill: Compacted subbase for paving.
- H. Section 32 12 16 - Asphalt Paving: Asphalt wearing course.
- I. Section 32 14 13 - Precast Concrete Unit Paving.
- J. Section 32 14 16 - Brick Unit Paving.
- K. Section 32 14 40 - Stone Paving.
- L. Section 32 17 23 - Pavement Markings.

1.3 PRICE AND PAYMENT PROCEDURES

- A. Provide concrete paving by the unit price method.
- B. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

1.4 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete; 2016.
- C. ACI 305R - Guide to Hot Weather Concreting; 2010.
- D. ACI 306R - Guide to Cold Weather Concreting; 2016.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018.
- F. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

- G. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.
- H. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- I. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.
- J. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.
- K. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2018.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on joint filler, admixtures, and curing compound.
- C. Samples: Submit two sample panels, 12 by 12 inch in size illustrating exposed aggregate finish.

## PART 2 PRODUCTS

### 2.1 PAVING ASSEMBLIES

- A. Comply with applicable requirements of Department of Transportation Standards in the State of New York.

### 2.2 FORM MATERIALS

- A. Form Materials: As specified in Section 03 30 00, conform to ACI 301.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).

### 2.3 REINFORCEMENT

- A. Reinforcing Steel and Welded Wire Reinforcement: Types specified in Section 03 20 00.
- B. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; unfinished finish.

### 2.4 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Concrete Materials: As specified in Section 03 30 00.

### 2.5 ACCESSORIES

- A. Curing Compound: Conforming with Department of Transportation Standards in the State of New York.
- B. Liquid Surface Sealer: Conforming with Department of Transportation Standards in the State of New York.

## 2.6 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 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 211.1 and at rates recommended by manufacturer.
- D. Concrete Properties:
  - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 4,000 psi.
  - 2. Fly Ash Content: Maximum 20 percent of cementitious materials by weight.
  - 3. Cement Content: Minimum 605 lb per cubic yard.
  - 4. Water-Cement Ratio: Maximum 40 percent by weight.
  - 5. Total Air Content: 5.0 to 8.0 percent, determined in accordance with ASTM C173/C173M.
  - 6. Maximum Slump: 4 inches.
  - 7. Maximum Aggregate Size: 1 inch.

## 2.7 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. Transit Mixers: Comply with ASTM C94/C94M.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

### 3.2 SUBBASE

- A. See Section 32 11 23 for construction of base course for work of this Section.

### 3.3 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.
- C. Notify Architect minimum 24 hours prior to commencement of concreting operations.

### 3.4 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

### 3.5 REINFORCEMENT

- A. Place reinforcement at as indicated on the construction drawings.
- B. Interrupt reinforcement at expansion joints.

### 3.6 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

### 3.7 PLACING CONCRETE

- A. Coordinate installation of snow melting components.
- B. Place concrete as specified in Section 03 30 00.
- C. Do not place concrete when base surface is wet.
- D. Place concrete using the slip form technique.
- E. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- F. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- G. Place concrete to pattern indicated.

### 3.8 JOINTS

- A. Align curb, gutter, and sidewalk joints.
- B. Place 1/2 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
  - 1. Form joints with joint filler extending from bottom of pavement to within 1/4 inch of finished surface.
  - 2. Secure to resist movement by wet concrete.
- C. Provide scored joints.
  - 1. As indicated on plan.
  - 2. At 5 feet intervals.
  - 3. Between sidewalks and curbs.
  - 4. Between curbs and pavement.
  - 5. Scores to be a 2" tooled joint.
- D. Provide keyed joints as indicated.
- E. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.
- F. Joint Sealants:
  - 1. Apply joint sealants to expansion joints, and other areas indicated.
  - 2. See Section 07 92 00 - Joint Sealant for sealant type and application.

3. In addition to the requirements of 07 92 00, apply sealants prior to first freezing temperatures, and when substrate can be maintained at 40 degrees F, minimum for 48 hours prior to and 72 hours following application.

### 3.9 FINISHING

- A. Area Paving: Light broom, texture perpendicular to pavement direction.
- B. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.
- C. Median Barrier: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.
- D. Curbs and Gutters: Light broom, texture parallel to pavement direction.
- E. Inclined Vehicular Ramps: Broomed perpendicular to slope.
- F. Place sealer on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

### 3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Maximum Variation From True Position: 1/4 inch.

### 3.11 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
  1. Provide free access to concrete operations at project site and cooperate with appointed firm.
  2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
  3. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
  1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
  2. Perform one slump test for each set of test cylinders taken.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

### 3.12 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian or vehicular traffic over pavement for 7 days minimum after finishing.

END OF SECTION



SECTION 32 14 13  
PRECAST CONCRETE UNIT PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Interlocking concrete paver units and detectable warning pavers.
- B. Non-interlocking concrete paver units.
- C. Detectable warning pavers.
- D. Sand setting bed.
- E. Sand joint filler.
- F. Polymeric sand joint filler.
- G. Topsoil filler.
- H. Edge restraints.

1.2 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Preparation of subsoil for pavers.
- B. Section 31 23 23 - Fill: Compacted fill for pavers.
- C. Section 32 11 23 - Aggregate Base Courses: Aggregate subbase for pavers.
- D. Section 32 12 16 - Asphalt Paving: Pavement subbase for pavers.
- E. Section 32 13 13 - Concrete Paving: Concrete subbase for pavers.

1.3 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

1.4 REFERENCE STANDARDS

- A. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- B. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- C. ASTM C936/C936M - Standard Specification for Solid Concrete Interlocking Paving Units; 2018.
- D. ASTM D5268 - Standard Specification for Topsoil Used for Landscaping Purposes; 2013.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

### 2.2 MATERIALS

- A. Interlocking Concrete Pavers: Hydraulically pressed concrete, configured for interlocking with adjacent units and complying with ASTM C936/C936M.
  - 1. Compressive Strength: 8000 pounds per square inch average, with minimum of 7200 pounds per square inch.
  - 2. Thickness: 2-3/8 inches.
  - 3. Type: Rectangular.
  - 4. Color: Natural.
- B. Detectable Warning Pavers: Cast concrete with truncated domes, Standard ADA color.
- C. Sand for Setting Bed: Clean washed natural sand or crushed stone complying with gradation requirements of ASTM C33/C33M for fine aggregates.
- D. Sand for Joints: Fine washed sand with 100 percent passing No. 16 sieve and not more than 10 percent passing No. 200 sieve.
- E. Polymeric Sand: Fine sand complying with ASTM C144 combined with polymer binders for creating semi-solid joints between pavers.
- F. Topsoil Fill: For filling voids and joints, provide topsoil complying with ASTM D5268.
- G. Edging: Formed aluminum, as detailed.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that substrate is level or to correct gradient, smooth, capable of supporting pavers and imposed loads, and ready to receive work of this Section.
- B. Verify gradients and elevations of substrate are correct.
- C. Verify dry weather forecast without rain for a minimum of 24 hours with temperatures above 55 degrees Fahrenheit.
- D. Verify that pavers are completely dry prior to polymeric sand installation.

### 3.2 PREPARATION

- A. Treat soil with herbicide to retard plant growth.
- B. Wear clothing and equipment to protect from excessive exposure to polymeric sand.
- C. See Section 31 22 00 for subsoil preparation.
- D. See Section 31 23 23 for fill compaction requirements.
- E. See Section 32 11 23 for aggregate subbase.
- F. See Section 32 12 16 for pavement subbase.



- G. See Section 32 13 13 for concrete subbase.

### 3.3 INSTALLATION OF SOLID PAVER UNITS

- A. Spread sand bedding evenly over prepared substrate surface to a maximum thickness of 1-1/2 inch.
- B. Dampen and roller compact sand to level and even surface.
- C. Screed and scarify top 1 inch to 1 1/2 inch of sand.
- D. Place paver units in herringbone pattern creating staggered joints, from straight reference edge.
- E. Cut paver units at edges with masonry saw.
- F. Place half units at edge and interruptions. Maintain tight joints.
- G. Tamp and level paver units with mechanical vibrator until units are firmly bedded, level, and to correct elevation and gradients. Do not tamp unrestrained edges.

### 3.4 CLEANING

- A. Do not clean pavers until pavers and mortar are dry.
- B. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials, or adjacent surfaces.
- C. Use non-metallic tools in cleaning operations.
- D. Rinse surfaces with clean water.
- E. Broom clean paving surfaces. Dispose of excess sand.

### 3.5 PROTECTION

- A. Do not permit traffic over unprotected paver surface.

### 3.6 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

END OF SECTION



SECTION 32 14 16  
BRICK UNIT PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Brick Pavers.
- B. Sand Materials.
- C. Reinforcement.
- D. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 31 23 23 - Fill: Compacted subbase preparation.
- B. Section 32 12 16 - Asphalt Paving: Bituminous paving for brick paver base; extruded asphalt curbs.
- C. Section 32 13 13 - Concrete Paving: Concrete paving for brick paver base; concrete curbs.

1.3 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for requirements applicable to this section. Measurement and payment will be as follows:

1.4 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.
- C. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- E. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- F. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019.
- G. ASTM C902 - Standard Specification for Pedestrian and Light Traffic Paving Brick; 2015.
- H. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- I. ASTM C1272 - Standard Specification for Heavy Vehicular Paving Brick; 2017.
- J. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.
- K. ASTM D1073 - Standard Specification for Fine Aggregate for Asphalt Paving Mixtures; 2016.
- L. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittals procedures.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with 5 years experience.

## 1.7 MOCK-UP

- A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-up.

## 1.8 FIELD CONDITIONS

- A. Do not install mortar when surrounding air or substrate surface temperature is below 50 degrees F prior to, during, and 48 hours after completion of work.
- B. Do not install mortar when surrounding air or substrate surface temperature is above 90 degrees F during and 48 hours after completion of the work.
- C. Do not install mortar when wind velocity exceeds 15 mph or relative humidity exceeds 50 percent.
- D. At end of working day, or during rainy weather, cover work exposed to weather with waterproof coverings, securely anchored.

# PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Brick Pavers:
  - 1. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.2 APPLICATIONS

- A. Sidewalks and Residential Driveways: Pavers for pedestrian traffic.
  - 1. Setting Bed: Sand, with open joints.
  - 2. Subbase: See drawings.

## 2.3 BRICK PAVERS

- A. Pavers for Pedestrian Traffic: Extruded fire clay.
  - 1. Grade: ASTM C902 Weather Class SX Traffic Type I, with dimensional tolerances complying with Application PS.
  - 2. Face Size: 4 by 8 inches.
  - 3. Thickness: 2-3/8 inches (60 mm).
  - 4. Exposed Surface Texture: Wirecut.
  - 5. Edges: Square.

## 2.4 SAND MATERIALS

- A. Sand for Base and Joint Filler: ASTM C33/C33M, clean, washed river or bank sand containing maximum of 50 percent particle size of No. 50 sieve.

- B. Polymeric Sand: Fine sand complying with ASTM C144 combined with polymer binders for creating semi-solid joints between pavers.

## 2.5 ACCESSORIES

- A. Cleaning Solution: Type recommended by paver manufacturer.
- B. Sealant: ASTM C920, self-leveling or nonsag polyurethane or silyl-terminated polyether/polyurethane (STPE/STPU) sealant approved by manufacturer for traffic exposure without being recessed below the top of substrate surface.
- C. Backer Rod: ASTM C1330, closed-cell polyethylene, 25 to 33 percent larger in diameter than joint width.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify substrate is ready to support pavers and imposed loads.
- B. Verify gradients and elevations of substrate are correct.
- C. Verify dry weather forecast without rain for a minimum of 24 hours with temperatures above 55 degrees Fahrenheit.
- D. Verify that pavers are completely dry prior to polymeric sand installation.

### 3.2 PREPARATION

- A. See Section 31 23 23 for subbase preparation.

### 3.3 INSTALLATION - SAND SETTING BED

- A. Wear clothing and equipment to protect from excessive exposure to polymeric sand.
- B. Spread sand evenly over prepared substrate surface to a nominal thickness of 1-1/2 inches.
- C. Dampen and roller compact sand to level surface.
- D. Screed and scarify top 1/2 inch of sand.
- E. Place paver units in herringbone pattern, from straight reference line.
- F. Place half units or special shaped units at edges and interruptions. Maintain tight joints. Machine saw partial units.
- G. Sprinkle sand over surface and sweep into joints. Moisten joints and recover with additional sand until firm joints are achieved. Remove excess sand.
- H. Spread polymeric sand uniformly over surface. Use a push broom to fill joints and remove excess while not sweeping long distances. Sweep all excess with a fine bristle brush and remove residues with a leaf blower.
- I. Tamp and level paver units with mechanical plate vibrator until units are firmly bedded, level, and to correct elevation and slope gradient.

### 3.4 CLEANING

- A. Do not clean pavers until pavers and mortar are dry.
- B. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials, or adjacent surfaces.
- C. Use non-metallic tools in cleaning operations.
- D. Rinse surfaces with clean water.
- E. Broom clean paving surfaces. Dispose of excess sand.
- F. See Section 01 74 19 for construction waste management and disposal.

### 3.5 PROTECTION

- A. Do not permit traffic over unprotected paver surface.
- B. Do not permit traffic for 48 hours after pavement placement.

### 3.6 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

END OF SECTION

SECTION 32 14 40  
STONE PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Paver materials.
- B. Sandbed materials.
- C. Mortar and grout materials.
- D. Accessories.
- E. Mixes.

1.2 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Preparation of subsoil for pavers.
- B. Section 31 23 23 - Fill: Compacted fill for pavers.
- C. Section 32 12 16 - Asphalt Paving: Subbase for pavers.
- D. Section 32 13 13 - Concrete Paving: Subbase for pavers.

1.3 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

1.4 REFERENCE STANDARDS

- A. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.
- B. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- D. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- E. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019.
- F. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.
- H. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.
- I. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2018.
- J. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015, with Editorial Revision (2017).

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

## 1.6 QUALITY ASSURANCE

## 1.7 MOCK-UP

- A. Provide paver mock-up, 4 feet long by 4 feet wide; include setting bed, pavers, curbs, joints, and edging.
- B. Locate where directed.
- C. Mock-up may not remain as part of the Work.

## 1.8 FIELD CONDITIONS

- A. Maintain cementitious materials and substrate surface to a minimum of 50 degrees F prior to, during, and 48 hours after completion of work.
- B. At end of working day or during rainy weather, cover work exposed to weather with waterproof coverings, securely anchored.

# PART 2 PRODUCTS

## 2.1 PAVER MATERIALS

## 2.2 SANDBED MATERIALS

- A. Sand for Base: Clean washed bank sand containing maximum of 30 percent particle size of No. 10 (2 mm) sieve.
- B. Sand for Joints: Clean washed fine sand of 4.75mm sieve size.

## 2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M Type I, white color.
- B. Sand: ASTM C144; sharp, clean, screened sand free of injurious amounts of organic material.
- C. Water: Potable, not detrimental to mix.

## 2.4 ACCESSORIES

- A. Welded Wire Reinforcement: ASTM A1064/A1064M; 2 x 2, 16/16 wire; galvanized steel.
- B. Mortar Bed Joint Filler: Preformed compressible strip complying with ASTM D1751 or ASTM D1752, or closed-cell non-absorbent compressible polyethylene or polymer foam in sheet form; thickness as required to form joint of indicated width; intended to remain in joint to allow moderate movement.
- C. Sealant: ASTM C920, self-leveling or non-sag polyurethane or silyl-terminated polyether/polyurethane (STPE/STPU) sealant explicitly approved by manufacturer for traffic exposure without being recessed below the top of substrate surface.



- D. Backer Rod: ASTM C1330, closed-cell polyethylene, 25 to 33 percent larger in diameter than joint width.

## 2.5 MIXES

- A. Joint Grout: Portland cement mix complying with the following:
  - 1. Compressive Strength (28 day): 3000 psi.
  - 2. Slump: 1 to 2 inches.
  - 3. Air Entrainment: 5 to 7 percent.
  - 4. Color Admixture: In accordance with manufacturer's instructions.
- B. Add admixtures in accordance with manufacturer's instructions.
- C. Thoroughly mix ingredients in quantities needed for immediate use.
- D. Use within two hours after mixing. Do not re-temper.

