

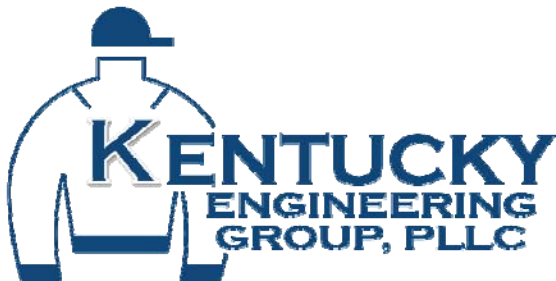
# **CONTRACT DOCUMENTS and SPECIFICATIONS**

## **PHASE 11 WATER SYSTEM IMPROVEMENTS**

### **CONTRACT 5 NEW OFFICE BUILDING**

## **Rattlesnake Ridge Water District**

**Carter County, Kentucky**



**Kentucky Engineering Group, PLLC**

**P.O. Box 1034**

**Versailles, Kentucky 40383**

**November, 2017**

**KEG Project No. 15036**

**BID DOCUMENTS**



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APPENDIX A

Geotechnical Report

**RATTLESNAKE RIDGE WATER DISTRICT  
GRAYSON, KENTUCKY  
PHASE 11 WATER SYSTEM IMPROVEMENTS**

ADVERTISEMENT FOR BIDS

Sealed Bids for the construction of the Phase 11 Water System Improvements Project will be received by the Rattlesnake Ridge Water District, at the office of Rattlesnake Ridge Water District, located at 3563 State Hwy. 1661, Grayson, Kentucky 41143 until **2:00 pm** local time on **Monday September 10, 2018**, at which time the Bids received will be publicly opened and read. The Project consists of constructing the following: Contract 1 – Water Main Extensions; Contract 2 – 100,000 Gallon and 75,000 Gallon Elevated Water Storage Tanks; Contract 3 – Rehabilitation of Three Water Storage Tanks; Contract 4 – Booster Station Improvements; Contract 5 – New Office Building.

Bids will be received for Contracts 1,2,3,4 and 5. Bids shall be on a unit price basis.

The Issuing Office for the Bidding Documents is: Lynn Imaging, 328 Old Vine Street, Lexington, Kentucky, 40507. The email address is info@lynnimaging.com. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of 8 am to 4 pm.

Bidding Documents also may be examined at Rattlesnake Ridge Water District, 3563 State Hwy. 1661, Grayson, Kentucky 41143 on Mondays through Fridays between the office hours of 9 am to 4 pm;

Printed copies of the Bidding Documents may be obtained from the Issuing Office, during the hours indicated above, upon a non-refundable payment of \$500 for Contract 1 and Contract 5, and \$350 for Contracts 2 thru 4 for each set. Checks for Bidding Documents shall be payable to "Lynn Imaging". Upon request and receipt of the document amount indicated above plus a non-refundable shipping charge, the Issuing Office will transmit the Bidding Documents via delivery service. The shipping charge amount will depend on the shipping method selected by the prospective Bidder. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the Bidder's date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

A pre-bid conference shall be held on Thursday August 30, 2018 at 11:00 am local time at the Rattlesnake Ridge Water District Office, located at 3563 State Hwy 1661, Grayson, Kentucky 41143.

All bidders must be listed as a plan holder by the plan distributor, Lynn Imaging.

Bid security shall be furnished in accordance with the Instructions to Bidders.

Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A-Agriculture, Rural Development, Food and Drug Administration, and Related Agencies, Appropriations Act, 2017) and subsequent statutes mandating domestic preference applies to American Iron and Steel requirement to this project. All listed iron and steel products used in this project must be produced in the United States. The term "iron and steel products" means the following products made primarily of iron and steel: lines or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. The de minimis and minor components waiver {all project specific waivers as applicable} apply to this contract.

Owner: Rattlesnake Ridge Water District

By: Bill Gilbert

Title: Chairman

Date: **August 22, 2018**

+ + END OF ADVERTISEMENT FOR BIDS + +

## INSTRUCTIONS TO BIDDERS

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## ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. The term "Bidder" means one who submits a Bid directly to Owner, as distinct from a subbidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible, and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

## ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents must be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid. Bids from anyone not on the Engineer's Plan Holders List will not be opened.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

## ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit with its Bid written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and the additional information listed in the Bid Form.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

## ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

- 4.01 *Site and Other Areas*
- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.



#### 4.02 *Existing Site Conditions*

##### A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. If there are reports and/or additional information concerning site conditions available, they will be included as Appendices to the Bidding Documents.
2. Geotechnical Report: If a Geotechnical Report is available, it will be included as an appendix to the Bidding Documents. The Geotechnical Report describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations.

The Conditions in the Geotechnical Report are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the said Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the Report, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are reported.

Nothing in the report is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.

- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

#### 4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing

so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

#### 4.04 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

#### 4.05 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

### **ARTICLE 5 – BIDDER'S REPRESENTATIONS**

#### 5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work included but not limited to the AIS requirements as mandated and any subsequent statutes mandating domestic preference which apply to the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Bidding Documents, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Bidding Documents, especially with respect to Technical Data in such reports and drawings;

- E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### **ARTICLE 6 – PRE-BID CONFERENCE**

- 6.01 A pre-bid conference is scheduled for this project.

#### **ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing via email to **jthompson@kyengr.com**. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

#### **ARTICLE 8 – BID SECURITY**

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five (5) percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in

the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

#### **ARTICLE 9 – CONTRACT TIMES**

- 9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

#### **ARTICLE 10 – LIQUIDATED DAMAGES**

- 10.01 Provisions for liquidated damages, if any, for failure to timely attain Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Supplemental General Conditions and referred to in the Agreement.

#### **ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS**

- 11.01 The Contract for the Work, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids in the case of a proposed substitute and 5 days prior in the case of a proposed "or-equal". Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. Each such request shall include the Manufacturer's Certification Letter (Exhibit D) for compliance with AIS requirements and any subsequent statutes mandating domestic preference, if applicable. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in accordance with Paragraphs 7.04 and 7.05 of the General conditions after the Effective Date of the contract.

- 11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.
- 11.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

## **ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS**

- 12.01 If required by the bid documents, the Bidder shall submit to Owner a list of the Subcontractors or Suppliers proposed for the major portions of the Work. If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute.
- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.
- 12.03 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SGC 7.06.

## **ARTICLE 13 – PREPARATION OF BID**

- 13.01 The Bid Form is included with the Bidding Documents.
  - A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
  - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

- 13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.04 A Bid by an individual shall show the Bidder's name and official address.
- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form. 11.8. The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of any cash allowances named in the Contract Documents as provided in Paragraph 11.02 of the General Conditions.  
  
The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of any cash allowances named in the Contract Documents as provided in Paragraph 11.02 of the General Conditions.
- 13.10 Each Bid must be submitted on the prescribed form and accompanied by the submittals listed in the Bid Form.

#### **ARTICLE 14 – BASIS OF BID**

##### **14.01 Unit Price**

- A. Bidders shall submit a Bid on a unit price basis as set forth in the Bid Form.