## 2.6 FABRICATION

- A. Fabrication Tolerances For Stone Units: Within 1/8 inch of actual dimensions.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Verify that substrate is level, smooth, capable of supporting pavers and imposed loads, and ready to receive work of this section.
- B. Verify gradients and elevations of substrate are correct.
- C. Verify dry weather forecast without rain for a minimum of 24 hours, with temperatures above 55 degrees Fahrenheit.
- D. Verify that pavers are completely dry prior to polymeric sand installation.

## 3.2 PREPARATION

- A. See Section 31 22 00 for subsoil preparation.

## 3.3 INSTALLATION - SAND SETTING BED

- A. Spread sand evenly over prepared substrate to a maximum thickness of 1-1/2 inch.
- B. Dampen and roller compact sand to level and even surface.
- C. Screed and scarify top 1/2 inch of sand.
- D. Place paver units in herringbone pattern, from straight reference edge.
- E. Sprinkle sand over surface, sweep into joints and moisten. Recover with additional sand and repeat until joints are firm. Remove excess sand.
- F. Tamp and level paver units with mechanical vibrator until units are firm, level, and to correct elevation and gradients.

### 3.4 INSTALLATION - MORTAR SETTING BED

- A. Locate control and expansion joints directly above joints in structural base and where indicated on drawings; use joint filler to form full depth joint prior to laying mortar bed.
- B. Set paver units in full mortar bed of minimum 1 inch thickness, to support pavers over full bearing surface.
- C. Place paver units in herringbone pattern, from straight reference edge.
- D. Maintain uniform joint width of 3/8 inch between pavers, and at abutting vertical surfaces and protrusions. To accommodate grout, rake out joints 1/4 to 3/8 inch deep.
- E. Keep control and expansion joints free of grout for sealant installation.
- F. Fill joints with grout; pack and work into voids; neatly tool surface to concave joint. Wet cure.
- G. Seal control and expansion joints with sealant, in accordance with sealant manufacturer's instructions; use joint filler, backer rod, and or bond breaker tape to achieve width-to-depth ratio recommended by sealant manufacturer.

### 3.5 CLEANING

- A. Do not clean pavers until pavers and mortar are dry.
- B. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials, or adjacent surfaces.
- C. Use non-metallic tools in cleaning operations.
- D. Rinse surfaces with clean water.
- E. Broom clean paving surfaces. Dispose of excess sand.
- F. See Section 01 74 19 for construction waste management and disposal.

### 3.6 PROTECTION

- A. Do not permit traffic over sealant joints until sealant is fully cured.
- B. Do not permit traffic over unprotected paver surface.
- C. Protect paver surface with sheets of plywood.

### 3.7 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

END OF SECTION

SECTION 32 16 23  
SIDEWALKS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Asphalt sidewalks.
- B. Concrete sidewalks.
- C. Concrete wheelchair ramps.
- D. Unit paving sidewalks.

1.2 RELATED REQUIREMENTS

- A. Section 32 11 23 - Aggregate Base Courses.
- B. Section 32 12 16 - Asphalt Paving.
- C. Section 32 13 13 - Concrete Paving.
- D. Section 32 14 13 - Precast Concrete Unit Paving.
- E. Section 32 14 16 - Brick Unit Paving.
- F. Section 32 17 23 - Pavement Markings.
- G. Section 32 17 26 - Tactile Warning Surfacing.

1.3 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- B. ACI 305R - Guide to Hot Weather Concreting; 2010.
- C. ACI 306R - Guide to Cold Weather Concreting; 2016.
- D. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- E. AI MS-19 - Basic Asphalt Emulsion Manual; 2008.
- F. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
- G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.
- H. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.
- J. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- K. ASTM C157/C157M - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete; 2017.
- L. ASTM C902 - Standard Specification for Pedestrian and Light Traffic Paving Brick; 2015.

- M. ASTM C936/C936M - Standard Specification for Solid Concrete Interlocking Paving Units; 2018.
- N. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2010a (Reapproved 2015).
- O. ASTM D946/D946M - Standard Specification for Penetration-Graded Asphalt Binder for Use in Pavement Construction; 2015.
- P. ASTM D5268 - Standard Specification for Topsoil Used for Landscaping Purposes; 2013.
- Q. COE CRD-C 48 - Method of Test for Water Permeability of Concrete; 1992.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Weather Data: Records during placement of asphalt or concrete, including date, location of placement, quantity, and air temperature.

#### 1.5 FIELD CONDITIONS

- A. Temperature Requirements: Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- B. Follow recommendations of ACI 305R and ACI 306R when concreting during hot and cold weather, respectively.
- C. Follow recommendations of polymeric sand manufacturer.

### PART 2 PRODUCTS

#### 2.1 ASPHALT SIDEWALKS

- A. Gravel Subbase: Thickness as indicated on drawings.
- B. Asphalt Cement: ASTM D946/D946M.

#### 2.2 CONCRETE SIDEWALKS AND WHEELCHAIR RAMPS

- A. Gravel Subbase: Thickness as indicated on drawings.
- B. Concrete Forms: Wood.
- C. Concrete Materials: Comply with ASTM C94/C94M.
- D. Aggregate: Pit Run, washed, 3/8 inch (1 cm) stone; free of shale, clay, friable material and debris.
- E. Reinforcement:
  - 1. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, plain type, flat sheets, unfinished.

#### 2.3 UNIT PAVING SIDEWALKS

- A. Sand for Setting Bed: Clean washed natural sand or crushed stone complying with gradation requirements of ASTM C33/C33M for fine aggregates.

- B. Precast Unit Pavers: Solid and interlocking, complying with ASTM C936/C936M.
  - 1. Size: 12 by 12 inches.
  - 2. Thickness: 2-3/8 inches.
  - 3. Color: Selected by Architect from manufacturer's standard range.
  - 4. Compressive Strength: 3000 pounds per square inch, average.
- C. Brick Unit Pavers: Solid and interlocking, complying with ASTM C902.
  - 1. Size: 3-5/8 by 7-5/8 inches.
  - 2. Thickness: 2-1/4 inches.
  - 3. Color: \_\_\_\_\_.
  - 4. Color: Selected by Architect from manufacturer's standard range.
  - 5. Compressive Strength: 3000 pounds per square inch, average.
- D. Polymeric Sand: Fine sand complying with ASTM C144 combined with polymer binders for creating semi-solid joints between pavers.
  - 1. Material: Granite.
  - 2. Additive(s): Portland Cement.
  - 3. Compressive Strength: 750 pounds per square inch.
  - 4. Adhesion by Tensile Load: 100 pounds per square inch.
  - 5. Color: Beige.
- E. Edging: Formed aluminum, as detailed.
- F. Detectable Warning Pavers: Cast concrete with truncated domes, yellow.

## 2.4 ACCESSORIES

- A. Landscape Aggregates: Epoxy-coated round or polished aggregates.
  - 1. Color: As selected by Architect from manufacturer's standard range.
  - 2. Size: As selected by Architect from manufacturer's standard range.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify gradients and elevations of the subgrade are correct as shown on drawings. Where poor subgrade material is encountered, remove and replace with suitable material.
- B. Verify compacted subgrade is acceptable, ready to support imposed loads and paving, and ready to receive work.

### 3.2 SUBBASE PREPARATION

- A. Maintain subgrade in a smooth, compacted condition with required section and established grade until concrete is placed.
- B. See Section 32 11 23 for aggregate subbase.

### 3.3 ASPHALT SIDEWALK INSTALLATION

- A. Place asphalt within 24 hours of applying primer or tack coat.
- B. Compact to specified density. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

### 3.4 CONCRETE SIDEWALK AND WHEELCHAIR RAMP INSTALLATION

- A. Forming:
  - 1. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
  - 2. Sidewalk Forms: Place and secure forms to location, dimension, profile, and gradient shown on drawings. Height equal to the full depth of the finished sidewalk.
  - 3. Wheelchair Ramps: Place and secure forms to location, dimension, profile, and gradient shown on drawings. Comply with ADA Standards.
- B. Reinforcement:
  - 1. Place wire-mesh reinforcement mid-height of forms.
- C. Placement:
  - 1. Place concrete in a single lift.
  - 2. Consolidate concrete by tamping and spading.
- D. Joints:
  - 1. Spacing: Provide scored joints every 10 feet (3 m).
  - 2. Filler height equal to the full depth of the finished concrete.
- E. Finishing:
  - 1. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge, 1/4 inch radius.
  - 2. Wheelchair Ramps: Broomed perpendicular to slope.
- F. Record weather information for placement.

### 3.5 UNIT PAVING SIDEWALK INSTALLATION

- A. Spread sand bedding evenly over prepared substrate surface to a maximum thickness of 1-1/2 inch.
- B. Dampen and roller compact bed sand to level and even surface.
- C. Place paver units in herringbone pattern creating staggered joints, from straight reference edge.
- D. Cut paver units at edges with masonry saw.
- E. Tamp and level paver units with mechanical vibrator until units are firmly bedded, level, and to correct elevation and gradients. Do not tamp unrestrained edges.
- F. Sprinkle sand over surface and sweep into joints. Moisten joints and recover with additional sand until firm joints are achieved. Remove excess sand.
- G. Install polymeric sand according to manufacturer's recommendations.
- H. Record weather information for placement.

### 3.6 TOLERANCES

- A. Surface Flatness: 1/4 inch, maximum, measured with 10 foot straight edge.
- B. Variation from True Position: 1/4 inch, maximum.
- C. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.

3.7 PROTECTION

- A. Immediately after placement, protect sidewalk from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over sidewalk for 7 days minimum after finishing.

END OF SECTION





SECTION 32 17 23  
PAVEMENT MARKINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Painted pavement markings.
- B. Painted curb markings.
- C. Temporary Marking Tape.

1.2 RELATED REQUIREMENTS

- A. Section 32 12 16 - Asphalt Paving.
- B. Section 32 13 13 - Concrete Paving.
- C. Section 32 16 23 - Sidewalks.
- D. Section 32 17 26 - Tactile Warning Surfacing.

1.3 REFERENCE STANDARDS

- A. AASHTO M 237 - Standard Specification for Epoxy Resin Adhesives for Bonding Traffic Markers to Hardened Portland Cement and Asphalt Concrete; 2005 (Reapproved 2019).
- B. AASHTO M 247 - Standard Specification for Glass Beads Used in Pavement Markings; 2013 (Reapproved 2018).
- C. AASHTO M 249 - Standard Specification for White and Yellow Reflective Thermoplastic Striping Material (Solid Form); 2012 (Reapproved 2020).
- D. AASHTO MP 24 - Standard Specification for Waterborne White and Yellow Traffic Paints; 2015 (Reapproved 2020).
- E. ASTM D4505 - Standard Specification for Preformed Retroreflective Pavement Marking Tape for Extended Service Life; 2012 (Reapproved 2017).
- F. ASTM E303 - Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester; 1993 (Reapproved 2013).
- G. FHWA MUTCD - Manual on Uniform Traffic Control Devices for Streets and Highways; U.S. Department of Transportation, Federal Highway Administration; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work of this section with adjoining work.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by affected installers.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate survey control points and pavement markings color and layout.
  - 1. Layout and color shall be Owner approved prior to application.

- C. Product Data: Manufacturer's data sheets on each product to be used.
- D. Certificates: Submit for each batch stating compliance with specified requirements.
  - 1. Painted pavement markings.
- E. Manufacturer's Instructions:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver paint in containers of at least 5 gallons accompanied by batch certificate.
- B. Store products in manufacturer's unopened packaging until ready for installation.

#### 1.8 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not apply paint if temperature of surface to be painted or the atmosphere is less than 50 degrees F or more than 95 degrees F.

#### 1.9 SEQUENCING

- A. Allow new pavement surfaces to cure for a period of not less than 30 days before application of markings.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Painted Pavement Markings:
  - 1. Ennis-Flint: [www.ennisflintamericas.com](http://www.ennisflintamericas.com).
  - 2. Franklin Paint; HYDROPHAST: [www.franklinpaint.com](http://www.franklinpaint.com).
  - 3. Ozark Materials, LLC: [www.ozarkmaterials.net](http://www.ozarkmaterials.net).
  - 4. Sherwin Williams: [www.sherwin-williams.com](http://www.sherwin-williams.com).
  - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Temporary Marking Tape:
  - 1. 3M: Stamark: [www.3m.com](http://www.3m.com).

#### 2.2 PAINTED PAVEMENT AND CURB MARKINGS

- A. Comply with State of New York Highway Department standards.

- B. Painted Pavement Markings: As indicated on drawings.
  - 1. Marking Paint: Latex Based, in accordance with AASHTO MP 24.
    - a. Roadway Markings:
      - 1) Center Lines: Yellow.
      - 2) Shoulder, Lane, and Crosswalk Lines: White.
    - b. Parking Lots: White.
    - c. Symbols and Text: White.
    - d. Accessible Symbols: Provide blue.
    - e. Curb Text: Red.
  - 2. Reflective Glass Beads: Type 1, in accordance with AASHTO M 247.
  - 3. Obliterating Paint: Type I, in accordance with AASHTO MP 24.
    - a. Bituminous Pavement: Black.
    - b. Concrete Pavement: Gray.

### 2.3 TEMPORARY MARKING TAPE

- A. Preformed, reflective, pressure sensitive adhesive tape in color(s) required; Contractor is responsible for selection of material of sufficient durability as to perform satisfactorily during period for which its use is required.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Identify existing markings for removal.
- B. Owner verification: Verify by Owner approved shop drawings of new pavement markings prior to beginning application.
  - 1. Final approval by Owner following chalking out, shall be required.
- C. Verification of Conditions: Verify that pavement is dry and ready for installation.
- D. Notify Architect of unsatisfactory conditions before proceeding.

### 3.2 PREPARATION

- A. Establish survey control points for locating and dimensioning of markings.
- B. Place barricades, warning signs, and flags as necessary to alert approaching traffic and prevent traffic crossing newly painted markings.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- D. Clean surfaces prior to installation.
  - 1. Remove dust, dirt, and other debris by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods.
  - 2. Remove rubber deposits and other coatings adhering to the pavement, by scraping, wire brushing, sandblasting, mechanical abrasion, or approved chemicals.
  - 3. Remove existing paint markings by mechanical means outlined above or by applying obliterating paint.
  - 4. Sandblasting: Use equipment of size and capacity necessary, providing not less than 150 cfm of air at pressure not less than 90 psi at each nozzle used.

- E. Where oil or grease are present, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application; after cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint.
- F. Temporary Markings: Apply as directed by Architect.
- G. Apply paint stencils by type and color at necessary intervals.

### 3.3 INSTALLATION

- A. General:
  - 1. Position pavement markings as indicated on drawings and approved shop drawings.
  - 2. Field location adjustments require approval of Architect and Owner.
  - 3. Allow traffic movement without hindrance.
- B. Painted Pavement Markings:
  - 1. Apply in accordance with manufacturer's instructions using an experienced technician that is thoroughly familiar with equipment, materials, and marking layouts.
  - 2. Apply in accordance with State of New York Highway Department standards.
  - 3. Obliterating Paint: Apply as necessary to cover existing markings completely.
  - 4. Marking Paint: Apply uniformly, with sharp edges.
    - a. Applications: One coat.
    - b. Wet Film Thickness: 0.015 inch, minimum.
    - c. Stencils: Lay flat against pavement, align with striping, remove after application.
    - d. Glass Beads: Apply directly to paint, 10 second lag time, 6 lbs/gal of paint, uniform thickness and coverage.
    - e. Length Tolerance: Plus or minus 3 inches.
    - f. Width Tolerance: Plus or minus 1/8 inch.
  - 5. Roadway Traffic Lanes: Use suitable mobile mechanical equipment that provides constant agitation of paint and travels at controlled speeds.
    - a. Conduct operations in such a manner that necessary traffic can move without hindrance.
    - b. If paint does not dry within expected time, discontinue paint operations until cause of slow drying is determined and corrected.
    - c. Skip Markings: Synchronize one or more paint "guns" to automatically begin and cut off paint flow; make length of intervals as indicated.
    - d. Use hand application by pneumatic spray for application of paint in areas where a mobile paint applicator cannot be used.
- C. Temporary Pavement Markings: When required or directed by Architect, or where phasing plans and schedules indicate, apply temporary markings of the color(s), width(s) and length(s) as indicated or directed.
  - 1. After temporary marking has served its purpose, remove temporary marking by carefully controlled sandblasting, approved grinding equipment, or other approved method so that surface to which the marking was applied will not be damaged.
  - 2. At Contractor's option, temporary marking tape may be used in lieu of temporary painted marking; remove unsatisfactory tape and replace with painted markings at no additional cost to Owner.

### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. If inspections indicate work does not meet specified requirements, rework and reinspect at no cost to Owner.

1. Remove and replace markings that are applied at less than minimum material rates; deviate from true alignment; exceed length and width tolerances; or show light spots, smears, or other deficiencies or irregularities.
2. Remove unsatisfactory markings in a manner to avoid damage to the surface to which the marking was applied by carefully controlled sandblasting, approved grinding equipment, or other approved method.

C. Allow the pavement marking to set at least the minimum time recommended by manufacturer.

### 3.5 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals for additional requirements.
- B. Temporary Markings: Remove without damaging surfaces.

### 3.6 PROTECTION

- A. Prevent approaching traffic from crossing newly applied pavement markings.
- B. Replace damaged or removed markings at no additional cost to Owner.
- C. Preserve survey control points until pavement marking acceptance.

END OF SECTION



SECTION 32 17 24  
COURT COLOR FINISH SYSTEM AND CRACK REPAIR

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Acrylic Resurfacer for Tennis/Basketball Courts.
- B. Acrylic Color Finish Coat for Tennis/Basketball Courts.
- C. Acrylic White Line Paint for Tennis/Basketball Courts.

1.2 SUBMITTALS

- A. The installer of the tennis court color finish system shall furnish product data and specifications for materials used for acrylic color surfacing and an affidavit that all materials and workmanship complies with the requirements of this section. This includes but not limited to sand, emulsion, and equipment.
- B. Submit color samples and complete specifications of acrylic color system proposed.
- C. Submit system components Technical Data Sheets (TDS).
- D. Installer's Qualification Statement.

1.3 QUALITY ASSURANCE

- A. Court color finish system work must be performed by a contractor who employs a certified tennis court builder with documented experience of installing, repair, and renovation of at least five acrylic court surfaces in the northeast USA. The CTCB must be present during court construction and certify the court construction prior to installation of the court color finish system.
- B. Installer must be a member of American Sports Builders Association.
- C. Asphalt substrates shall be allowed to cure a minimum of 15 days before application of any coatings.
- D. The substrate shall be clean and dry before coatings are applied. The surface of the substrate shall be inspected and made sure to be free of grease, oil, dust, dirt and other foreign matter before any coatings are applied.
- E. Water used in all mixtures shall be fresh and potable.
- F. No part of the surfacing system shall be applied during a rainfall, or when rainfall is imminent.
- G. Do not apply coatings to a cold surface. Surface and air temperatures must be a minimum of 50 degrees F and rising.
- H. No coatings shall be applied if surface temperatures exceed 130 degrees F.
- I. All materials shall be delivered to the job site in sealed containers with manufacturer's label affixed.

#### 1.4 WARRANTY

- A. A contractor shall warranty the surface installation against faulty materials or workmanship for a period of two; (2) years from the date of acceptance by the owner. Any defects occurring during the warranty period shall be promptly repaired upon notification at no cost to the owner.

### PART 2 PRODUCTS

#### 2.1 BASIS OF DESIGN

- A. Laykold Colorcoat system, Advanced Polymer Technology Corporation of Harmony, Pennsylvania, U.S.A. (888) 266-4221

#### 2.2 LAYKOLD ACRYLIC RESURFACER

- A. Acrylic-based emulsion used for smoothing rough pavements.
- B. Two coats.
- C. Percent solids by weight 52% Minimum.
- D. Weight: 10.68 lbs/gal.

#### 2.3 LAYKOLD ACRYLIC COLOR FINISH COAT

- A. Pigmented wear-resistant acrylic emulsion.
- B. Two coats.
- C. Percent solids by weight 49% minimum.
- D. Weight: 12.9 (+/-3) lbs/gal.

#### 2.4 LAYKOLD ACRYLIC WHITE LINE PAINT

- A. Factory textured, wear-resistant acrylic emulsion line marking paint. 2 coats required.
- B. Percent solids by weight 67% minimum.
- C. Weight: 11.4 lbs/gal.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Follow manufacturer's application specifications.
- B. Pressure wash entire court surface to remove all mildew, mold and debris using a rotating high pressure washing head capable of producing heated water. Utilize water reclamation and filtration systems to conserve water and reduce water runoff. Soiled water and debris must be contained and not allowed to run off into surrounding areas.
- C. The entire tennis court surface must be flooded with the owner or owners representative present. After one hour of 70 degree sunny temperatures any depressions holding more than a nickel laying flat, will be defined and receive a shim of acrylic Leveling binder patch. The



designated area will be re-flooded to insure it is within tolerance. the finished surface shall have no depressions or ridges exceeding one eighth (1/8) inch in ten (10) feet. Clean and fill structural cracks with crack & leveling binder patch.

- D. Apply acrylic resurfacer/filler, one (1) coat, per manufacturer's specifications. Tennis courts shall match existing colors.
- E. Apply acrylic color finish, two (2) coats per manufacturer's specifications. Courts shall be same color as filler coats. Fortified with 80 mesh rounded silica or approved equal.
  - 1. All color pigmented by the manufacturer. The use of neutral material pigmented on site will not be allowed.
  - 2. All acrylic color material must be mixed using a motor agitation system having a minimum capacity of 165 gallons.
  - 3. Color: Playing court and out of bounds area color to match existing, and to be approved by Owner.
  - 4. Mask and hand paint courts with acrylic white line paint two inches wide per USTA standards, accurately located and marked in accordance with rules of the high school tennis. No spraying of the line paint will be allowed.

END OF SECTION



SECTION 32 17 26  
TACTILE WARNING SURFACING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Plastic tactile and detectable warning tiles for pedestrian walking surfaces.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for sidewalks and platforms.
- B. Section 32 13 13 - Concrete Paving: Concrete sidewalks.
- C. Section 32 17 23 - Pavement Markings: Crosswalk and curb markings.

1.3 REFERENCE STANDARDS

- A. 49 CFR 37 - Transportation Services for Individuals with Disabilities (ADA); current edition.
- B. AASHTO LRFD - Bridge Design Specifications; 2017, with Errata (2018).
- C. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- D. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2016).
- E. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; 2011.
- F. SAE AMS-STD-595 - Colors Used in Government Procurement; 2017a.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Warranty: Submit manufacturer warranty; complete forms in Owner's name and register with manufacturer.

1.5 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Cast Iron Tiles: Provide manufacturer's standard ten year warranty against manufacturing defects, breakage or deformation.
- C. Plastic Tiles: Provide manufacturer's standard five year warranty against manufacturing defects, breakage or deformation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Plastic Tactile and Detectable Warning Surface Tiles:
  - 1. Substitutions: See Section 01 60 00 - Product Requirements.

- B. Cast Iron Detectable Warning Plates:
  - 1. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.2 TACTILE AND DETECTABLE WARNING DEVICES

- A. Plastic Tactile and Detectable Warning Tiles: ADA Standards compliant, glass fiber and carbon fiber reinforced, exterior grade, matte finish polyester sheet with truncated dome pattern, solid color throughout, internal reinforcing of sheet and of truncated domes, integral radius cut lines on back face of tile; with factory-applied removable protective sheeting.
  - 1. Installation Method: Cast in place.
  - 2. Shape: Rectangular.
  - 3. Dimensions: 24 inches by 48 inches.
  - 4. Pattern: In-line pattern of truncated domes complying with ADA Standards.
- B. Cast Iron Detectable Warning Plates:
  - 1. Material: Cast gray iron; ASTM A48/A48M, Class 30 A (minimum).
  - 2. Installation Method: Cast in place.
  - 3. Shape: Rectangular and Radius.
  - 4. Square Dimensions: 24 inches square.
  - 5. Radius Dimensions: 24 inches wide, 9 feet, 5 inch radius.
  - 6. Pattern: Truncated cones in compliance with ADA Standards.

## PART 3 EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Install in accordance with manufacturer's written instructions.
  - 1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
  - 2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.
- B. Field Adjustment:
  - 1. Cut units to size and configuration shown on drawings.
  - 2. Do not cut plastic tiles to less than 9 inches wide in any direction.
  - 3. Locate relative to curb line in compliance with ATBCB PROWAG, Sections 304 and 305.
  - 4. Orient so dome pattern is aligned with the direction of ramp.
  - 5. Align truncated dome pattern between adjacent units.
- C. Install units fully seated to substrate, square to straight edges and flat to required slope.
- D. Align units so that tops of adjacent units are flush and joints between units are uniform in width.

### 3.2 INSTALLATION, CAST IN PLACE PLASTIC TILES

- A. Concrete:
  - 1. See Section 03 30 00.
  - 2. Slump: 4 to 7 percent.
- B. When installing multiple adjacent units, leave a 3/16 inch gap between units to allow for expansion.
- C. Tamp and vibrate units as recommended by manufacturer.
- D. Place and position weights on units while concrete cures as recommended by manufacturer. Ensure no voids or air pockets exist between top surface of concrete and underside of units.

### 3.3 INSTALLATION, SURFACE APPLIED PLASTIC TILES

- A. Cure concrete surfaces for a minimum of 4 days before installing units.
- B. Mechanically roughen surface as required to remove contaminants and prepare surface for adhesive and sealant application.
- C. Drill fastener holes straight, true and to depth recommended by manufacturer.
- D. Apply adhesive to back of unit as recommended by manufacturer.
- E. Mechanically fasten to substrate. Avoid striking or damaging the unit itself during installation.
- F. Apply sealant to edges in cove profile.

### 3.4 INSTALLATION - CAST IN PLACE, CAST IRON PLATES

- A. Concrete: See Section 03 30 00.
- B. When installing multiple adjacent units, connect plates before placing.
- C. Install by method described in manufacturer's written instructions.
- D. Place units into wet concrete.
- E. Press assembly into concrete to achieve final elevation.
- F. Finish concrete adjacent to plate. Remove wet concrete spilled onto plate surface.

### 3.5 CLEANING PLASTIC UNITS

- A. Remove protective plastic sheeting within 24 hours of installation.
- B. Remove excess sealant or adhesive from joints and edges.
- C. Clean four days prior to date of scheduled inspection.

### 3.6 PROTECTION

- A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.
- B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

END OF SECTION



SECTION 32 18 16.13  
PLAYGROUND PROTECTIVE SURFACING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal of existing protective surfacing and correction of grades as necessary.
- B. Protective surfacing for playground area.
- C. Subbase under resilient surfacing.
- D. Containment curbs.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 32 33 44 - Playground Equipment: Playground layout (staking).
- C. Section 32 11 23 - Aggregate Base Courses: Subbase for resilient surfacing.
- D. Section 32 12 16 - Asphalt Paving: Subbase for resilient surfacing.
- E. Section 32 13 13 - Concrete Paving: Subbase for resilient surfacing.

1.3 REFERENCE STANDARDS

- A. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2012, with Editorial Revision (2015).
- B. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine; 2017.
- C. ASTM D6662 - Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards; 2017.
- D. ASTM F1292 - Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment; 2018.
- E. ASTM F1487 - Standard Consumer Safety Performance Specification for Playground Equipment for Public Use; 2017.
- F. ASTM F2075 - Standard Specification for Engineered Wood Fiber for Use as a Playground Safety Surface Under and Around Playground Equipment; 2015.
- G. AWPA U1 - Use Category System: User Specification for Treated Wood; 2018.
- H. CPSC Pub. No. 325 - Public Playground Safety Handbook; 2010.

1.4 DEFINITIONS

- A. Use Zone: The area beneath and immediately adjacent to a play structure or equipment (play event) that is designated for unrestricted circulation around equipment, and on whose surface it is predicted that a user would land when falling from or exiting the equipment.
- B. Critical Fall Height: The maximum fall height at which the protective surfacing meets the requirements of ASTM F1292.

- C. High Play Activity Area: Areas where the fall height is especially great, such as at swings. A high play activity area is defined only where the protective surfacing of the entire playground area is not designed for the greatest fall height. High play activity areas are defined on the drawings.
- D. Fall Height: The vertical distance between the finished elevation of the designated play surface and the finished elevation of the protective surfacing beneath it as defined by ASTM F1487.
- E. Protective Surfacing: Resilient ground surfacing. The characteristics of the protective surfacing are based on the fall height of the playground equipment. Changes in either the surfacing or the fall height, particularly reducing the resilience of the protective surfacing or increasing the fall height, will reduce safety-related performance.
- F. Subbase: A layer under the resilient layer of the protective surfacing but over the subgrade; may be rigid, as in concrete or bituminous, or aggregate.
- G. Subgrade: The surface of the ground on which the protective surfacing is installed.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements - Administrative Requirements, for submittal procedures.
- B. Product Data: For all manufactured surfacing products, provide manufacturer's product data showing materials of construction, compliance with specified standards, installation procedures, and safety limitations.
  - 1. Include IPEMA certifications where required.
  - 2. Treated Wood Products: Provide information on wood treatment chemical content, toxicity level, and life-cycle durability.
- C. Product Data: For natural surfacing materials, provide supplier's certification or mill certificate showing compliance with specified requirements.
- D. Samples: For each product for which color must be selected provide color chart showing full range of colors.
- E. Maintenance Data:
  - 1. For manufactured surfacing products, provide manufacturer's recommended maintenance instructions and list of repair products, with address and phone number of source of supply.
  - 2. For loose fill surfacing products, provide detailed re-ordering information to enable Owner to match installed material exactly.
- F. Manufacturer's Field Report.

#### 1.6 QUALITY ASSURANCE

- A. Maintain one copy of the latest edition of ASTM F1487 and CPSC Pub. No. 325 at project site.
- B. Manufacturer Qualifications: Company regularly engaged in manufacturing products specified in this section, with not less than three years of documented experience.
  - 1. Manufacturer's Representative: Provide name, company name and address, and qualifications.
- C. Installer Qualifications: Company certified by manufacturer for training and experience installing the protective surfacing; provide installer's company name and address, and training and experience certificate.



## 1.7 PRE-INSTALLATION MEETING

- A. Coordinate with Section 32 33 44.
- B. Convene a meeting one week before starting earthwork for playground to discuss coordination between various installers.
  - 1. Require attendance by personnel responsible for grading and installers of playground equipment, protective surfacing, footings, and adjacent work.
  - 2. Include representatives of Contractor.
  - 3. Notify Architect at least 2 weeks prior to meeting.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store protective surfacing to project site in accordance with manufacturer's recommendations.
- B. Store materials in a dry, covered area, elevated above grade.

## 1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals - Closeout Submittals, for additional warranty requirements.

# PART 2 PRODUCTS

## 2.1 PERFORMANCE CRITERIA

- A. Because the safety of the playground depends on strict compliance with the performance criteria, this information is provided for Contractor's information.
  - 1. The protective surfacing constitutes a resilient layer installed over a non-resilient layer, which is installed over the subgrade, with the top of playground equipment footings and anchorage devices covered by full depth of the resilient portion of the protective surfacing.
  - 2. The total depth available for protective surfacing, from surface of subgrade, is indicated on drawings.
  - 3. The top elevation of the protective surfacing is intended to be flush with adjacent grades.
  - 4. Use Zone: The protective surfacing has been designed to provide acceptable impact attenuation as defined in ASTM F1292 for Critical Height of 12 feet.
  - 5. High Play Activity Area: The protective surfacing has been designed to provide impact acceptable attenuation as defined in ASTM F1292 for Critical Fall Height of \_\_\_\_ feet.
- B. If deviation from specified depth is required, it is the Contractor's responsibility to make all changes required to maintain specified top elevation and required impact attenuation at no extra cost to Owner; obtain approval prior to proceeding; follow approval request procedure as specified for substitutions.