#### **ARTICLE 15 – SUBMITTAL OF BID**

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."



- 15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

#### **ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID**

- 16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

#### **ARTICLE 17 – OPENING OF BIDS**

- 17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

#### **ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

- 18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

#### **ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- 19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

## **ARTICLE 20 – BONDS AND INSURANCE**

- 20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

## **ARTICLE 21 – SIGNING OF AGREEMENT**

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

## **ARTICLE 22 – NOT USED**

## **ARTICLE 23 – NOT USED**

## **ARTICLE 24 – POWER OF ATTORNEY**

- 24.01 Attorneys-in-fact who sign Bid Bonds or Contract Bonds must file with each bond a certified and effective dated copy of their power of attorney.
- 24.02 Section 746 of Title VII Consolidated Appropriations Act of 2017 (Division A- Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and any subsequent statutes mandating domestic preference applies an American Iron and Steel requirement to this project. All iron and steel products used in this project must be procured in the United States. "Iron and Steel Products" is defined in Section I.b.2. The de minimis and minor components waivers {add project specific waivers as applicable} apply to this contract.

## **ARTICLE 25 – LAWS AND REGULATIONS**

- 25.01 The Bidder's attention is directed to the fact that all applicable State Laws, municipal ordinance, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.



**ARTICLE 26 – SAFETY STANDARDS AND ACCIDENT PREVENTION**

26.01 With respect to all Work performed under this contract, the Contractor shall:

- A. Comply with the safety standards provisions of applicable laws, building and construction codes and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971.
- B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- C. Maintain at his/her office or other well-known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or doctor's care of persons (including employees), who may be injured on the job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

**ARTICLE 27 – WAGE RATE REQUIREMENTS**

27.01 If the contract price is in excess of \$100,000, provisions of the Contract Work Hours and Safety Standards Act at 29 CFD 5.5(b) apply.

General Decision Number: KY180139 06/22/2018 KY139

Superseded General Decision Number: KY20170139

State: Kentucky

Construction Type: Heavy

Counties: Bell, Breathitt, Carter, Clay, Elliott, Floyd, Harlan, Jackson, Knott, Lawrence, Lee, Leslie, Letcher, Magoffin, Martin, Morgan, Owsley, Perry and Wolfe Counties in Kentucky.

HEAVY CONSTRUCTION PROJECTS (including sewer/water construction).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.35 for calendar year 2018 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.35 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 calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Modification Number	Publication Date
0	01/05/2018
1	06/22/2018

CARP0064-007 05/01/2015

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 27.50	16.06
-----		
ELEC0369-004 09/05/2016		

	Rates	Fringes
LINE CONSTRUCTION		
Equipment Operator.....	\$ 32.27	20%+5.46
Groundman.....	\$ 21.29	20%+5.46
Lineman.....	\$ 36.12	20%+5.46
-----		
ENGI0181-011 07/01/2016		

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 31.05	14.65
GROUP 2.....	\$ 28.28	14.65
GROUP 4.....	\$ 27.97	14.65

#### OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - Bulldozer; Crane; Drill; Grader/Blade; Mechanic;  
Scraper

GROUP 2 - Bobcat/Skid Steer/Skid Loader; Forklift

GROUP 4 - Oiler

Operators on cranes with booms 150 feet and over (including jib) shall receive \$1.00 above Group 1 rate; 250 feet and over including jib shall receive \$1.50 above Class 1 rate. Combination Rate: All crane operators operating cranes, where the length of the boom in combination with the length of the piling leads equal or exceeds 150 feet, shall receive \$1.00 above the Group 1 rate.

Employees assigned to work below ground level are to be paid 10% above basic wage rate. This does not apply to open cut work.

-----  
IRON0782-010 08/01/2017

	Rates	Fringes
IRONWORKER (Reinforcing & Structural)		
Projects over \$20,000,000.00.....	\$ 27.09	20.66
Projects under \$20,000,000.00.....	\$ 28.32	23.00

-----  
\* LAB00189-014 07/01/2017

	Rates	Fringes
LABORER		
Concrete Saw (Hand Held/Walk Behind).....	\$ 24.47	12.21
Concrete Worker.....	\$ 24.22	12.21

-----  
\* LAB01445-001 07/01/2017

	Rates	Fringes
LABORER		
Airtrack Driller.....	\$ 24.04	13.29

-----  
SUKY2011-016 06/25/2014

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 21.60	10.35
ELECTRICIAN.....	\$ 32.35	2.18
LABORER: Common or General.....	\$ 21.36	9.39
LABORER: Flagger.....	\$ 18.31	8.89
LABORER: Pipelayer.....	\$ 20.15	8.92
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 25.97	10.25
OPERATOR: Loader.....	\$ 30.35	0.00
-----		

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 [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

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 Regional Office for the area in which the survey was conducted because those Regional Offices have 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.

=====

END OF GENERAL DECISION

**BID FORM**

**RATTLESNAKE RIDGE WATER DISTRICT**

**PHASE 11 WATER SYSTEM IMPROVEMENTS (15036)**

**CONTRACT 5 – NEW OFFICE BUILDING**



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**ARTICLE 1 – BID RECIPIENT**

- 1.01 This Bid is submitted to:

***Rattlesnake Ridge Water District***

**3563 State Highway 1661**

**Grayson, Kentucky 41143**

- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

**ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS**

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

- 3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work and including all AIS requirements.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and

observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### **ARTICLE 4 – BIDDER'S CERTIFICATION**

##### **4.01 Bidder certifies that:**

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
  - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
  - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

## ARTICLE 5 – BASIS OF BID

- 5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	Site Work	LS	1		
2	Renovations to Existing Garage	LS	1		
3	New Office Building Addition	LS	1		

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

**Total Bid Price**

\$ \_\_\_\_\_

## ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete within 270 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 300 calendar days after the date when the Contract Times commence to run.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 6.01 above, plus any extensions thereof allowed in accordance with Article 15 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$750 for each day that expires after the time specified in Paragraph 6.01 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$750 for each day that expires after the time

EJCDC® C-410, Bid Form for Construction Contracts.

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specified in Paragraph 6.01 for completion and readiness for final payment until the Work is completed and ready for final payment.

## ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid security SECTION 00430 EJCDC C-430;
- B. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. List of Project References;
- E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
- F. Contractor's License No.: [REDACTED] **[or]** Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
- G. Required Bidder Qualification Statement with supporting data; and
- H. If Bid amount exceeds \$10,000, signed Compliance Statement (RD 400-6). Refer to specific equal opportunity requirements set forth in paragraph 18.10 of the General Conditions;
- I. If Bid amount exceeds \$25,000, signed Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions (AD-1048);
- J. If Bid amount exceeds \$100,000, signed RD Instruction 1940-Q, Exhibit A-1, Certification for Contracts, Grants, and Loans. Refer to paragraph 18.11 of the General Conditions;
- K. Manufacturer's Certification Letter (Exhibit D) on any approved "or equal" or substitute request to ensure compliance with AIS requirements and any subsequent statutes mandating domestic preference.

## ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

## ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:

*[Signature]*

*[Printed name]*

*(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)*

Attest:

*[Signature]* \_\_\_\_\_

*[Printed name]* \_\_\_\_\_

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

Submittal Date: \_\_\_\_\_

Address for giving notices:

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

Telephone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Contact Name and e-mail address: \_\_\_\_\_

\_\_\_\_\_

Bidder's License No.: \_\_\_\_\_

*(where applicable)*

*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

# QUALIFICATIONS STATEMENT

Prepared by



Issued and Published Jointly by



Endorsed by



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EJCDC® C-451, Qualifications Statement.

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[www.acec.org](http://www.acec.org)

American Society of Civil Engineers  
1801 Alexander Bell Drive, Reston, VA 20191-4400  
(800) 548-2723  
[www.asce.org](http://www.asce.org)

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**QUALIFICATIONS STATEMENT**

**THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT  
PERMITTED BY LAWS AND REGULATIONS**

**1. SUBMITTED BY:**

Official Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_**2. SUBMITTED TO:** \_\_\_\_\_**3. SUBMITTED FOR:** \_\_\_\_\_Owner: Rattlesnake Ridge Water DistrictProject Name: Phase 11 Water System Improvements ProjectContract 3- Interior Repainting Water Storage Tanks  
\_\_\_\_\_  
\_\_\_\_\_**TYPE OF WORK:** Interior Blasting and Repainting of 3 existing Standpipe Tanks  
\_\_\_\_\_**4. CONTRACTOR'S CONTACT INFORMATION**

Contact Person: \_\_\_\_\_

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

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**5. AFFILIATED COMPANIES:**

Name: \_\_\_\_\_

EJCDC® C-451, Qualifications Statement.

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Address:

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**6. TYPE OF ORGANIZATION:**

☐ SOLE PROPRIETORSHIP

Name of Owner:

---

Doing Business As:

---

Date of Organization:

---

☐ PARTNERSHIP

Date of Organization:

---

Type of Partnership:

---

Name of General Partner(s):

---

---

---

☐ CORPORATION

State of Organization:

---

Date of Organization:

---

Executive Officers:

- President:

---

- Vice President(s):

---

---

---

- Treasurer:

---

- Secretary:

---

☐ LIMITED LIABILITY COMPANY

State of Organization:

---

Date of Organization:

---

Members:

---

---

---

---

☐ JOINT VENTURE

Sate of Organization:

---

Date of Organization:

---

Form of Organization:

---

Joint Venture Managing Partner

- Name:

---

- Address:

---

---

---

Joint Venture Managing Partner

- Name:

---

- Address:

---

---

Joint Venture Managing Partner

- Name:

---

- Address:

---

---

## 7. LICENSING

EJCDC® C-451, Qualifications Statement.

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Jurisdiction: \_\_\_\_\_

Type of License: \_\_\_\_\_

License Number: \_\_\_\_\_

Jurisdiction: \_\_\_\_\_

Type of License: \_\_\_\_\_

License Number: \_\_\_\_\_

**8. CERTIFICATIONS****CERTIFIED BY:**

Disadvantage Business Enterprise: \_\_\_\_\_

Minority Business Enterprise: \_\_\_\_\_

Woman Owned Enterprise: \_\_\_\_\_

Small Business Enterprise: \_\_\_\_\_

Other (\_\_\_\_\_): \_\_\_\_\_

**9. BONDING INFORMATION**

Bonding Company: \_\_\_\_\_

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

Bonding Agent: \_\_\_\_\_

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

Contact Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Aggregate Bonding Capacity: \_\_\_\_\_

Available Bonding Capacity as of date of this submittal: \_\_\_\_\_

**10. FINANCIAL INFORMATION**

Financial Institution: \_\_\_\_\_

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

Account Manager: \_\_\_\_\_

Phone: \_\_\_\_\_

INCLUDE AS AN ATTACHMENT AN AUDITED BALANCE SHEET FOR EACH OF THE  
LAST 3 YEARS

## 11. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

## 12. SAFETY PROGRAM:

Name of Contractor's Safety Officer: \_\_\_\_\_

Include the following as attachments:

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) OSHA No. 500- Log & Summary of Occupational Injuries & Illnesses for the past 5 years.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all OSHA Citations & Notifications of Penalty (monetary or other) received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all safety citations or violations under any state all received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide the following for the firm listed in Section V (and for each proposed Subcontractor furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) the following (attach additional sheets as necessary):

Workers' compensation Experience Modification Rate (EMR) for the last 5 years:

YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____

Total Recordable Frequency Rate (TRFR) for the last 5 years:

YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____

Total number of man-hours worked for the last 5 Years:

YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____

Provide Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) Days Away From Work, Days of Restricted Work Activity or Job Transfer (DART) incidence rate for the particular industry or type of Work to be performed by Contractor and each of Contractor's proposed Subcontractors and Suppliers) for the last 5 years:

YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____

### 13. EQUIPMENT:

MAJOR EQUIPMENT:

List on **Schedule C** all pieces of major equipment available for use on Owner's Project.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HERewith, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: \_\_\_\_\_

BY: \_\_\_\_\_

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

DATED: \_\_\_\_\_

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_

NOTARY PUBLIC - STATE OF \_\_\_\_\_

MY COMMISSION EXPIRES: \_\_\_\_\_

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Audited balance sheet for each of the last 3 years for firm named in Section 1.
5. Evidence of authority for individuals listed in Section 7 to bind organization to an agreement.
6. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
7. Required safety program submittals listed in Section 13.
8. Additional items as pertinent.



## SCHEDULE A

### CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

## SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				



## BID BOND

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

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*): Rattlesnake Ridge Water District  
3563 State Hwy. 1661  
Grayson, Kentucky 41143

BID

Bid Due Date:

Description: Phase 11 -Water System Improvements – Contract 5

BOND

Bond Number:

Date:

Penal sum

(Figures) (Words)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

**~~SURETY~~**

(Seal)

**Bidder's Name and Corporate Seal**

By:

Signature (Attach Power of Attorney)

Print Name

Title

Attest:

Signature

Title

*Note: Addresses are to be used for giving any required notice.*

*Provide execution by any additional parties, such as joint venturers, if necessary.*

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
  - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
  - 3.2 All Bids are rejected by Owner, or
  - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall

govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

## COMPLIANCE STATEMENT

This statement relates to a proposed contract with Rattlesnake Ridge Water District

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(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1. ☐ I have, ☐ have not, participated in a previous contract or subcontract subject to Executive 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.
2. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed contract is for \$50,000 or more and I have 50 or more employees, I also represent that:

3. ☐ I have, ☐ have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.
4. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): (See Reverse).