## 2.2 MATERIALS

- A. Recycled Rubber Fill: Loose fill; 100 percent recycled rubber chips, shreds, granules, or nuggets; installed over subgrade. Install to meet current ADA standards.
  - 1. Chip Size: 3/8 inch, nominal.
  - 2. Depth: As required to achieve specified Critical Fall Height as defined in ASTM F1292 but not more than depth indicated; maintain top elevation flush with adjacent grades.
  - 3. Color: As indicated on drawings.

4. Certification: Provide IPEMA certification of ASTM F1292 Critical Fall Height at thickness specified.
5. Manufacturers:
  - a. Gametime.
  - b. EMC.
  - c. Permalife
  - d. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Engineered Wood Fiber Fill: Manufactured for the purpose of protective surfacing; complying with ASTM F2075 and current ADA standards; do not use mulch manufactured from recycled pallets, or lumber containing nails or metal fasteners.
  1. Depth: As required to achieve specified Critical Fall Height as defined in ASTM F1292 but not more than depth indicated; maintain top elevation flush with adjacent grades.
  2. Certification: Provide IPEMA certification of ASTM F1292 Critical Fall Height at thickness specified.
  3. Manufacturers:
    - a. Fibar Systems: [www.fibar.com/#sle](http://www.fibar.com/#sle).
    - b. GameTime, Inc: [www.gametime.com/#sle](http://www.gametime.com/#sle).
    - c. Sof' Fall : [www.sof-fall.com/#sle](http://www.sof-fall.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Geotextile: Nonwoven polypropylene sheet.
- D. Aggregate Subbase: See Section 32 11 23.

### PART 3 EXECUTION

#### 3.1 PREPARATION FOR REPLACEMENT OF EXISTING LOOSE FILL SURFACING

- A. Remove existing loose fill.
- B. Measure the location of all playground elements, including perimeter of existing protective surfacing, access and egress points, hard surfaces, walls, fences, and structures, and planting locations.
- C. Stake the layout of the entire Use Zone perimeter before starting any work, based on Contract Documents.
  1. Verify that Use Zone perimeters do not overlap hard surfaces, whether currently installed or not.
  2. If overlaps exist, notify Architect.
  3. Do not proceed until revised drawings have been provided, showing corrected layout.
- D. Inside Use Zones remove all obstructions that would extend into the resilient protective surfacing.
- E. After subgrade is correct, mark intended depth of surfacing on the base supports of each item of playground equipment using paint or tape in a manner that will be easily verifiable during installation of surfacing.
- F. Perform percolation test at the lowest elevation of the subgrade in the areas to be covered by protective surfacing.
  1. Report results to Architect.
  2. If percolation is less than 1 inch in a 3 hour period, do not proceed.

### 3.2 EXAMINATION

- A. Playground equipment installer will perform playground layout prior to installation of footings; verify correctness of layout before starting this work.
- B. Verify that playground equipment and site furnishings and irrigation system located within playground area are complete.
- C. Verify location of underground utilities and facilities in the playground area. Damage to underground utilities and facilities will be repaired at Contractor's expense.
- D. Verify that subgrades are at proper elevations and that smooth grading is complete.
- E. Verify that proper depth of surfacing is marked on base supports of playground equipment.

### 3.3 PREPARATION

- A. Correct subgrade irregularities to ensure that required depth of protective surfacing can be installed, and subgrade elevation is in accordance with manufacturer's requirements.
- B. Inside Use Zones remove all obstructions that would extend into the resilient protective surfacing.
- C. Remove rocks, debris, and other similar items.

### 3.4 SUBBASE

- A. Install aggregate subbase as indicated on drawings and in Section 32 11 23. Compact aggregate to maximum 95 percent, in accordance with ASTM D1557.
- B. Install with top surface of subbase no higher than grades and levels indicated and not more than 1/4 inch lower than grades and levels indicated.
- C. Install in true, even plane, sloped to provide positive drainage.
- D. Flatness Tolerance: 1/4 inch in 10 feet, maximum.

### 3.5 RESILIENT SURFACING LAYER

- A. Install in accordance with CPSC Pub. No. 325, ASTM F1487, manufacturer's instructions, and requirements of authorities having jurisdiction (AHJ).
- B. Install proper thickness throughout Use Zone(s).
- C. Clean and dry surface of subbase.
- D. Cover aggregate subbase with geotextile:
  - 1. Verify that aggregate is free of ruts or protruding objects.
  - 2. Lap minimum 4 inches width at seams. Adhere seams in accordance with manufacturer's recommendations.
  - 3. Install smooth, and free of tensile stresses, folds, or wrinkles.
  - 4. Protect from clogging, tears, or other damage during surfacing installation.
  - 5. Repair or replace damaged geotextile in accordance with manufacturer's recommendations.

### 3.6 LOOSE FILL SURFACING

- A. Install in accordance with CPSC Pub. No. 325, ASTM F1487, and requirements of authorities having jurisdiction (AHJ).

- B. Cover Subgrade with Geotextile:
  - 1. Lap minimum 4 inches width at seams. Adhere seams in accordance with manufacturer's recommendations.
  - 2. Install smooth, and free of tensile stresses, folds, or wrinkles.
  - 3. Protect from clogging, tears, or other damage during surfacing installation.
  - 4. Repair or replace damaged geotextile in accordance with manufacturer's recommendations.
- C. Install loose fill to depths indicated, with smooth even surface flush with tops of containment curbs.

### 3.7 FIELD QUALITY CONTROL

- A. Obtain the services of the equipment manufacturer's field representative to review the finished installation for compliance with specified requirements and with design criteria to the extent known to the Contractor; submit report of field review.
- B. Owner or Owner's representative will inspect playground surfacing after installation to verify that surfacing is of proper type and depth and that playground meets specified design safety and accessibility requirements.
- C. Repair or replace rejected work until compliance is achieved.

### 3.8 CLEANING AND PROTECTION

- A. Restore adjacent existing areas that have been damaged from the construction.
- B. Clean playground equipment of construction materials, dirt, stains, filings, and blemishes due to shipment or installation. Clean in accordance with manufacturer's instructions, using cleaning agents as recommended by manufacturer.
- C. Clean playground area of excess construction materials, debris, and waste.
- D. Remove excess and waste material and dispose of off-site in accordance with requirements of authorities having jurisdiction.
- E. Protect installed products until Date of Substantial Completion.
- F. Replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 32 31 13  
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Posts, rails, and frames.
- B. Wire fabric.
- C. Concrete.
- D. Manual gates with related hardware.
- E. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete anchorage for posts.
- B. Section 08 71 00 - Door Hardware: Gate locking device.

1.3 REFERENCE STANDARDS

- A. ASTM A121 - Standard Specification for Metallic-Coated Carbon Steel Barbed Wire; 2013 (Reapproved 2017).
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- D. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a (Reapproved 2017).
- E. ASTM A428/A428M - Standard Test Method for Weight (Mass) of Coating on Aluminum-Coated Iron or Steel Articles; 2010 (Reapproved 2014).
- F. ASTM A491 - Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric; 2011 (Reapproved 2017).
- G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- H. 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.
- I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.
- J. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2014a.
- K. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric; 2017.
- L. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework; 2018.

- M. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 2018.
- N. CLFMI CLF-SFR0111 - Security Fencing Recommendations; 2014.
- O. FS RR-F-191/1D - Fencing, Wire and Post Metal (Chain-Link Fence Fabric); 1990.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components. See CLFMI CLF-SFR0111 for planning and design recommendations.
- D. Manufacturer's Installation Instructions: Indicate installation requirements, post foundation anchor bolt templates, and shop drawings.
- E. Manufacturer's Qualification Statement.
- F. Fence Installer Qualification Statement.
- G. Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Fence Installer: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.

#### 1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a 2 year period after Date of Substantial Completion.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Chain Link Fences and Gates:
  - 1. Master-Halco, Inc.: [www.masterhalco.com](http://www.masterhalco.com).
  - 2. Merchants Metals: [www.merchantsmetals.com](http://www.merchantsmetals.com).
  - 3. Wheatland Tube Company: [www.wheatland.com](http://www.wheatland.com).

#### 2.2 COMPONENTS

- A. Line Posts:
  - 1. Up to 6 feet high: 1.9 inch O.D.
- B. Corner and Terminal Posts:
  - 1. Up to 6 feet high: 2.375 inch O.D.

C. Gate Posts:

Gate Fabric Height Up To & Including 6 ft		Gate Fabric Height Over 6 ft To 12 ft	
Gate Leaf Width	Outside Diameter	Gate Leaf Width	Outside Diameter
up to 4 ft	2.375 in	up to 6 ft	2.875 in
over 4 ft to 10 ft	2.875 in	over 6 ft to 12 ft	4.000 in
over 10 ft to 18 ft	4.000 in	over 12 ft to 18 ft	6.625 in
		over 18 ft to 24 ft	8.625 in

D. Fabric: 2 inch diamond mesh interwoven wire, 9 gauge, 0.1483 inch thick, top selvage knuckle end closed, bottom selvage knuckle end closed or equivalent.

E. Tie Wire: 9 gauge aluminum core; vinyl coated to 6 gauge.

2.3 MATERIALS

A. Posts, Rails, and Frames:

B. Line Posts: Type I round in accordance with FS RR-F-191/1D.

C. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round in accordance with FS RR-F-191/1D.

2.4 MANUAL GATES AND RELATED HARDWARE

A. Hardware for Single Swinging Gates: 180 degree box hinges, 2 for gates up to 60 inches high, 3 for taller gates; strong arm latch.

B. Hardware for Double Swinging Gates: 180 degree box hinges, 2 for gates up to 60 inches high, 3 for taller gates; strong arm latch.

C. Hardware for Double Swinging Vehicle Gates: 180 degree box hinges, 2 for gates up to 60 inches high, 3 for taller gates; strong arm latch, drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp.

2.5 ACCESSORIES

A. Caps: Cast steel galvanized; Vinyl coated sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; Cast Steel Galvanized.

2.6 FINISHES

A. Vinyl coated over coating of 1.8 ounces per square foot galvanizing.

B. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.

C. Accessories: Same finish as framing.

D. Color(s): To be selected by Architect from manufacturer's standard range.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Verify that areas are clear of obstructions or debris.

### 3.2 PREPARATION

- A. Removal: Obstructions or debris.
- B. Ground Preparation:

### 3.3 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ASTM F567.
- B. Place fabric on outside of posts and rails.
- C. Set intermediate posts plumb, in concrete footings with top of footing 3 inches below finish grade. Slope top of concrete for water runoff.
- D. Line Post Footing Depth Below Finish Grade: ASTM F 567.
- E. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F 567.
- F. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.
- G. Provide top rail through line post tops and splice with 6 inch long rail sleeves.
- H. Install center brace rail on corner gate leaves.
- I. Do not stretch fabric until concrete foundation has cured 7 days.
- J. Stretch fabric between terminal posts or at intervals of 500 foot maximum, whichever is less.
- K. Position bottom of fabric 2 inches above finished grade.
- L. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.
- M. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
- N. Install bottom tension wire stretched taut between terminal posts.
- O. Do not attach the hinged side of gate to building wall; provide gate posts.
- P. Install hardware and gate with fabric to match fence.
- Q. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.

### 3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.
- C. Do not infringe on adjacent property lines.



### 3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Layout: Verify that fence installation markings are accurate to design, paying attention to gate locations, underground utilities, and property lines.
- C. Post Settings: Randomly inspect three locations against design for:
  - 1. Hole diameter.
  - 2. Hole depth.
  - 3. Hole spacing.
- D. Fence Height: Randomly measure fence height at three locations or at areas that appear out of compliance with design.
- E. Gates: Inspect for level, plumb, and alignment.

### 3.6 CLEANING

- A. Leave immediate work area neat at end of each work day.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.
- D. Remove mortar from exposed posts and other fencing material using a 10 percent solution of muriatic acid followed immediately by several rinses with clean water.
- E. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

END OF SECTION



SECTION 32 33 00  
SITE FURNISHINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Benches.
- B. Columns.
- C. Planters.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Bollard infill and underground encasement.
- B. Section 05 50 00 - Metal Fabrications: Anchors to attach site furnishings to mounting surfaces.
- C. Section 05 50 00 - Metal Fabrications: Utilitarian concrete filled steel pipe bollards.

1.3 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2018.
- E. ASTM A536 - Standard Specification for Ductile Iron Castings; 1984 (Reapproved 2014).

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.5 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's warranty against defects in materials or workmanship for ductile iron castings for a period of 10 years from Date of Substantial Completion.
- C. Provide manufacturer's Lifetime Warranty against defects in materials or workmanship for wood benches manufactured from solid teak.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Metal Furnishings:

1. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Precast Furnishings:
  1. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Steel Pipe Bollards:
  1. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Wood Benches:
  1. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.2 METAL FURNISHINGS

- A. Metal Furnishings, General:
  1. Hardware: Stainless steel.
- B. Benches: Metal frame and seat section with back.
  1. Frame: Steel.
  2. Seat: Wood slat.

## 2.3 WOOD BENCHES

- A. Materials:
  1. Wood: Solid, A -Grade Teak.
  2. Factory Finish: Natural.
- B. Benches: Solid wood supports and seat section with back.
- C. Products:
  1. Substitutions: See Section 01 60 00 - Product Requirements.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify proper installation of mounting surfaces, preinstalled anchor bolts, and other mounting devices; and ready to receive site furnishing items.
- B. See Section 05 50 00 for anchors to attach site furnishings to mounting surfaces.
- C. Do not begin installation until unacceptable conditions are corrected.

### 3.2 INSTALLATION

- A. Provide level mounting surfaces for site furnishing items.

END OF SECTION

SECTION 32 33 44  
PLAYGROUND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Playground layout (staking).
- B. Concrete footings for playground equipment.
- C. Playground equipment.
- D. Location of each item of playground equipment is indicated on drawings.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Footings for playground equipment.
- B. Section 31 22 00 - Grading: Shaping subgrade to specified grade levels; removal of excess soil and rocks.
- C. Section 32 18 16.13 - Playground Protective Surfacing: Protective surfacing in playground area.

1.3 DEFINITIONS

- A. Play Event: A piece of playground equipment that supports one or more play activities.
- B. Use Zone: Area under and around a play event within which the ground surfacing must meet fall impact attenuation requirements of ASTM F1292 when tested at the fall height specified for the play event.
- C. Fall Height: Vertical distance between the finished elevation of the designated play surface and the finished elevation of the protective surfacing beneath it, as defined in ASTM F1487.
- D. Protective Surfacing: Resilient ground surfacing, specified in Section 32 1816.13. The characteristics of the protective surfacing are based on the fall height of the playground equipment. Changes in either the surfacing or the fall height, particularly reducing the resilience of the protective surfacing or increasing the fall height, will reduce safety-related performance.
- E. Subgrade: Surface of the ground on which the protective surfacing is installed; the subbase for the protective surfacing is installed over the subgrade.

1.4 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A135/A135M - Standard Specification for Electric-Resistance-Welded Steel Pipe; 2009 (Reapproved 2014).
- C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2018.
- D. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2018.

- E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- G. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.
- H. ASTM F1292 - Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment; 2018.
- I. ASTM F1487 - Standard Consumer Safety Performance Specification for Playground Equipment for Public Use; 2017.
- J. CPSC Pub. No. 325 - Public Playground Safety Handbook; 2010.

#### 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Proposals for Substitutions: Substitutions that will increase fall height, platform height, or maximum equipment height will not be considered; submit shop drawings with proposed modifications clearly identified and sufficient information to determine compliance with specified criteria.
- C. Product Data: For manufactured equipment, provide manufacturer's product data showing materials of construction, compliance with specified standards, installation procedures, safety limitations, and the number of users permitted.
  - 1. Treated Wood Products: Provide information on wood treatment chemical content, toxicity level, and life-cycle durability.
  - 2. Wood Finishes: Provide information on wood finish chemical content and toxicity level.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

#### 1.6 QUALITY ASSURANCE

- A. Maintain one copy of the latest edition of ASTM F1487 and CPSC Pub. No. 325 at project site.
- B. Installer Qualifications: Company certified by manufacturer for training and experience installing play events and equipment.

#### 1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide minimum 5 year warranty for playground equipment.

### PART 2 PRODUCTS

#### 2.1 PLAYGROUND EQUIPMENT - GENERAL

- A. Design Assumptions: Because the safety of the playground depends on strict compliance with design criteria, this information is provided for Contractor's information.
  - 1. Playground has been designed for children ages 2 through 5.

2. If deviations from specified dimensions, especially fall heights, is required, obtain approval prior to proceeding; follow approval request procedure as specified for substitutions.
- B. Mount equipment on concrete footings, unless otherwise indicated.
  1. Playground protective surfacing constitutes a resilient layer installed over a subbase (non-resilient) that is installed over subgrade; top of footings and anchorage devices is to be covered by full depth of resilient portion of protective surfacing.
  2. Protective Surfacing Depth: As indicated on drawings.
  3. Provide supports as required to mount equipment at proper height above finish and sub-grades to allow installation of sufficient depth of protective surfacing; portion of support below top of surfacing must comply with specified requirements for equipment.
  4. Paint portion of support that is intended to be installed below top surface of protective surfacing a different color, or mark in other permanent way, so that installers and maintainers of protective surfacing can easily determine whether sufficient depth has been installed.
- C. Provide permanent label for each equipment item stating age group that equipment was designed for, manufacturer identification, and warning labels in accordance with ASTM F1487.

## 2.2 PLAYGROUND EQUIPMENT

- A. Comply with ASTM F1487 and CPSC Pub. No. 325; provide equipment complying with specified requirements for relevant age group(s).
  1. Provide components having factory-drilled holes; do not use components with extra holes that will not be filled by hardware or covered by other components.
- B. Slides: Slide bed, ship's ladder with handrails, and platform.
  1. Location: As indicated on drawings.
  2. Slide Bed: Rigid, molded ultraviolet stabilized polyethylene, with anti-static additives, segmented enclosed tube construction.
  3. Treads and Handrails: Solid wood with stringers of wood.
  4. Fall Height - Ages Two to Five: 30 inches, maximum.
  5. Fall Height - Ages Five to Twelve: 48 inches, maximum.
  6. Width: As indicated on drawings.
  7. Width: 14 inches.
  8. Maximum Slope: 1:5.1.
  9. Manufacturers:
    - a. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Crawl Tubes:
  1. Location: As indicated on drawings.
  2. Certification: Provide International Play Equipment Manufacturers Association (IPEMA) certification that indicates product complies with ASTM F1487, excluding sections 7.1.1, 10, and 12.6.1.
  3. Manufacturers:
    - a. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.3 MATERIALS

- A. Steel Pipe and Tube: Comply with ASTM A135/A135M, ASTM A500/A500M, or ASTM A513/A513M; hot-dipped galvanized and free of excess weld and spatter.
  1. Tensile Strength: 45,000 psi, minimum.
  2. Yield Point: 33,000 psi, minimum.
  3. Galvanizing: Hot-dip metal components in zinc after fabrication, in accordance with ASTM A123/A123M; remove tailings and sharp protrusions and burnish edges.

- B. Extruded Aluminum: ASTM B221 or ASTM B221M, Alloy 6061, 6062, or 6063.
  - 1. Tensile Strength: 39,000 psi, minimum.
  - 2. Yield Point: 36,500 psi, minimum.
- C. Hardware: Provide without hazardous protrusions, corners, or finishes, and that require tools for removal after installation; countersunk fasteners are preferred.
  - 1. Use stainless steel for metal-to-metal connections; select type to minimize galvanic corrosion of materials connected by hardware.
  - 2. Use stainless steel for wood-to-wood and wood-to-metal connections.
  - 3. Use stainless steel with plastic components.
  - 4. Bearings: Self lubricating.
  - 5. Hooks, Including S-Hooks: Closed loop; maximum gap 0.04 inches, less than the thickness of a dime.
  - 6. Rails, Loops, and Hand Bars: Same metal as item is mounted on or aluminum; with powder coating.
  - 7. Anchors: In accordance with manufacturer's recommendations.
- D. Boards and Timbers: Free of holes, cracks, and loose knots; do not use wood or wood coatings that contain pesticides; do not utilize used lumber.

### PART 3 EXECUTION

#### 3.1 VERIFICATION OF CONDITIONS

- A. Verify that playground equipment footings have been installed in proper locations and at proper elevations.
- B. Verify location of underground utilities and facilities in playground area; damage to underground utilities and facilities will be repaired at Contractor's expense.

#### 3.2 PREPARATION

- A. Stake location of playground elements, including Use Zone perimeters, perimeter of protective surfacing, access and egress points, hard surfaces, walls, fences, and structures, and planting locations.
- B. Stake layout of entire Use Zone perimeter before starting any work and before subbase under resilient surfacing is laid.
  - 1. Verify that Use Zone perimeters do not overlap hard surfaces, whether currently installed or not.
  - 2. Verify that Use Zones are free of obstructions that would extend into resilient portion of protective surfacing.
  - 3. If conflicts or obstructions exist, notify Architect.
  - 4. Do not proceed until revised drawings have been provided, showing corrected layout, and obstructions have been removed.

#### 3.3 INSTALLATION

- A. Coordinate work with preparation for and installation of protective surfacing specified in Section 32 18 16.13; install engineered wood fiber protective surfacing after playground equipment installation.
- B. Install in accordance with CPSC Pub. No. 325, ASTM F1487, manufacturer's instructions, and requirements of authorities having jurisdiction (AHJ).
- C. Anchor equipment securely below bottom elevation of resilient surfacing layer.



- D. Install without sharp points, edges or protrusions, entanglement hazards, pinch, crush, or shear points.
- E. Do not modify play events on site without written approval of manufacturer.
- F. Install required signage if not factory-installed.

### 3.4 FIELD QUALITY CONTROL

- A. Obtain the services of the equipment manufacturer's field representative to review the finished installation for compliance with specified requirements and with design criteria to the extent known to the Contractor; submit report of field review.
- B. Certified playground installer is responsible for obtaining third party safety audit after installation to verify that playground meets specified design safety and accessibility requirements.
- C. Repair or replace rejected work until compliance is achieved.

### 3.5 CLEANING

- A. Restore adjacent existing areas that have been damaged from the construction.
- B. Clean playground equipment of construction materials, dirt, stains, filings, and blemishes due to shipment or installation; clean in accordance with manufacturer's instructions, using cleaning agents as recommended by manufacturer.
- C. Clean playground area of excess construction materials, debris, and waste.
- D. Remove excess and waste material and dispose of off-site in accordance with requirements of authorities having jurisdiction (AHJ).

### 3.6 PROTECTION

- A. Protect installed products until Date of Substantial Completion.
- B. Replace damaged products before Date of Substantial Completion.

END OF SECTION



SECTION 32 92 19  
SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Hydroseeding, mulching and fertilizer.
- D. Maintenance.

1.2 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
- B. Section 31 23 23 - Fill: Topsoil material.

1.3 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

1.4 DEFINITIONS

- A. Weeds: Include 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.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Topsoil samples.
- C. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- E. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer .

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

## 1.7 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum five years documented experience.

## PART 2 PRODUCTS

### 2.1 SEED MIXTURE

- A. Seed Mixture: General Lawn Areas, Evergreen Professional 80/20 mix by Banfield Baker or approved equal
  - 1. 40% Diva Kentucky Bluegrass
  - 2. 40% Guinness Kentucky Bluegrass
  - 3. 10% Palmer IV Perennial Ryegrass
  - 4. 10% Double Time Perennial Ryegrass

### 2.2 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.

### 2.3 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Mulching Material: Pelleted, biodegradable, dry recycled paper fiber, free from weeds, formulated to absorb and release water continually during seeding establishment.
  - 1. Integral tackifier and starter fertilizer.
  - 2. Manufacturer:
    - a. Lebanon Turf; PennMulch: [www.lebanonturf.com](http://www.lebanonturf.com).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.
- D. Erosion Fabric: Jute matting, open weave. Provide on all disturbed slopes of 3:1 or greater.

### 2.4 TESTS

- A. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- B. Submit minimum 10 oz sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.
- C. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

#### 3.2 PREPARATION

- A. Prepare subgrade in accordance with Section 31 22 00.
- B. Place topsoil in accordance with Section 31 22 00.

#### 3.3 FERTILIZING

- A. Apply fertilizer at a rate of soil analysis recommendations.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

#### 3.4 SEEDING

- A. Apply seed at a rate of 10 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded area with roller not exceeding 112 lbs.
- E. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
  - 1. Where pelleted mulch is incorporated, apply at manufacturer's recommended rate of coverage.
- F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
- G. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

#### 3.5 HYDROSEEDING

- A. Apply seeded slurry with a hydraulic seeder at a rate of 10 lbs per 1000 sq ft evenly in two intersecting directions.
- B. Do not hydroseed area in excess of that which can be mulched on same day.
- C. Immediately following seeding, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

- E. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

### 3.6 PROTECTION

- A. Cover seeded slopes where grade is 36 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36 inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

### 3.7 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will pay for water.
- B. See Section 01 70 00 - Execution Requirements, for additional requirements relating to maintenance service.
- C. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.
- D. 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.
- E. Neatly trim edges and hand clip where necessary.
- F. Immediately remove clippings after mowing and trimming.
- G. Water to prevent grass and soil from drying out.
- H. Roll surface to remove minor depressions or irregularities.
- I. Control growth of weeds.
- J. Immediately reseed areas that show bare spots.
- K. Protect seeded areas with warning signs during maintenance period.

END OF SECTION

SECTION 32 92 23  
SODDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Fertilizing.
- D. Sod installation.
- E. Maintenance.

1.2 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Topsoil material.
- B. Section 31 22 00 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
- C. Section 31 23 23 - Fill: Topsoil material.

1.3 DEFINITIONS

- A. 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.

1.4 REFERENCE STANDARDS

- A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; 2006.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Certificate: Certify grass species and location of sod source.

1.6 QUALITY ASSURANCE

- A. Sod Producer: Company specializing in sod production and harvesting with minimum five years experience, and certified by the State of New York.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sod on pallets. Protect exposed roots from dehydration.
- B. Do not deliver more sod than can be laid within 24 hours.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Sod: TPI (SPEC), Certified Turfgrass Sod quality; cultivated grass sod; type indicated in plant schedule on Drawings; with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sq ft. Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.
  - 1. Kentucky Blue Grass Type: 100 percent.
  - 2. Machine cut sod and load on pallets in accordance with TPI (SPEC) Guidelines.
- B. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay, or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.
- C. Fertilizer: Submit for approval; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated by analysis.
- D. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

### 2.2 SOURCE QUALITY CONTROL

- A. Provide analysis of topsoil fill under provisions of Section 01 40 00.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- C. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this section.

### 3.2 PREPARATION

- A. Prepare subgrade in accordance with Section 31 22 00.
- B. Place topsoil in accordance with Section 31 22 00.

### 3.3 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil and prior to installation of sod.
- C. Apply fertilizer no more than 48 hours before laying sod.



- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

### 3.4 LAYING SOD

- A. Moisten prepared surface immediately prior to laying sod.
- B. Lay sod immediately after delivery to site to prevent deterioration.
- C. Lay sod smooth and tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.
- D. Where new sod adjoins existing grass areas, align top surfaces.
- E. Where sod is placed adjacent to hard surfaces, such as curbs, pavements, etc., place top elevation of sod 1/2 inch below top of hard surface.
- F. On slopes 6 inches per foot and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.
- G. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.
- H. After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities. Roll sodded areas with roller not exceeding 110 lbs.

### 3.5 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will pay for water.
- B. Maintain sodded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.
- C. 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.
- D. Neatly trim edges and hand clip where necessary.
- E. Immediately remove clippings after mowing and trimming.
- F. Water to prevent grass and soil from drying out.
- G. Roll surface to remove irregularities.
- H. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- I. Immediately replace sod to areas that show deterioration or bare spots.
- J. Protect sodded areas with warning signs during maintenance period.

END OF SECTION



SECTION 32 93 00  
PLANTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Topsoil bedding.
- C. New trees, plants, and ground cover.
- D. Relocated trees, plants, and ground cover.
- E. Mulch and Fertilizer.
- F. Maintenance.
- G. Tree Pruning.

1.2 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Topsoil material.
- B. Section 31 23 23 - Fill: Topsoil material.

1.3 PRICE AND PAYMENT PROCEDURES

- A. Unit Prices:
  - 1. See Section 01 22 00 - Unit Prices, for additional unit price requirements.
  - 2. Topsoil: By the cubic yard. Includes topsoil, placing topsoil.
  - 3. Plants: By the unit. Includes preparation of subsoil, placing topsoil, planting, watering and maintenance to specified time period.

1.4 DEFINITIONS

- A. Weeds: Any plant life not specified or scheduled.
- B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.5 REFERENCE STANDARDS

- A. ANSI/AHIA Z60.1 - American National Standard for Nursery Stock; 2014.
- B. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices; 2017.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Maintenance Data: Include cutting and trimming method; types, application frequency, and recommended coverage of fertilizer.
- C. Submit list of plant life sources.

- D. Maintenance Contract.

#### 1.7 QUALITY ASSURANCE

- A. Nursery Qualifications: Company specializing in growing and cultivating the plants with three years documented experience.
- B. Installer Qualifications: Company specializing in installing and planting the plants with 5 years experience.
- C. Tree Pruner Qualifications: Company specializing in pruning trees with proof of Arborist Certification.
- D. Maintenance Services: Performed by installer.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- B. Protect and maintain plant life until planted.
- C. Deliver plant life materials immediately prior to placement. Keep plants moist.

#### 1.9 FIELD CONDITIONS

- A. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.
- B. Do not install plant life when wind velocity exceeds 30 mph.

#### 1.10 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year warranty.
- C. Warranty: Include coverage for one continuous growing season; replace dead or unhealthy plants.
- D. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

### PART 2 PRODUCTS

#### 2.1 PLANTS

- A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

#### 2.2 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; minimum pH value of 5.4 and maximum 7.0.

## 2.3 SOIL AMENDMENT MATERIALS

- A. Fertilizer: Containing fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated in analysis.
- B. Peat Moss: Shredded, loose, sphagnum moss; free of lumps, roots, inorganic material or acidic materials; minimum of 85 percent organic material measured by oven dry weight, pH range of 4 to 5; moisture content of 30 percent.
- C. Bone Meal: Raw, finely ground, commercial grade, minimum of 3 percent nitrogen and 20 percent phosphorous.
- D. Lime: Ground limestone, dolomite type, minimum 95 percent carbonates.
- E. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous growth of plants.

## 2.4 MULCH MATERIALS

- A. Mulching Material: Double Ground Hardwood, Dark Brown in color species wood shavings, free of growth or germination inhibiting ingredients.

## 2.5 ACCESSORIES

- A. Wrapping Materials: Burlap.
- B. Stakes: Softwood lumber, pointed end.
- C. Cable, Wire, Eye Bolts and Turnbuckles: Non-corrosive, of sufficient strength to withstand wind pressure and resulting movement of plant life.
- D. Plant Protectors: Rubber sleeves over cable to protect plant stems, trunks, and branches.
- E. Landscape Fabric: Non-woven, needle punched, polypropylene, fabric; Mirafi MSCALE, or approved equal.

## 2.6 PLANT SOIL MIX

- A. A uniform mixture of 1 part peat and 3 parts topsoil by volume.

## 2.7 SOURCE QUALITY CONTROL

- A. Provide analysis of topsoil; comply with requirements of Section 01 40 00.
- B. Provide testing of imported topsoil.
- C. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Verify that prepared subsoil and planters are ready to receive work.
- B. Saturate soil with water to test drainage.

- C. Verify that required underground utilities are available, in proper location, and ready for use.

### 3.2 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.
- C. Scarify subsoil to a depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- D. Dig pits and beds 6 inches larger than plant root system.

### 3.3 PLACING TOPSOIL

- A. Spread topsoil to a minimum depth of 4 inches over area to be planted. Rake smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- E. Install topsoil into pits and beds intended for plant root balls, to a minimum thickness of 6 inches.