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According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays the valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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**NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR  
CERTIFICATIONS OF NON-SEGREGATED FACILITIES**

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date \_\_\_\_\_

\_\_\_\_\_  
*(Signature of Bidder or Prospective Contractor)*

\_\_\_\_\_  
*Address (including Zip Code)*

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

\_\_\_\_\_  
(name)

\_\_\_\_\_  
(date)

\_\_\_\_\_  
(title)

oOo

## U.S. DEPARTMENT OF AGRICULTURE

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### **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions**

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This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

#### **(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)**

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

---

Organization Name

PR/Award Number or Project Name

---

Name(s) and Title(s) of Authorized Representative(s)

---

Signature(s)

Date

#### **Instructions for Certification**

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," without modification, in all lower tier covered transaction and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

## NOTICE OF AWARD

---

Date of Issuance:

Owner: Rattlesnake Ridge Water District      Owner's Contract No.:  
Engineer: Kentucky Engineering Group, PLLC      Engineer's Project No.: 15036  
Project: Phase 11 Water System Improvements      Contract Name: Contract 5 – New Office Building

Bidder:

Bidder's Address:

### TO BIDDER:

You are notified that Owner has accepted your Bid dated [ \_\_\_\_\_ ] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Phase 11 Water System Improvements – Contract 5 – New Office Building \_\_\_\_\_ .

The Contract Price of the awarded Contract is: \$ \_\_\_\_\_

[ 0 ] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically. *[revise if multiple copies accompany the Notice of Award]*

☒ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of this Notice of Award:

1. Deliver to Owner [ 5 ] counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance and payment bonds]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

---

Owner: Rattlesnake Ridge Water District

Authorized Signature

By:

Title:

Copy: Engineer

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

## **AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

Prepared by



Issued and Published Jointly by



Endorsed by



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(703) 684-2882  
[www.nspe.org](http://www.nspe.org)

American Council of Engineering Companies  
1015 15th Street N.W., Washington, DC 20005  
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1801 Alexander Bell Drive, Reston, VA 20191-4400  
(800) 548-2723  
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## INTRODUCTION

This Agreement between Owner and Contractor for Construction Contract (Stipulated Price) ("Agreement") has been prepared for use with the Suggested Instructions to Bidders for Construction Contracts ("Instructions to Bidders") (EJCDC® C-200, 2013 Edition); the Suggested Bid Form for Construction Contracts ("Bid Form") (EJCDC® C 410, 2013 Edition); and the Standard General Conditions of the Construction Contract ("General Conditions") (EJCDC® C-700, 2013 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the others. See also the Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition), and the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

In construction contracting, as a general matter the "agreement" is the legal instrument executed (signed) by the project owner and the construction contractor, binding the parties to the terms of the contract. See CSI Project Delivery Practice Guide (2011), Section 11.1.2, p. 210, and CSI Construction Specification Practice Guide (2011), Section 5.1, p. 75. This EJCDC Agreement form serves that basic function, by identifying the parties and Contract Documents, and establishing the Contract Price and Contract Times. This Agreement form is specifically intended for stipulated price (fixed price) contracts—that is, contracts in which Owner and Contractor identify specific lump sums and unit prices as Contractor's compensation for performing the Work. For construction contracts in which the Contract Price is primarily based on costs incurred during construction, users should select EJCDC® C-525, Agreement between Owner and Contractor for Construction Contract (Cost-Plus).

This Agreement form is drafted to be flexible enough to be used on projects that are competitively bid, and for public and private contracts that are negotiated or awarded through a proposal process or otherwise. On competitively bid projects, the following documentary information would typically be made available to bidders:

- Bidding Requirements, which include the Advertisement or invitation to bid, the Instructions to Bidders, and the Bid Form that is suggested or prescribed, all of which provide information and guidance for all Bidders, and Bid Form supplements (if any) such as Bid Bond and Qualifications Statement.
- Contract Documents, which include the Agreement, performance and payment bonds, the General Conditions, the Supplementary Conditions, the Drawings, and the Specifications.
- Documents referred to in the Supplementary Conditions or elsewhere as being of interest to bidders for reference purposes, but which are not Contract Documents.

Together, the Bidding Requirements and the Contract Documents are referred to as the Bidding Documents. (The terms "Bidding Documents," "Bidding Requirements," and "Contract Documents" are defined in Article 1 of the General Conditions.) The Bidding Requirements are not Contract Documents because much of their substance pertains to the relationships prior to the award of the Contract and has little effect or impact thereafter. Many contracts are awarded without even going through a bidding process, and thus have no Bidding Requirements, illustrating that the bidding items are typically superfluous to the formation of a binding and comprehensive construction contract. In some cases, however, a bid or proposal will contain numerous line items and their prices; in such case the actual bid or proposal document may be attached as an exhibit to the Agreement to avoid extensive rekeying.



Suggested provisions are accompanied by “Notes to User” and bracketed notes and prompts to assist in preparing the Agreement. The provisions have been coordinated with the other forms produced by EJCDC. Much of the language should be usable on most projects, but modifications and additional provisions will often be necessary. When modifying the suggested language or writing additional provisions, the user must check the other documents thoroughly for conflicts and coordination of terms, and make appropriate revisions in all affected documents.

All parties involved in construction projects benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. When preparing documents for a construction project, careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition), available at no charge from the EJCDC website, [www.ejcdc.org](http://www.ejcdc.org), and from the websites of EJCDC’s sponsoring organizations.

CSI MasterFormat™ (50-Division format) designates Document “00 52 XX” for various forms of the owner-contractor agreement. If this format is used, the first page of the Agreement would be numbered 00 52 13-1 (or other appropriate third pair of numbers, in accordance with MasterFormat™).

Instructions and restrictions regarding the use of this document are set out in the License Agreement that accompanied the document at the time of purchase. To prepare the Agreement for inclusion in a Project Manual or for use in a specific contractual engagement, (1) remove the cover pages and this Introduction, (2) fill in Project-specific information and make revisions to the Agreement, following the guidance in the Notes to Users and bracketed notes and prompts, and the advice of legal counsel, and (3) delete the Notes to Users and bracketed notes and prompts.

Owner and Contractor hereby agree as follows:

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Phase 11 Water System Improvements **Contract 5 – New Office Building**

3.01 The part of the Project that pertains to the Work has been designed by Kentucky Engineering Group, PLLC.

3.02 The Owner has retained Kentucky Engineering Group, PLLC (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

A. The Work will be substantially completed within 270 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 300 days after the date when the Contract Times commence to run.

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the

actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner \$ 750 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially completed.

*Finally, note that Paragraph 4.04.B above does not refer to fines or penalties. In the typical case, fines and penalties are linked to Substantial Completion, and are not applicable to delays in final completion of the Work.*

## ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

- A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

## ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the TBD day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

- a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
- b. 100 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 5

percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

#### 6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

### **ARTICLE 7 – INTEREST**

- 7.01 All amounts not paid when due shall bear interest at the rate of 3.5 percent per annum.