### 3.4 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after initial raking of topsoil.
- C. Mix thoroughly into upper 2 inches of topsoil.
- D. Lightly water to aid the dissipation of fertilizer.

### 3.5 PLANTING

- A. Place plants for best appearance for review and final orientation by Architect.
- B. Set plants vertical.
- C. Remove non-biodegradable root containers.
- D. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.
- E. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.
- F. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

### 3.6 PLANT RELOCATION AND RE-PLANTING

- A. Relocate plants as indicated by Architect.
- B. Replant plants in pits or beds, partly filled with prepared topsoil mixture, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.

- C. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant materials in vertical position.
- D. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

### 3.7 INSTALLATION OF ACCESSORIES

- A. Wrap deciduous shade and flowering tree trunks and place tree protectors.

### 3.8 PLANT SUPPORT

- A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:
  - 1. Tree Caliper: 1 inch; Tree Support Method: 1 stake with one tie
  - 2. Tree Caliper: 1 to 2 inches; Tree Support Method: 2 stakes with two ties
  - 3. Tree Caliper: 2 to 4 inches; Tree Support Method: 3 stakes with 2 ties
  - 4. Tree Caliper: Over 4 inches; Tree Support Method: 4 guy wires with eye bolts and turn buckles

### 3.9 TREE PRUNING

- A. Prune trees as recommended in ANSI A300 Part 1.
- B. Prune newly planted trees as required to remove dead, broken, and split branches.

### 3.10 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 40 00.
- B. Plants will be rejected if a ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

### 3.11 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will pay for water.
- B. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- C. Provide a separate maintenance contract for specified maintenance service.
- D. Maintain plant life immediately after placement and until plants are well established and exhibit a vigorous growing condition. Continue maintenance until termination of warranty period.
- E. Irrigate sufficiently to saturate root system and prevent soil from drying out.
- F. Remove dead or broken branches and treat pruned areas or other wounds.
- G. Neatly trim plants where necessary.
- H. Immediately remove clippings after trimming.
- I. Control growth of weeds.
- J. Control insect damage and disease.
- K. Maintain wrappings, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.

END OF SECTION





SECTION 33 01 10.58  
DISINFECTION OF WATER UTILITY PIPING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Disinfection of site domestic water lines specified in Section 33 14 16.
- B. Disinfection of building domestic water piping specified in Section 22 10 05.
- C. Testing and reporting results.

1.2 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping and Specialties: Disinfection of building domestic water piping system.
- B. Section 33 14 16 - Water Utility Distribution Piping.

1.3 REFERENCE STANDARDS

- A. AWWA B300 - Hypochlorites; 2018.
- B. AWWA B301 - Liquid Chlorine; 2010.
- C. AWWA B302 - Ammonium Sulfate; 2016.
- D. AWWA B303 - Sodium Chlorite; 2018.
- E. AWWA C651 - Disinfecting Water Mains; 2014.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Test Reports: Indicate results comparative to specified requirements.
- C. Certificate: From authority having jurisdiction indicating approval of water system.
- D. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.
- E. Disinfection report:
  - 1. Type and form of disinfectant used.
  - 2. Date and time of disinfectant injection start and time of completion.
  - 3. Test locations.
  - 4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
  - 5. Date and time of flushing start and completion.
  - 6. Disinfectant residual after flushing in ppm for each outlet tested.
- F. Bacteriological report:
  - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
  - 2. Time and date of water sample collection.
  - 3. Name of person collecting samples.
  - 4. Test locations.

5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
6. Coliform bacteria test results for each outlet tested.
7. Certification that water complies, or fails to comply, with bacterial standards of the Authorities Having Jurisdiction.

#### 1.5 QUALITY ASSURANCE

- A. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this Section with minimum three years documented experience.
- B. Testing Firm: Company specializing in testing potable water systems, certified by governing authorities of the State of New York.
- C. Submit bacteriologist's signature and authority associated with testing.

### PART 2 PRODUCTS

#### 2.1 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300, Hypochlorite, AWWA B301, Liquid Chlorine, AWWA B302, Ammonium Sulfate, and AWWA B303, Sodium Chlorite.

### PART 3 EXECUTION

- 3.1 NO HEAVILY CHLORINATED WATER SHALL BE DISCHARGED INTO ANY WATERWAY OR SEWER SYSTEM. A MINIMUM OF 150' OF OVERLAND FLOW SHALL BE REQUIRED BEFORE ENTERING THE ABOVE REFERENCED DISCHARGE LOCATIONS. IN ALL CASES, HEAVILY CHLORINATED WATER DISPOSAL SHALL BE IN ACCORDANCE WITH AWWA C651 - SECTION 6.2, AND APPENDIX B.

#### 3.2 PRELIMINARY FLUSHING

- A. The main shall be flushed prior to disinfection at a flushing velocity of not less than 3 ft/sec. The rate of flow required to produce this velocity in various diameters is shown below.

Required Opening to Flush Pipelines  
(40-psi Residual Pressure)

Pipe size in.	Flow required to produce 3 fps velocity gpm
6	270
8	470
10	730
12	1100
14	1440

3.3 NO SITE FOR FLUSHING SHOULD BE CHOSEN UNLESS IT HAS BEEN DETERMINED THAT DRAINAGE IS ADEQUATE AT THAT SITE.

3.4 FORM OF CHLORINE FOR DISINFECTION

- A. The most common forms of chlorine used in the disinfecting solutions are calcium hypochlorite granules or sodium hypochlorite solutions.
- B. Calcium Hypochlorite: Calcium hypochlorite contains 70 percent available chlorine by weight. calcium hypochlorite is packaged in containers of various types and sizes ranging from small plastic bottles to 100-lb drums.
  - 1. A chlorine-water solution is prepared by dissolving the granules in water in the proportion requisite for the desired concentration.
- C. Sodium Hypochlorite: Sodium hypochlorite is supplied in strengths from 5.25 to 16 percent available chlorine. It is packaged in liquid form in glass, rubber or plastic containers ranging in size from 1-qt. bottles to 5-gal. carboys. It may also be purchased in bulk for delivery by tank truck.
  - 1. The chlorine-water solution is prepared by adding hypochlorite to water. Product deterioration must be reckoned with in computing the quantity of sodium hypochlorite required for the desired concentration.
  - 2. Application: The hypochlorite solutions shall be applied to the water main with a gasoline or electrically-powered chemical feed pump designed for feeding chlorine solutions. For small applications the solutions may be fed with a hand pump, for example, a hydraulic test pump. Feed lines shall be of such material and strength as to withstand safely the maximum pressures that may be created by the pumps. All connections shall be checked for tightness before the hypochlorite solution is applied to the main.

3.5 METHODS OF CHLORINE APPLICATION

- A. Continuous Feed Method: This method is suitable for general application.
- B. Chlorine Required to Produce 50 Mg/l Concentration in 100 ft. of Pipe by Diameter

Pipe size in.	100 percent chlorine - lb.	1 percent chlorine solutions - gal.
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88
14	0.327	3.92

- C. Water from the existing distribution system or other approved sources of supply shall be made to flow at a constant, measured rate. The two rates shall be proportioned so that the chlorine concentration in the water in the pipe is maintained at a minimum of 50 mg/L available chlorine. To assure that this concentration is maintained, the chlorine residual should be measured at regular intervals in accordance with the procedures described in the current edition of Standard Methods and AWWA M12-Simplified Procedures for Water Examination.
  - 1. NOTE: In the absence of a meter, the rate may be determined either by placing a Pitot gage at the discharge or by measuring the time to fill a container of known volume.
- D. The table in paragraph above gives the amount of chlorine residual required for each 100 ft. of pipe of various diameters. Solutions of 1 percent chlorine may be prepared with sodium

hypochlorite or calcium hypochlorite. The latter solution requires approximately 1 lb. of calcium hypochlorite in 8.5 gal of water.

- E. During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the line supplying the water. Chlorine application shall not cease until the entire main is filled with the chlorine solution. The chlorinated water shall be retained in the main for at least 24 hr., during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. At the end of this 24 hr. period, the treated water shall contain no less than 25 mg/L chlorine throughout the length of the main.

### 3.6 EXAMINATION

- A. Verify that piping system and water well has been cleaned, inspected, and pressure tested.
- B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

### 3.7 DISINFECTION - PIPING

- A. Use method prescribed by the applicable state or local codes, or health authority or water purveyor having jurisdiction, or in the absence of any of these follow AWWA C651.
- B. Disinfection injection/ sampling taps shall be installed along the length of pipe at a distance no greater than 1,000 feet.
- C. Provide and attach equipment required to perform the work.
- D. Inject treatment disinfectant into piping system.
- E. Maintain disinfectant in system for 24 hours.
- F. Flush, circulate, and clean until required cleanliness is achieved; use municipal domestic water.
- G. Replace permanent system devices removed for disinfection.
- H. Pressure test system to 200 psi. Repair leaks and re-test.

### 3.8 FINAL FLUSHING

- A. After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than 1 mg/L. Chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipeline.

### 3.9 BACTERIOLOGIC TESTS

- A. After final flushing, and before the water main is placed in service, a sample or samples shall be collected from the end of the line and tested for bacteriologic quality and shall show the absence of coliform organisms. If the number and frequency of samples is not prescribed by the public health authority having jurisdiction, at least two samples shall be collected from throughout the new main from unchlorinated supplies. Samples shall be collected at least 24 hours apart.
  - 1. NOTE: In the case of extremely long mains, it is desirable that samples be collected the length of the line as well as at its end.
- B. Samples for bacteriologic analysis shall be collected in sterile bottles treated with sodium thiosulphate. No hose or fire hydrant shall be used in collection of samples. A suggested sampling tap consists of a standard corporation cock installed in the main with a copper tube

gooseneck assembly. After samples have been collected the gooseneck assembly may be removed, and retained for future use.

### 3.10 REPETITION OF PROCEDURE

- A. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained.

### 3.11 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 40 00.
- B. Test samples in accordance with AWWA C651.

END OF SECTION



SECTION 33 01 30.41  
CLEANING OF SEWERS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Sewer line cleaning shall remove foreign materials from the lines and restore the sewer to a minimum of 95% of the original carrying capacity, or as required for proper seating of internal pipe joint sealing packers or pipe lining systems, whichever is greater. Since the success of the other phases of work depends a great deal on the cleanliness of the lines, the importance of this phase of the operation is emphasized. If, during cleaning operations, damage results from the Contractor's negligence, the Contractor will be held responsible and shall notify the Engineer and/or Owner immediately of said damage.

PART 2 - PRODUCTS

2.1 CLEANING EQUIPMENT

- A. Light Cleaning With High-Velocity Jet (Hydrocleaning) Equipment: All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. Light cleaning shall be defined as up to three (3) passes with the high-velocity jet. All sections of sanitary sewer to be rehabilitated shall be light cleaned prior to rehabilitation.
- B. Heavy Cleaning with Mechanically Powered Equipment: Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be allowed. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 750 feet of rod. The rod shall be specifically heat-treated steel. To insure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve. Heavy cleaning shall be completed as ordered by the Engineer and/or Owner and shall be ordered where light cleaning is insufficient or light cleaning equipment cannot be passed through the line due to excessive build-up of foreign materials.
- C. Root Removal: Root removal shall be completed at the locations shown on the drawings or where otherwise necessary. The Contractor shall use mechanical root removal equipment.

PART 3 - EXECUTION

3.1 CLEANING PRECAUTIONS

- A. During sewer cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment which shall insure that the cleaning operation created does not damage or cause flooding of property being served by the sewer. When water for cleaning operations

is needed, the Contractor may use water in accordance with Section 01 51 00. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant. No direct connection between hydrant and cleaning equipment, tanks, etc., shall be allowed, unless otherwise approved by the Owner.

### 3.2 SEWER CLEANING

- A. The designated sewer sections shall be light cleaned using high velocity jet and/or heavy cleaned using mechanically powered equipment. Approval of this method shall be based on the conditions of lines at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed, or the equipment fails to traverse the entire manhole section, it will be assumed that a major blockage exists, the cleaning effort shall be abandoned, and the Engineer and/or Owner shall be notified. Manholes at each end of the sewer reach cleaned, shall also be cleaned.

### 3.3 ROOT REMOVAL

- A. Roots shall be removed in the sections where root intrusion is a problem. Special attention should be used during the cleaning operation to assure complete removal of visible roots from the joints. Any roots which could prevent the seating of the packer, liner or could prevent the proper application of chemical sealants shall be removed. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners.

### 3.4 CHEMICAL ROOT TREATMENT

- A. To aid in the removal of roots and where approved by the Engineer, sewer sections that have root intrusion may be treated with an approved herbicide. The application of the herbicide to the roots shall be done in accordance with the manufacturer's recommendations and specifications in such a manner to preclude damage to surrounding vegetation. Any damaged vegetation so designated by the Engineer and/or Owner shall be replaced by the Contractor at no additional cost to the Owner. All safety precautions as recommended by the manufacturer shall be adhered to concerning handling and application of the herbicide.

### 3.5 MATERIAL REMOVAL

- A. Debris such as dirt, sand, rocks, grease, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section, which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.

### 3.6 DISPOSAL OF MATERIALS

- A. The Contractor shall dispose of all debris removed from the sewers during the cleaning operation at a site approved by the Department of Environmental Conservation or Department of Environmental Protection in the State of New York. The Engineer and Owner shall be notified immediately of any hazardous waste material encountered during this project.



### 3.7 FINAL ACCEPTANCE

- A. Acceptance of sewer line cleaning shall be made upon the successful completion of the television inspection and shall be to the satisfaction of the Engineer and Owner. If TV inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to re-clean and re-inspect the sewer line until the cleaning is shown to be satisfactory. If internal sealing or point repair sleeve is scheduled to follow the television inspection, particular attention shall be given to the adequacy of the cleaning to ensure that proper seating of the sealing packer can be achieved.

END OF SECTION



SECTION 33 14 16  
WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Water pipe for site conveyance lines.
- B. Exterior Ductile Iron Pipe and Fittings.
- C. DR11 HDPE Pipe and Fittings.
- D. Tracer Wire, Underground Warning tape.
- E. Bedding and cover materials.
- F. Pipe Supports.
- G. Joint Restraint Appurtenances.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for thrust restraints.
- B. Section 09 91 13 - Exterior Painting.
- C. Section 21 11 00 - Facility Fire-Suppression Water-Service Piping.
- D. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.
- E. Section 33 01 10.58 - Disinfection of Water Utility Piping Systems: Disinfection of site service utility water piping.

1.3 REFERENCE STANDARDS

- A. AASHTO HB - Standard Specifications for Highway Bridges; 2002, with Errata (2005).
- B. ASME B16.4 - Gray Iron Threaded Fittings: Classes 125 and 250; 2016.
- C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- E. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2016.
- F. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2011 (Amended 2012).
- G. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2017.
- H. AWWA C115/A21.15 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges; 2011.
- I. AWWA C153/A21.53 - American National Standard for Ductile-Iron Compact Fittings, 3-inch through 24-inch and 54-inch through 64-inch, for Water Service.
- J. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; 2009.
- K. AWWA C502 - Dry-Barrel Fire Hydrants; 2018.

- L. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; 2015.
- M. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; 2017.
- N. AWWA C906 - AWWA Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In., for Water Distribution and Transmission.
- O. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- P. UL 246 - Hydrants for Fire-Protection Service; Current Edition, Including All Revisions.
- Q. ASTM D1784 - 11 Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
- R. ASTM D3261 - 10a Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

#### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with utility company requirements.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers with labeling in place.

#### 1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

### PART 2 PRODUCTS

#### 2.1 SOURCE QUALITY CONTROL

- A. All Products incorporated into the Work of this section shall be manufactured in the United States and shall be clearly indicated in all appropriate submittals unless specifically approved otherwise by the Engineer.

#### 2.2 GENERAL

- A. Potable Water Supply Systems: All materials contacting potable water shall be certified compliant with NSF 61 for maximum lead content; label pipe and fittings.