### **ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS**

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
- B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.
- E. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- F. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- G. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- H. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

- I. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

## ARTICLE 9 – CONTRACT DOCUMENTS

### 9.01 *Contents*

- A. The Contract Documents consist of the following:
1. This Agreement (pages 1 to 10, inclusive).
  2. Performance bond (pages 1 to     , inclusive).
  3. Payment bond (pages 1 to     , inclusive).
  4. Other bonds.
    - a.      (pages      to     , inclusive).
  5. General Conditions (pages 1 to 73, inclusive).
  6. Supplementary Conditions (pages 1 to 9, inclusive).
  7. Specifications as listed in the table of contents of the Project Manual.
  8. Drawings (not attached but incorporated by reference) consisting of 18 sheets with each sheet bearing the following general title: RATTLESNAKE RIDGE WATER DISTRICT BUILDING ADDITION
  9. Addenda (numbers      to     , inclusive).
  10. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (pages 1 to     , inclusive).
  11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    - a. Change Orders
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

## ARTICLE 10 – MISCELLANEOUS

### 10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

### 10.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without

limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

#### 10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

#### 10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

#### 10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
  1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
  2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
  3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
  4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

#### 10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on \_\_\_\_\_ (which is the Effective Date of the Contract).

OWNER:

\_\_\_\_\_  
Rattlesnake Ridge Water District

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

Title: Chairman

Attest: \_\_\_\_\_

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

Address for giving notices:

\_\_\_\_\_  
3563 State Hwy. 1661

\_\_\_\_\_  
Grayson, Kentucky 41143

*(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*

CONTRACTOR:

\_\_\_\_\_

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

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

*(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*

Attest: \_\_\_\_\_

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

Address for giving notices:

\_\_\_\_\_

\_\_\_\_\_

License No.: \_\_\_\_\_  
*(where applicable)*

*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

**NOTICE TO PROCEED**

---

Owner:	Rattlesnake Ridge Water District	Owner's Contract No.:	N/A
Contractor:		Contractor's Project No.:	
Engineer:	Kentucky Engineering Group, PLLC	Engineer's Project No.:	15036
Project:	Phase 11 Water System Improvements	Contract Name:	Contract 5 – New Office Building
		Effective Date of Contract:	

---

**TO CONTRACTOR:**

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [REDACTED], 20[REDACTED]. [see Paragraph 4.01 of the General Conditions]

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, [the date of Substantial Completion is \_\_\_\_\_, and the date of readiness for final payment is \_\_\_\_\_] **or** [the number of days to achieve Substantial Completion is \_\_\_\_\_, and the number of days to achieve readiness for final payment is \_\_\_\_\_].

Before starting any Work at the Site, Contractor must comply with the following:

*[Note any access limitations, security procedures, or other restrictions]*

---

Owner: Rattlesnake Ridge Water District

By: Authorized Signature

Title: Chairman

Date Issued:

Copy: Engineer



## SECTION 00600

### INSURANCE CERTIFICATE

Certificate of Insurance shall be provided in accordance with:

#### OWNER'S MINIMUM INSURANCE REQUIREMENTS

The Contractor at its expense shall procure and shall maintain the insurance required in this Contract and to be provided by the Contractor. The Contractor shall require each subcontractor to procure and maintain the insurance required by this Contract and to be provided by subcontractors. At a minimum, the following insurance Limits shall be procured:

General Liability – Commercial General Liability

Limits of Insurance -      \$2,000,000 general aggregate  
    \$2,000,000 products & completed operations aggregate  
    \$1,000,000 personal & advertising  
    \$1,000,000 each occurrence

Automobile Liability – All Owned, Non-owned & Hired vehicles

Limits of Liability - \$1,000,000 per accident

Excess or Umbrella Liability

Limits of Liability - \$2,000,000

Workmen's Compensation – Statutory Coverage in each state of operations or “all states” coverage

Limits of Liability -      \$100,000 each accident bodily injury  
    \$500,000 policy limit bodily injury by disease  
    \$100,000 each employee bodily injury by disease

Description of Operations

Rattlesnake Ridge Water District and Kentucky Engineering Groups, PLLC must be added to the Commercial General Liability policy as an additional insured by Standard Endorsements CG 2010(11-85) and CG 2037 or their equivalents.

All policies, except workers compensation, shall include a waiver of subrogation.

Certificate Holder

Must list:                      Rattlesnake Ridge Water District  
    P.O. Box 475  
    Grayson, Kentucky 41143

Cancellation

Thirty (30) days prior written notice is required.

Builders Risk/Installation Floater

May be required in an amount equal to the contract. If above ground structures are involved in the Contract, this is required.

END OF SECTION

## PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

Rattlesnake Ridge Water District  
3563 State Hwy. 1661  
Grayson, Kentucky 41143

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):* Phase 11 Water System Improvements – Contract 5 New Office Building

### BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

### CONTRACTOR AS PRINCIPAL

### SURETY

\_\_\_\_\_  
Contractor's Name and Corporate Seal

\_\_\_\_\_  
Surety's Name and Corporate Seal

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

By: \_\_\_\_\_  
Signature *(attach power of attorney)*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

EJCDC® C-610, Performance Bond

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and American Society of Civil Engineers. All rights reserved. 1 of 3

***Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.***

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 Paragraph 3.

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

3.1 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 Paragraph 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;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 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 Paragraph 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 Paragraph 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 Owners 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 Paragraph 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:

5.4.1 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

5.4.2 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 Paragraph 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 Paragraph 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 Paragraph 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:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 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 Paragraph 5; and

7.3 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 Paragraph 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 periods of limitations 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 for the Contractor for 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:

## PAYMENT BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address)*

Rattlesnake Ridge Water District

3563 State Hwy. 1661

Grayson, KY 41143

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: Phase 11 Water System Improvements Contract 5 – New Office Building

### BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

### CONTRACTOR AS PRINCIPAL

### SURETY

\_\_\_\_\_  
*(seal)*

Contractor's Name and Corporate Seal

\_\_\_\_\_  
*(seal)*

Surety's Name and Corporate Seal

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

Signature

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

Signature *(attach power of attorney)*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Signature

Signature

---

Title

---

Title

***Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.***

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 Paragraph 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 Paragraph 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,
    - 5.1.1 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
    - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 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 Paragraph 13).
6. If a notice of non-payment required by Paragraph 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 Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 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 Paragraph 7.1 or 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 Paragraph 7.1 or 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 Paragraph 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 Paragraph 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 requests 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 of "labor, materials, or equipment" that part of the 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:



## Contractor's Application for Payment No.

Application Period:		Application Date:	
To (Owner):	From (Contractor):	Via (Engineer):	
Project:	Contract:	Kentucky Engineering Group, PLLC	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:	
N/A		15036	

### Application For Payment

#### Change Order Summary

Approved Change Orders				
Number	Additions	Deductions		
TOTALS				
NET CHANGE BY				
CHANGE ORDERS				

1. ORIGINAL CONTRACT PRICE..... \$ \_\_\_\_\_

2. Net change by Change Orders..... \$ \_\_\_\_\_

3. Current Contract Price (Line 1 ± 2)..... \$ \_\_\_\_\_

4. TOTAL COMPLETED AND STORED TO DATE  
(Column F total on Progress Estimates)..... \$ \_\_\_\_\_

5. RETAINAGE:

a.     X     \_\_\_\_\_ Work Completed..... \$ \_\_\_\_\_

b.     X     \_\_\_\_\_ Stored Material..... \$ \_\_\_\_\_

c. Total Retainage (Line 5.a + Line 5.b)..... \$ \_\_\_\_\_

6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c)..... \$ \_\_\_\_\_

7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$ \_\_\_\_\_

8. AMOUNT DUE THIS APPLICATION..... \$ \_\_\_\_\_

9. BALANCE TO FINISH, PLUS RETAINAGE  
(Column G total on Progress Estimates + Line 5.c above)..... \$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_

<b>Contractor's Certification</b> The undersigned Contractor certifies, to the best of its knowledge, the following: (1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment; (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and (3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.		Payment of:     \$ _____ <div style="text-align: center;">(Line 8 or other - attach explanation of the other amount)</div>
<b>Contractor Signature</b> By: _____ Date: _____		is recommended by: _____ (Date) <div style="text-align: center;">Kentucky Engineering Group, PLLC</div>
Approved by: _____ (Date) <div style="text-align: center;">Trimble County Water District No.1</div>		Payment of:     \$ _____ <div style="text-align: center;">(Line 8 or other - attach explanation of the other amount)</div>
Approved by: _____ (Date) <div style="text-align: center;">Rural Development</div>		is approved by: _____ (Date) <div style="text-align: center;">Trimble County Water District No.1</div>

**Change Order No.** \_\_\_\_\_

Date of Issuance:

Effective Date:

Owner: Rattlesnake Ridge Water District

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer: Kentucky Engineering Group, PLLC

Engineer's Project No.: 15036

Project: Phase 11 Water System Improvements

Contract Name: Contract 5

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

<b>CHANGE IN CONTRACT PRICE</b>	<b>CHANGE IN CONTRACT TIMES</b> <i>[note changes in Milestones if applicable]</i>
Original Contract Price:  \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ____ to No. ____:  \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ____ to No. ____: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order:  \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order:  \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order:  \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

<b>RECOMMENDED:</b>	<b>ACCEPTED:</b>	<b>ACCEPTED:</b>
By: _____ Engineer (if required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Title: \_\_\_\_\_

## CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: Rattlesnake Ridge Water District  
Contractor:  
Engineer: Kentucky Engineering Group, PLLC  
Project: Phase 11 Water System Improvements

Owner's Contract No.:  
Contractor's Project No.:  
Engineer's Project No.: 15036  
Contract Name: Contract No.5

**This [preliminary] [final] Certificate of Substantial Completion applies to:**

☐ All Work ☐ The following specified portions of the Work:

### Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities: ☐ None  
☐ As follows

Amendments to Contractor's responsibilities: ☐ None  
☐ As follows:

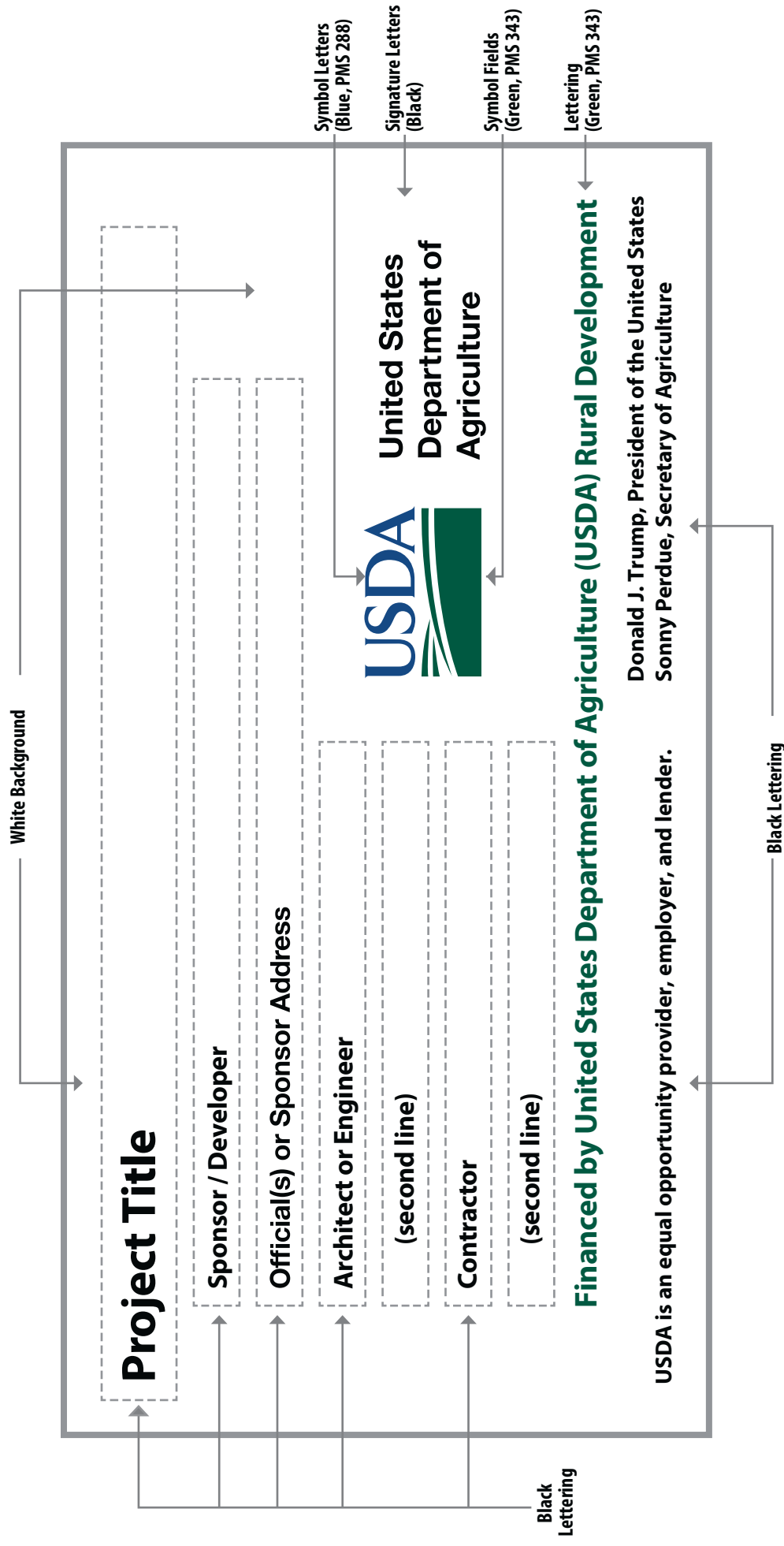
The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

# TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS

Recommended Fonts: Helvetica, Arial, or Myriad Pro



**SIGN DIMENSIONS** : 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x 3/4")  
**PLYWOOD PANEL (APA RATED A-B GRADE—EXTERIOR)**

**CERTIFICATE OF OWNER'S ATTORNEY AND AGENCY CONCURRENCE**

## CERTIFICATE OF OWNER'S ATTORNEY

PROJECT NAME: Phase 11 Water System Improvements – Contract 5 – New Office Building

---

CONTRACTOR NAME:

---

I, the undersigned, \_\_\_\_\_, the duly authorized and acting legal representative of \_\_\_\_\_, do hereby certify as follows: I have examined the attached Contract(s) and performance and payment bond(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements is adequate and has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

---

Name

Date

## AGENCY CONCURRENCE

As lender or insurer of funds to defray the costs of this Contract, and without liability for any payments thereunder, the Agency hereby concurs in the form, content, and execution of this Agreement.