#### 2.3 WATER PIPE

- A. Exterior Ductile Iron Pipe: AWWA C151:

1. Pipe: Ductile iron, having a wall thickness Class 52. Pipe shall be furnished with cement mortar lining in conformance with AWWA C-104.
  2. Fittings: Ductile iron, having a wall thickness Class 52. Fittings shall conform in all respects to AWWA C-153. Fittings shall be furnished with cement mortar lining in conformance with AWWA C-104. All M/J fittings shall be restrained using a wedge action retainer gland as approved by the engineer or specified on the engineering drawings. Push on joints located within two joints of the restrained fitting shall have a bolt-less restraining gasket as approved by the engineer or specified on the engineering drawings.
  3. Joints: Unless otherwise specified on the drawings, all pipe shall have rubber gasket joints conforming to AWWA C-111 unless otherwise noted.
- B. Copper Tubing: ASTM B88, Type K, Annealed:
1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
  2. Joints: Compression connection or AWS A5.8M/A5.8, BCuP silver braze.
- C. HDPE Pipe
1. Materials used for the manufacturing of polyethylene pipe and fittings shall be high density polyethylene (HDPE). The HDPE materials also shall be certified as suitable for potable water products by the National Sanitation Foundation (NSF) and AWWA (AWWA standard is C906). The material shall have a minimum hydrostatic design basis (HDB) of 1600 psi at 73° F.
  2. Pipe shall be manufactured in accordance with AWWA C-906. Pipe shall be furnished with squarely cut, plain ends in lengths that will allow for easy unloading, storage and installation. Nominal diameter, dimension ratio, and pressure class shall be as shown on the contract drawings or herein specified.
  3. Permanent identification of piping service shall be provided by co-extruding blue material into the pipe's outside surface. The material used shall be the same material as the pipe except for color. Stripes printed or painted on the outside surface shall not be acceptable.
  4. Fittings shall conform to ASTM D3261 for butt-type and shall be molded or thermoformed from sections of pipe.
  5. All pipe lengths and fittings shall be joined by thermal butt-fusion in accordance with the manufacturer requirements. Mechanical joint fittings and HDPE/MJ adapters with internal stiffening ring shall join all connections to existing watermain and new appurtenances (HD C110 full body MJ gland, stiffener and stainless steel tee bolts). Nominal diameter and dimension ratio shall be as shown on the contract drawings.
  6. The pipe and fitting Manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rate, and contamination. The cell classification properties of the material shall be certified by the supplier. Incoming materials shall be approved by Quality Control before processing into finished goods. Outgoing products shall be tested as required in AWWA C906.
  7. The Manufacturer shall maintain permanent Quality Control (QC) and Quality Assurance (AQ) records. Certification or copy of these records shall be made available to the Engineer on request.
- D. Curb Boxes:
1. Mueller style, improved extension type with arch pattern base.
  2. Extension rod and cotter pin shall be stainless steel.

## 2.4 CORPORATION STOP ASSEMBLY

- A. Manufacturers:
1. Mueller Company Model H-15008 for 3/4" stops and Model H-15013 for 2" stops or equal.
- B. Corporation Stops:

1. Brass or red brass alloy body conforming to ASTM B62.
  2. Inlet end threaded for tapping according to AWWA C800.
  3. Outlet end suitable for service pipe specified.
- C. Service Saddles:
1. Double strap type, designed to hold pressures in excess pipe working pressure.
  2. Service saddles shall have a bronze body and straps, corrosion resistant bolt, nuts and gaskets.

## 2.5 CURB STOP ASSEMBLY

- A. Manufacturers:
1. Mueller Company, Decatur, Illinois, Model H-15209 for 3/4" to 2".
- B. Curb Stops:
1. Bronze body with check valve.
  2. Curb stops shall be designed for a working pressure of 175 psi.
  3. If a weep is required it shall be noted on the drawings.
- C. Curb Boxes and Covers:
1. Mueller Model H-10334 for 3/4" to 2".
  2. Shall be extension type, arch pattern, cast iron, adjustable with the word water cast in the top and an arrow indicating the direction of opening.
  3. Equipped with Stationary rod and ring guide.

## 2.6 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 23 16.13.
- B. Cover: As specified in Section 31 23 16.13.

## 2.7 ACCESSORIES

- A. Concrete for Thrust Restraints: Concrete type specified in Section 03 30 00.

## 2.8 UNDERGROUND WARNING TAPE

- A. Plastic Ribbon Tape: Bright colored, continuously printed, minimum 6 inches (150 mm) wide by 4 mil (0.10 mm) thick, manufactured for direct burial service.

## 2.9 UNDERGROUND PIPE MARKER

- A. Utility Witness marker shall be lightweight, flat-style marker installed using a manual driving tool. Marker shall be made from fiberglass reinforced composite material.
- B. Marker color & size: Blue; 66" L x 3.75" W

## 2.10 UNDERGROUND TRACE WIRE

- A. Magnetic detectable conductor, clear plastic covering, imprinted with "Water Service " in large letters.

## 2.11 PIPE SUPPORTS

- A. General
1. Support spacing shall be such that:
    - a. Support capacity is at least 1.25 x weight of the pipe and water, and maximum manufacturer's support spacing is not exceeded.

- b. Dependent upon the application, hangers and supports may be factory-fabricated, constructed in the field, or a combination of the two. All supports, hangers, and fasteners shall have a protective coating. As noted on the drawings, they may be hot-dip galvanized.
- B. Floor Stanchions and Supports Between Pipes
  - 1. Unless otherwise shown, floor stanchions shall be adjustable for height through use of a threaded coupling or a sliding barrel with a locking of the pipe barrel.
- C. Ceiling Hangers
  - 1. Unless otherwise shown, ceiling hangers shall consist of clevis hanger and beam clamp, anchor bolt, or ceiling flange as appropriate for building material.
- D. Wall Supports
  - 1. Large Diameter (greater than 4 inches)
  - 2. Unless otherwise shown, wall supports for large diameter piping shall consist of an angle steel wall bracket with clevis hanger.
  - 3. Small Diameter (4 inches and less)
  - 4. Unless otherwise shown pipe straps for fastening small diameter pipes to walls or ceiling shall fit the pipe barrel for at least 180 degrees.

## 2.12 JOINT RESTRAINT APPURTENANCES

- A. M/J Joint Thrust Restraint Glands shall meet consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of AWWA C110 and have a working pressure rating of 350 psi.
- B. Push on Joint Thrust Restraint shall meet or exceed the performance criteria of U.S. Pipe Field Lok Gaskets, Gripper Gaskets, or Approved Equal.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

### 3.2 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.
- D. All PVC or Polyethylene Pipe shall not be left exposed to the sun and shall be covered. The contractor shall also provide documentation to the Construction Inspector as to the pipe's age and handling prior to being delivered to the site. This is to prevent pipe that has been left exposed to the sun at a storage yard from being used on the project. Lack of documentation of PVC or HDPE history will cause said pipe to be rejected.

### 3.3 TRENCHING

- A. See the sections on excavation and fill for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.

- C. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide \_\_\_\_ square feet thrust restraint bearing on subsoil.
- D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

### 3.4 BEDDING

- A. Excavate pipe trench in accordance with Section 31 26 16.13 for Work of this Section.
- B. Place bedding material according to the trench details provided on the Engineering Drawings.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent.
- D. Place fill material in accordance with Section 31 23 23.

### 3.5 INSTALLATION - PIPE

- A. Maintain separation of water main from sewer piping in accordance with building code.
- B. Ductile Iron:
  - 1. Maintain 10-feet horizontal and 18 inch vertical separation distance between water mains and sanitary sewer piping.
  - 2. Install pipe to indicated elevation to within tolerance of 5/8 inches.
  - 3. Install ductile iron piping and fittings to AWWA C600.
  - 4. Route pipe in straight line .
  - 5. Install pipe to allow for expansion and contraction without stressing pipe or joints.
  - 6. Install access fittings to permit disinfection of water system performed under Section 33 01 10.58.
  - 7. All mechanical joint fittings shall be reinforced with a thrust restrain joint gland. Boltless restraining gaskets shall be used two push on joints each side of a mechanical joint fitting. Mechanical Joint Fittings located within 15 ft. from one another shall be rodded together. Manufacturer's specifications for gaskets or glands shall be submitted to the engineer according to 01 30 00 - Administrative Requirements.
  - 8. Install water pipe with a minimum 5 ft of cover.
  - 9. Backfill trench in accordance with Section 31 23 23.
  - 10. Group piping with other site piping work whenever practical.
- C. HDPE
- D. HDPE Pipe:
  - 1. The Manufacturer shall supply an Installation Manual to the Engineer which outlines guidelines for handling, joining, installing, embedding and testing of polyethylene pipeline. These guidelines shall be used as reference material for the Engineer in his determination of the required procedures.
  - 2. Joints between plain ends of polyethylene pipe shall be made by butt fusion when possible. The Pipe Manufacturer's fusion procedures shall be followed at all times as well as the recommendations of the Fusion Machine Manufacturer. The wall thickness of the adjoining pipes shall have the same DR at the point of fusion.
  - 3. If mechanical fittings (which are designed for, or tested and found acceptable for use with polyethylene pipe) are utilized for transitions between pipe materials, repairs, jointing pipe sections, saddle connections, or at other locations; the recommendation of the Mechanical Fitting Manufacturer must be followed. These procedures may differ from other pipe materials.



4. Where connecting to newly laid ductile iron pipe, the next two ductile iron pipe joints adjacent to the HDPE/DIP connection shall utilize boltless restraining gaskets as approved by the engineer.
5. On each day butt fusions are to be made, the first fusion of the day shall be a trial fusion. The trial fusion shall be allowed to cool completely, then fusion test straps shall be cut out. The test strap shall be 12" or 30 times the wall thickness in length (minimum) and 1" or 1.5 times the wall thickness in width (minimum). Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new trial fusion shall be made, cooled completely and tested. Butt fusion of pipe to be installed shall not commence until a trial fusion has passed the bent strap test.
6. Pressure testing shall be conducted in accordance with the Manufacturer's recommended procedure. Pressure testing shall use water as the test media. Pneumatic (air) testing is prohibited.
7. Consideration should be given by the Contractor that the length of the HDPE piping expands and contracts considerably with changes in temperature. As such, the Contractor should take appropriate measures to ensure that undue stresses do not occur with fused pipe and its associated fittings.
8. The manufacturer shall have manufacturing and quality control facilities capable of producing and assuring the quality of the pipe and fittings required by these specifications and as shown on the contract drawings.
9. Caution shall be exercised at all times to avoid compression, damage or deformation to the pipe. Pipe shall be inspected before installation for cracks, defects, and chips and any pipe or fittings containing harmful imperfections shall be rejected and removed from the job site. HDPE pipe shall be supported by racks during storage to prevent damage to the bottom. Pipe stored outside shall be covered with opaque material while permitting air circulation around the pipe to prevent excessive heat accumulation. The interior as well as all sealing surfaces or pipe, fittings and other accessories shall be kept free from dirt and foreign matter. Severe impact blows, abrasion damage, and gouging or cutting by metal surfaces or rocks shall be avoided.

E. Copper Tubing

1. Earthwork shall be as described in Section 31 23 23 – Trenching except as amended herein. Unless otherwise detailed on the drawings, no bedding shall be required and backfill up to one foot above the tubing may be select native material. Stones larger than 2 inches shall not be placed in direct contact with the copper tubing. Horizontal goosenecks shall be used at the main connection. Minimum cover shall be 5 ft. unless ordered otherwise by the Engineer.
2. Service tubing to be installed under roadway (not including driveways) pavement, or at other locations shown on the drawings, shall be done without cutting or disturbing the pavement. Installation of copper tubing beneath local roadways can be installed using jacking, missile or directional drilling methods.

3.6 INSTALLATION - CORPORATION STOP ASSEMBLY

- A. Make connection for each different kind of water main using suitable materials, equipment and methods approved by the Architect/Engineer.
- B. Provide service clamps for mains other than of cast iron or ductile iron mains.
- C. Screw corporation stops directly into tapped and threaded iron main at 10 and 2 o'clock position on main's circumference; locate corporation stops at least 12 inches (300 mm) apart longitudinally and staggered.
- D. For plastic pipe water mains, provide full support for service clamp for full circumference of pipe, with minimum 2 inches (50 mm) width of bearing area; exercise care against crushing or causing other damage to water mains at time of tapping or installing service clamp or corporation stop.

- E. Use proper seals or other devices so no leaks are left in water mains at points of tapping; do not backfill and cover service connection until approved by the Architect/Engineer.

### 3.7 INSTALLATION - CURB STOP ASSEMBLY

- A. Set curb stops on solid bearing surface.
- B. Center and plumb curb box over curb stops. Set box cover flush with finished grade.
- C. Any curb boxes that contain a weep shall have at least 18 inches of washed crushed stone placed beneath the assembly for drainage.

### 3.8 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Perform field inspection and testing in accordance with Section 01 40 00.
- C. Pressure test water piping to \_\_\_\_ pounds per square inch.
  - 1. After completion of pipeline installation, including backfill, but prior to final connection to existing system, conduct, in presence of Architect/Engineer, concurrent hydrostatic pressure and leakage tests in accordance with AWWA C600.
  - 2. Provide equipment required to perform leakage and hydrostatic pressure tests.
  - 3. Test Pressure: Not less than 200 psi or 50 psi in excess of maximum static pressure, whichever is greater.
  - 4. Conduct hydrostatic test for at least two-hour duration.
  - 5. No pipeline installation will be approved when pressure varies by more than 5 psi at completion of hydrostatic pressure test.
  - 6. Before applying test pressure, completely expel air from section of piping under test. Provide corporation cocks so air can be expelled as pipeline is filled with water. After air has been expelled, close corporation cocks and apply test pressure. At conclusion of tests, remove corporation cocks removed and plug resulting piping openings.
  - 7. Slowly bring piping to test pressure and allow system to stabilize prior to conducting leakage test. Do not open or close valves at differential pressures above rated pressure.
  - 8. Examine exposed piping, fittings, valves, hydrants, and joints carefully during hydrostatic pressure test. Repair or replace damage or defective pipe, fittings, valves, hydrants, or joints discovered, following pressure test.
  - 9. No pipeline installation will be approved when leakage is greater than that determined by the following formula:  
$$L = (S \cdot D \cdot \sqrt{P}) / 133,200$$

L = allowable, in gallons per hour  
S = length of pipe tested, in inches  
D = nominal diameter of pipe, in inches  
p = average test pressure during leakage test, in pounds per square inch (gauge)
  - 10. When leakage exceeds specified acceptable rate, locate source and make repairs. Repeat test until specified leakage requirements are met.
- D. Perform backflow preventer testing in accordance with ASSE 5013, by State certified backflow prevention device tester.
  - 1. Provide test results and Certification of tester.
- E. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

END OF SECTION

SECTION 33 31 13  
SITE SANITARY SEWERAGE GRAVITY PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sanitary sewerage drainage piping, fittings, and accessories.
- B. Connection of building sanitary drainage system to municipal sewers.
- C. Cleanout access.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for cleanout base pad construction.
- B. Section 31 23 16 - Excavation: Excavating of trenches.
- C. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.
- D. Section 31 23 23 - Fill: Bedding and backfilling.

1.3 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.4 REFERENCE STANDARDS

- A. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2015, with Editorial Revision (2018).
- B. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2018.
- C. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2017.
- D. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating pipe, pipe accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- E. Project Record Documents:
  - 1. Record location of pipe runs, connections, manholes, cleanouts, and invert elevations.
  - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

## PART 2 PRODUCTS

### 2.1 SEWER PIPE MATERIALS

- A. Provide products that comply with applicable code(s).
- B. Plastic Pipe: ASTM D2729, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of 4-15 inches, bell and spigot style solvent sealed joint end.
- C. Plastic Pipe: ASTM D3034, Type PSM, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of 4-15 inches, bell and spigot style solvent sealed joint end.
- D. Plastic Pipe: ASTM D1785, Schedule 40, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of 4-18 inches, bell and spigot style solvent sealed joint end.
- E. Joint Seals: Mechanical clamp ring type, stainless steel expanding and contracting sleeve, neoprene ribbed gasket for positive seal.
- F. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

### 2.2 PIPE ACCESSORIES

- A. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Sewer Service " in large letters. Tracer wire shall be a minimum of 10 gauge copper wire with UF insulation.