---

Agency Representative

Date

---

Name

UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Utilities Service  
**KENTUCKY BULLETIN 1780-2**

**SUBJECT:** Guidance for Implementation of American Iron and Steel (AIS).

**TO:** Applicants, Consulting Engineers, Contractors, and Manufacturers

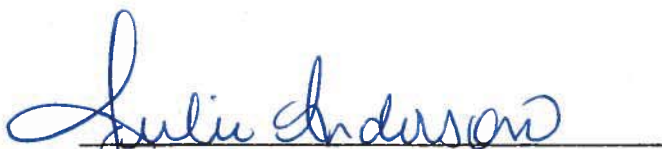
**EFFECTIVE DATE:** Date of approval.

**INSTRUCTIONS:** This is a new Bulletin and does not replace any existing Kentucky Bulletin.

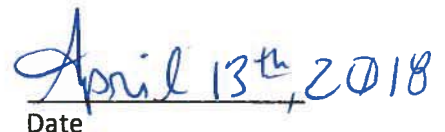
**AVAILABILITY:** This Bulletin, as well as any RD or RUS instructions, regulations, or forms referenced in this Bulletin are available at any RD State Office or Area Office. The State Office staff is familiar with the use of the documents and can answer specific questions or RD requirements.

The basic concept of this new requirement is that all iron and steel products used in projects funded by RUS WEP must be produced in the United States. Iron and steel products are defined on page 14 of this Bulletin.

**PURPOSE:** This Bulletin provides information and guidance to effected parties regarding the AIS Requirements mandated by Section 746 of Title VII Consolidated Appropriations Act of 2017 (Division A-Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statues mandating domestic preference.



Julie Anderson  
State Engineer  
Water and Environmental Programs



Date

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1. BACKGROUND

- A. Section 746 of Title VII Consolidated Appropriations Act of 2017 (Division A- Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference. It applies a new American Iron and Steel (AIS) requirement on the Rural Development (RD) WEP program.
- B. Statutory Language: SEC 746 Division A Title VII the Consolidated Appropriations Act of 2017.  
(1) No Federal funds made available for this fiscal year for the rural water, waste water, waste disposal, and solid waste management programs authorized by sections 306, 306A, 306C, 306D, and 310B of the Consolidated Farm and Rural Development Act (7 USC 1926 et seq.) shall be used for a project for the construction, alteration, maintenance, or repair of a public water or wastewater system unless all of the iron and steel products used in the project are produced in the United States.  
(2) In this section, the term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipe flanges, manhole covers, and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

2. APPLICABILITY

- A. The requirements of AIS apply only to projects that construct, alter, enlarge, extend, maintain, repair or otherwise improve rural water, sanitary sewage, solid waste disposal, and storm wastewater disposal facilities.
- B. The requirements apply to projects using funds from RD WEP. Any amount of funding from this program requires compliance with the AIS requirements. Use of funds from this program is not allowed unless the requirements for AIS are met for the entire project. Projects that leverage funds from other funding sources are also subject to the requirements.
- C. The requirements apply in the United States as defined in Section 746 (g) of the statute and therefore do not apply to projects located in Puerto Rico, the Virgin Islands, or Western Pacific Territories.
- D. The requirements apply to any used iron and steel products to be constructed in the project.
- E. The requirements do not apply to projects for which any funds were obligated on or before May 5, 2017. The requirements therefore do not apply to subsequent obligation of funds for projects which had an initial obligation of funds on or before May 5, 2017.
- F. The requirements do not apply to contracts which were executed prior to or on May 5, 2017, regardless of date of obligation.

- G. The requirements do not apply to projects for which contracts were executed and/or construction is already underway and/or completed prior to applying to USDA for funding.
  - H. The requirements do not apply to products primarily composed of iron and/or steel (composed of more than 50%) if they are not listed in the statute.
  - I. The requirements do not apply to raw materials used in the production of iron or steel such as iron ore, limestone, scrap iron and scrap steel.
  - J. The requirements do not apply to any items that are at the construction site temporarily, such as scaffolding, trench boxes, and equipment temporarily used or stored on site.
  - K. The requirements do not apply when the sole purpose of the loan and/or grant is to fund non-construction activities such as capacity/connection fees or the acquisition of a system.
  - L. The requirements supersede any regulation on full and open competition stated in 7 CFR 1780.70 (b) and 2 CFR Part 200.319. For example, if an iron and steel product that is compliant with AIS is made by only one manufacturer, provided documentation is submitted and verified, sole source procurement of said product may be used.
  - M. The requirements only apply to the final product as delivered to the work site and incorporated into the project. The need for compliance of an item with AIS depends on whether or not the final assembled product is listed. Components of a final product, even if they are listed, do not need to comply with the AIS requirements. In the case of an assembled product where the primary component is not listed in the 2017 Consolidated Appropriations Act and includes components/appurtenances that are specifically listed, said assembled product is not subject to AIS (e.g. pump assembly).
3. IMPLEMENTATION (Agency, Owner, Engineer, Contractor, manufacturer's et al)
- A. There are several parties involved in compliance with the AIS requirement and some requirements are specific to a party.
  - B. The parties that have one or more responsibilities under AIS include: the Agency funding recipients under the Water and Waste Disposal Loan and Grant program and Guaranteed Loan Program, consulting engineers, construction contractors, suppliers, distributors, manufacturers; lenders under the Guaranteed Loan Program; and grantees under 306C and ECWAG programs.

4. OWNER RESPONSIBILITIES:

- A. Sign loan resolutions, grant agreements and letters of intent to meet conditions which include AIS language, accepting AIS requirements in those documents and in the letter of conditions.
- B. Sign Agreement for Engineering Services, executed construction contracts and all other appropriate and necessary documents which include AIS language.
- C. Acknowledge responsibility for compliance with AIS requirements by signing change orders (i.e. C-941 of EJCDC or RD Form 1924-7) and partial payment estimates (i.e. C-602 of EJCDC or RD Form 1924-18).
- D. Obtain the certification letters from the Engineer once substantial completion has been achieved and maintain this documentation for the life of the loan.
- E. In special cases where the Owner provides its' own engineering and/or construction services, provide copies of Engineer's Certification Letter (Exhibit B) and Contractor's Certification Letter (Exhibit C) to the Agency. Manufacturer's Certification Letter (Exhibit D) must be obtained by the Owner for each AIS qualifying product. All certification letters must be kept in the Engineer's project file and on site during construction. For Owner Construction (Force Account), all AIS clauses from Section 11 must be included in the Agreement for Engineering Services.