### 2.3 CLEANOUT

- A. Lid and Frame: Cast iron construction, hinged lid.
  - 1. Lid Design: Open checkerboard grille.
  - 2. Cleanout lid shall be a minimum of 12 inches or unless otherwise shown on the engineering drawings.

### 2.4 BEDDING AND COVER MATERIALS

- A. Pipe Bedding Material: As specified in Section 31 23 16.13.
- B. Pipe Cover Material: As specified in Section 31 23 16.13.

## PART 3 EXECUTION

### 3.1 GENERAL

- A. Perform work in accordance with applicable code(s).

### 3.2 TRENCHING

- A. See Section 31 23 16.13 for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

### 3.3 INSTALLATION - PIPE

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
  - 1. Plastic Pipe: Also comply with ASTM D2321.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Connect to building sanitary sewer outlet and municipal sewer system, through installed sleeves.
- E. Install trace wire 6 inches above top of pipe; coordinate with Section 31 23 16.13.

### 3.4 INSTALLATION - CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.
- C. Establish elevations and pipe inverts for inlets and outlets as indicated.
- D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

### 3.5 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 40 00.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- C. Pressure Test
  - 1. Low-pressure Air Test (applies to all piping materials):
    - a. Test each section of gravity sewer piping between manholes.
    - b. Where customer service connections are installed under the Contract, test connections and service lines concurrently with the main, unless directed otherwise by the Engineer.
    - c. Introduce air pressure slowly to approximately 4 psig.
      - 1) Determine ground water elevation above spring line of pipe for every foot of ground water above spring line of pipe, increase. starting air test pressure by 0.43 psig; do not increase pressure above 10 psig.
    - d. Allow pressure to stabilize for at least five minutes. Adjust pressure to 3.5 psig or increased test pressure as determined above when ground water is present. Start test.
    - e. Test:
      - 1) Determine test duration for sewer section with single pipe size from the following table. Do not make allowance for laterals.

#### AIR TEST TABLE

##### Minimum Test Time for Various Pipe Sizes

Nominal Pipe Size, Inches	T(time), min/100 feet
3	0.2
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6

- 2) Record drop in pressure during test period; when air pressure has dropped more than 1.0 psig during test period, piping has failed; when 1.0 psig air pressure drop has not occurred during test period, discontinue test and piping is accepted.
- 3) When piping fails, determine source of air leakage, make corrections and retest; test section in incremental stages until leaks are isolated; after leaks are repaired, retest entire section between manholes.

#### D. Deflection Test (Applies to Plastic Sewer Pipe)

1. Perform vertical ring deflection testing after backfilling has been in place for at least 30 days but not longer than 12 months.
2. Allowable maximum deflection for installed plastic sewer pipe limited to 5 percent of original vertical internal diameter.
3. Perform deflection testing using properly sized rigid ball or 'Go, No-Go' mandrel.
4. Furnish rigid ball or mandrel with diameter not less than 95 percent of base or average inside diameter of pipe as determined by ASTM standard to which pipe is manufactured. Measure pipe in compliance with ASTM D2122.
5. Perform test without mechanical pulling devices.
6. Locate, excavate, replace and retest pipe exceeding allowable deflection.

#### E. Lamp Test

1. Lamp gravity piping after flushing and cleaning.
2. Perform lamping operation by shining light at one end of each pipe section between manholes; observe light at other end; reject pipe not installed with uniform line and grade; remove and reinstall rejected pipe sections; re-clean and lamp until pipe section achieves uniform line and grade.

### 3.6 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

SECTION 33 41 00  
SUBDRAINAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Building Perimeter Drainage Systems.
- B. Filter aggregate and fabric and bedding.

1.2 RELATED REQUIREMENTS

- A. Section 31 05 19 - Geosynthetics for Earthwork.
- B. Section 31 23 16 - Excavation: Excavating for subdrainage system piping and surrounding filter aggregate.
- C. Section 31 23 16.13 - Trenching: Excavating and backfilling for site subdrainage systems.
- D. Section 31 23 23 - Fill: Backfilling over filter aggregate, up to subgrade elevation.

1.3 REFERENCE STANDARDS

- A. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2017.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.1 PIPE MATERIALS

- A. Polyvinyl Chloride Pipe: ASTM D2729; plain end, 4 inch inside diameter; with required fittings.
- B. Corrugated Plastic Tubing: Flexible type; 4 inch diameter, with required fittings.
- C. Use perforated pipe at subdrainage system; unperforated through sleeved walls.

2.2 AGGREGATE AND BEDDING

- A. Filter Aggregate and Bedding Material: Granular fill as specified in Section 31 23 23.
- B. Filter Sand and Bedding Material: Sand as specified in Section 31 23 23.

2.3 ACCESSORIES

- A. Pipe Couplings: Solid plastic.
- B. Filter Fabric: Water pervious type, black polyolefin.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

### 3.2 PREPARATION

- A. Hand trim excavations to required elevations. Correct over-excavation with Native Select Fill.
- B. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

### 3.3 INSTALLATION

- A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.
- B. Place drainage pipe on clean cut subsoil.
- C. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Loosely butt pipe ends. Place joint cover strip 12 inches wide, around pipe diameter centered over joint.
- E. Place pipe with perforations facing down. Mechanically join pipe ends.
- F. Install pipe couplings.
- G. Install filter aggregate at sides, over joint covers and top of pipe. Provide top cover compacted thickness of 12 inches.
- H. Place filter fabric over levelled top surface of aggregate cover prior to subsequent backfilling operations.
- I. Place aggregate in maximum 4 inch lifts, consolidating each lift.
- J. Refer to Section 31 23 23 for compaction requirements. Do not displace or damage pipe when compacting.
- K. Place impervious fill over drainage pipe aggregate cover and compact.
- L. Connect to storm sewer system with unperforated pipe, through installed sleeves.
- M. Coordinate the Work with connection to municipal sewer utility service, and trenching.

### 3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspection and testing.

### 3.5 PROTECTION

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION



SECTION 33 42 11  
SITE STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Stormwater drainage piping.
- B. Stormwater pipe accessories.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for cleanout base pad construction.
- B. Section 31 23 16 - Excavation: Excavating of trenches.
- C. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.
- D. Section 31 23 23 - Fill: Bedding and backfilling.
- E. Section 33 05 61 - Concrete Manholes.
- F. Section 33 42 30 - Stormwater Drains.
- G. Section 33 46 00 - Stormwater Management.

1.3 REFERENCE STANDARDS

- A. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2016).
- B. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe; 2015a.
- C. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe; 2019.
- D. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2015, with Editorial Revision (2018).
- E. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2018.
- F. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2017.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of stormwater gravity piping with size, location and installation of stormwater drains according to Section 33 42 30.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating pipe, pipe accessories.

- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- E. Project Record Documents:
  - 1. Record location of pipe runs, connections, and invert elevations.
  - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

## PART 2 PRODUCTS

### 2.1 STORMWATER PIPE MATERIALS

- A. Provide products that comply with applicable code(s).
- B. Plastic Pipe: ASTM D2729, Poly Vinyl Chloride (PVC) material; inside nominal diameter of 4-15 inches, bell and spigot style solvent sealed joint end.
- C. Plastic Pipe: ASTM D3350, High Density Polyethylene (HDPE) corrugated wall pipe with integrally formed smooth liner; inside nominal diameter of 3 - 60 inch, meeting the requirements of AASHTO M 252, Type S, for diameters between 3 inches and 10 inches and AASHTO M 294, Type S, for diameters between 12 inches and 60 inches, soil-tight, bell and spigot joints with rubber gaskets, with pipe and fittings manufactured from virgin PE compounds with cell classification 3254420C, or better.

### 2.2 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.
- B. Filter Fabric: Non-biodegradable, woven.
- C. Trace Wire: Magnetic detectable conductor, clear plastic covering, minimum 6 inches wide by 4 mil thick, imprinted with "Storm Sewer Service " in large letters, for direct burial service.
- D. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots and on-body cleanout and cover with neoprene gaskets.
  - 1. Configuration: Angular.
  - 2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
  - 3. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, and rubber coupling.

### 2.3 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 23 16.13.
- B. Cover: As specified in Section 31 23 16.13.

## PART 3 EXECUTION

### 3.1 TRENCHING

- A. See Section 31 23 16.13 - Trenching for additional requirements.

- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling to provide top cover to minimum compacted thickness of 12 inches exclusive of asphalt or concrete, compacted to 95%.

### 3.2 INSTALLATION

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
  - 1. Plastic Pipe: Also comply with ASTM D2321.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Connect to building storm drainage system, foundation drainage system, and utility/municipal system.
- E. Make connections through walls through sleeved openings, where provided.
- F. Install continuous trace wire 6 inches above top of pipe; coordinate with Section 31 23 16.13.

### 3.3 FIELD QUALITY CONTROL

- A. Perform field inspection in accordance with Section 01 40 00 - Quality Requirements.

### 3.4 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.
- B. Repair or replace pipe that is damaged or displaced from construction operations.

END OF SECTION



SECTION 33 42 30  
STORMWATER DRAINS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Prefabricated drop inlets.
- B. Frames and grates.

1.2 RELATED REQUIREMENTS

- A. Section 03 10 00 - Concrete Forming and Accessories.
- B. Section 03 30 00 - Cast-in-Place Concrete.
- C. Section 31 23 16 - Excavation.
- D. Section 31 23 23 - Fill.
- E. Section 33 42 11 - Site Storm Utility Drainage Piping.
- F. Section 33 46 00 - Stormwater Management.

1.3 REFERENCE STANDARDS

- A. AASHTO HB - Standard Specifications for Highway Bridges; 2002, with Errata (2005).
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 301 - Specifications for Structural Concrete; 2016.
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- E. ACI 305R - Guide to Hot Weather Concreting; 2010.
- F. ACI 306R - Guide to Cold Weather Concreting; 2016.
- G. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).
- H. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- I. DIN 19580 - Drainage channels for vehicular and pedestrian areas - Durability, mass per unit area and evaluation of conformity; 2010.
- J. DIN EN 1433 - Drainage Channels for Vehicular and Pedestrian Areas - Classification, Design and Testing Requirements; Marking and Evaluation of Conformity; 2005.
- K. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- L. ASTM C55 - Standard Specification for Concrete Building Brick; 2017.
- M. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.
- N. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.

- O. ASTM C139 - Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes; 2017.
- P. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

#### 1.5 QUALITY ASSURANCE

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Drop Inlets:
  - 1. Substitutions: See Section 01 60 00 - Product Requirements.

#### 2.2 DROP INLETS

- A. Weight Rating: Pedestrian according to AASHTO HB.
- B. Prefabricated Drop Inlet: Polymer concrete, glass fiber reinforced, metal installation brackets.
- C. Frames and Grates: Galvanized steel support, cast iron grate, checkerboard pattern, match drain opening size.

#### 2.3 CATCH BASIN, TRENCH DRAIN, CLEANOUT, AND AREA DRAIN COMPONENTS

- A. Lids and Drain Covers: Cast iron, hinged to cast iron frame.
  - 1. Cleanout:
    - a. Lid Design: Linear grill.
  - 2. Area Drain:
    - a. Lid Design: Linear grill.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Verify built-in items are in proper location and ready for roughing into work.
- C. Verify excavation location and depth are correct.

#### 3.2 EXCAVATION AND FILL

- A. Hand trim excavation for accurate placement to indicated elevations.
- B. Backfill with cover fill, tamp in place and compact, then complete backfilling.

#### 3.3 INSTALLATION

- A. Establish elevations and pipe inverts for inlets and outlets as indicated in drawings.

- B. Concrete Mixing:
  - 1. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- C. Cast-In-Place Concrete Base Pad:
  - 1. Form bottom of excavation walls clean and smooth to correct limits.
  - 2. Place concrete in accordance with ACI 304R.
  - 3. Float base pad top surface level.
- D. Prefabricated Drop Inlets or Trench Drains:
  - 1. Place base section plumb and level.
  - 2. Install according to manufacturer's instructions.
  - 3. Secure installation brackets.
- E. Grade Adjustments:
  - 1. Lay brick or masonry units uniformly on mortar bed with full head joints, running bond. Top with mortar, plumb and level.
  - 2. Lay concrete ring on mortar bed plumb and level. Top with mortar, plumb and level.
  - 3. Install expanded polypropylene ring according to manufacturer's instructions.
  - 4. Place adjacent materials tight and smooth following design grades.
- F. Frames and Grates:
  - 1. Place frame plumb and level.
  - 2. Mount frame on mortar bed at indicated elevation.
  - 3. Mount frame on expanded polypropylene ring according to manufacturer's instructions.
  - 4. Mount frame on prefabricated drop inlets or trench drains according to manufacturer's instructions.
  - 5. Place grate in frame securely.

#### 3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Perform field inspection for pipe invert elevations.
- C. If inspections indicate work does not meet specified requirements, adjust work and reinspect at no cost to Owner.

END OF SECTION





SECTION 33 71 19  
ELECTRICAL UNDERGROUND DUCTS, DUCTBANKS, AND MANHOLES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Conduit and duct:
  - 1. Galvanized steel rigid metal conduit (RMC).
  - 2. Rigid polyvinyl chloride (PVC) conduit.
- B. Accessories:
  - 1. Underground warning tape.

1.2 RELATED REQUIREMENTS

- A. Section 03 10 00 - Concrete Forming and Accessories.
- B. Section 03 20 00 - Concrete Reinforcing.
- C. Section 03 30 00 - Cast-in-Place Concrete.
- D. Section 22 10 06 - Plumbing Piping Specialties.
- E. Section 31 23 16 - Excavation.
- F. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.
- G. Section 31 23 23 - Fill: Bedding and backfilling.

1.3 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2015.
- B. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures; 2016.
- C. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures; 2018.
- D. ASTM C891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures; 2011.
- E. ASTM F512 - Standard Specification for Smooth-Wall Poly(Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation; 2019.
- F. IEEE C2 - National Electrical Safety Code; 2017.
- G. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- H. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2013.
- I. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2016.
- J. NEMA TC 6&8 - Polyvinyl Chloride (PVC) Plastic Utilities for Underground Installations; 2013.
- K. NEMA TC 7 - Smooth-Wall Coilable Electrical Polyethylene Conduit; 2016.

- L. NEMA TC 9 - Fittings for Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installation; 2004 (Reaffirmed 2012).
- M. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- N. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- O. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- P. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

#### 1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

#### 1.5 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

### PART 2 PRODUCTS

#### 2.1 CONDUIT AND DUCT

- A. Galvanized Steel Rigid Metal Conduit (RMC): NFPA 70, Type RMC; comply with ANSI C80.1 and list and label as complying with UL 6.
  - 1. Manufacturers:
    - a. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Fittings: Comply with NEMA FB 1 and list and label as complying with UL 514B; steel or malleable iron, threaded type.
    - a. Manufacturers:
      - 1) Substitutions: See Section 01 60 00 - Product Requirements.
- B. Rigid Polyvinyl Chloride (PVC) Conduit: NFPA 70, Type PVC; comply with NEMA TC 2 and list and label as complying with UL 651; Schedule 40 unless otherwise indicated; rated for use with conductors rated 90 degrees C.
  - 1. Manufacturers:
    - a. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Fittings: Comply with NEMA TC 3 and list and label as complying with UL 651.
    - a. Manufacturer: Same as manufacturer of conduit to be connected.

#### 2.2 ACCESSORIES

- A. Underground Warning Tape: Polyethylene tape suitable for direct burial.
  - 1. Manufacturers:
    - a. Substitutions: See Section 01 60 00 - Product Requirements.
  - 2. Legend: Type of service, continuously repeated over full length of tape.
  - 3. Color:
    - a. Tape for Buried Power Lines: Black text on red background.
    - b. Tape for Buried Communication, Alarm, and Signal Lines: Black text on orange background.

## 2.3 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify routing and termination locations of duct bank prior to excavation for rough-in.

END OF SECTION