5. ENGINEER RESPONSIBILITIES

- A. Costs of compliance with AIS should be included in the engineering fees (if appropriate) and in Engineer's opinions of probable project costs.
- B. Develop the initial AIS Materials List (Exhibit J) for each contract using project specifications and include the initial qualifying list with the bid documents. An excel version that will compute all totals can be obtained from the RD State Office that can be used as a working copy.
- C. Include AIS language (Section 11) in the Agreement for Engineering Services.
- D. Plans, specifications, bidding documents and bid addenda must include required AIS language (Section 12). For any AIS products specified by brand names, obtain a Manufacturer's Certification Letter (Exhibit D) from the manufacturer to verify the products comply with AIS.
- E. Certify that plans, specifications, and bidding documents comply with AIS and commit that bid addenda, executed contracts and change orders will comply with AIS and submit Engineer's Certification Letter (Exhibit B) to the Agency prior to authorization to advertise for bids.

- F. Provide a copy of the Manufacturer's Certification Letter (Exhibit D) on any specified brand name AIS products in the plans, specifications and bidding documents including any bid addenda to the Contractor.
- G. Coordinate with the Contractor(s) to compile a complete AIS Materials List (Exhibit J) for each contract, sign and date, and provide a copy to the Agency in the construction contract(s).
- H. Review shop drawings and change orders to ensure compliance with AIS. For shop drawings under consideration for any brand name, equal and/or substitute, any iron and steel products subject to AIS, obtain the Manufacturer's Certification Letter (Exhibit D) from the Contractor to verify the products comply with AIS.
- I. Keep all certification letters (including those from the Engineer, Contractor, and any manufacturer providing AIS products) in the Engineer's project file.
- J. Review AIS Materials List (Exhibit J) submitted with each invoice to verify accuracy and sign and date.
- K. For any change order under consideration for any AIS products, obtain a Manufacturer's Certification Letter (Exhibit D) from party submitting the change proposal to ensure compliance with AIS.
- L. Acknowledge responsibility for compliance with AIS requirements by signing change orders (i.e. C-941 of EJCDC or RD Form 1927-7) and partial pay estimates (i.e. C-620 of EJCDC or RD Form 1924-18).
- M. Upon substantial completion of project, obtain the Contractor's Certification Letter (Exhibit C) and a complete and final AIS Materials List (Exhibit J) to submit to the RD State Engineer. Obtain copies of any/all manufacturers' certification letters for all AIS products used in the project to be kept in the Owner's project file.
- N. Resident project representative (RPR) reports must include verification, either by picture or written statement, that an item subject to AIS was installed and was in compliance with requirements.

6. CONTRACTOR RESPONSIBILITIES

- A. Review the Engineer's AIS Materials List (Exhibit J) prior to bid preparation.
- B. Bid submittal with a request for consideration from a proposed equal or substitute should also include a Manufacturer's Certification Letter (see Exhibit D) to verify the products comply with AIS.
- C. Upon award of the contract, obtain copies of any and all manufacturers' certification letters from the Engineer for brand name products specified by the Engineer.

- D. Work with the Engineer to compile a complete AIS Materials List (Exhibit J) for each contract as bid.
- E. Shop drawing submittals for proposed equals, substitutes, and any iron and steel product subject to AIS, provide a Manufacturer's Certification Letter (Exhibit D) to verify the product complies with AIS.
- F. Prior to construction, ensure that copies of any and all manufacturers' certification letters, including those from others (e.g. Engineer, Owner, etc.), for any AIS products to be used in the project are in the project file on site prior to installation.
- G. Pay request must have an updated AIS Materials List (Exhibit J) submitted with each pay request. All columns must be filled out completely as applicable. Do not complete columns under "De Minimis Materials Only" for qualifying materials. Sign and date. An excel version that will compute all totals can be obtained from the RD State Office that can be used as a working copy.
- H. Change orders for any AIS products must include a Manufacturer's Certification Letter (Exhibit D) to the Engineer to verify the products comply with AIS.
- I. Acknowledge responsibility for compliance with AIS requirement by signing change orders (i.e. C-941 of EJCDC or RD Form 1924-7) and partial pay estimates (C-620 of EJCDC or RD Form 1924-18).
- J. Keep all manufacturer certification letters (including those from the Engineer, Contractor and any manufacturer providing AIS products) on site during construction in the construction project file.
- K. Upon substantial completion of the project, provide Contractor's Certification Letter (Exhibit C) to the Engineer that all iron and steel products installed comply with AIS

7. MANUFACTURER, SUPPLIER, DISTRIBUTOR RESPONSIBILITIES

- A. If iron and steel products are produced in the United States as defined in this Bulletin, prepare (applicable to manufacturers and fabricators) or obtain (applicable to suppliers, distributors, vendors, etc.) Manufacturer's Certification Letters (Exhibit D) and make available upon request to Engineer, Contractor, etc.

8. RESPONSIBILITIES UNDER THE GUARANTEED LOAN PROGRAM

AIS applies to projects funded by Section 306A- Guaranteed Loan Program

- A. Lenders are responsible to ensure that loan recipients comply with AIS requirements.
- B. Loan recipients are ultimately responsible for compliance with AIS requirements.

9. ECWAG

- A. If construction contracts were awarded and/or executed or construction began prior to application, these projects are not subject to AIS (Section 2).
- B. If construction contracts were awarded and/or executed or construction began during the application process, these projects are subject to AIS.

10. AGREEMENT BETWEEN OWNER AND ENGINEER (EJCDC E-500) PROVISIONS

- A. Article 5.01.A: Add the following "Opinions of probable cost and any revisions thereof should reflect compliance with American Iron and Steel (AIS) requirements mandated in the Consolidated Appropriations Act of 2017 and any subsequent mandating domestic preferences."
- B. Add paragraph 5.03.B: "Opinions of total project cost and any revisions thereof should reflect compliance with AIS and any subsequent statutes mandating domestic preference."
- C. Add paragraph A.1.03.A.13: "Services required to determine and certify that to the best of the Engineer's knowledge and belief that all iron and steel products referenced in engineering analysis, the plans, specifications, bidding documents, and associated bid addenda requiring design revisions are either produced in the US or are subject to approved waiver. Services required to determine to the best of the Engineer's knowledge and belief that approved substitutes, equals, and all iron and steel products proposed in the shop drawings, change orders and partial payment estimates are either produced in the US, or are subject of an approved waiver. The de minimis and minor components waiver {add project specific waivers if applicable} apply to this contract."
- D. Add paragraph A.1.04.A.10: "Provide copies of all manufacturers' certification letters to the Bidders on brand name iron and steel products along with plans, specifications and bidding documents. Manufacturers' certification letters are to be included in the bidding documents and must be kept in the Engineer's project file and in site during construction."
- E. Add paragraph A.1.04.11: "Provide copies of all manufacturers' certification letters to the Contractor on any brand name iron and steel products along with the plans, specifications, bidding documents. Including any bid addenda and change orders. Manufacturers' certification letters must be kept in the Engineer's project file for the duration of construction."
- F. Add paragraph A.1.04.12: "Develop AIS Materials list (Exhibit J) for bidding purposes and finalize with the Contractor for tracking. Review updated AIS Materials list for accuracy each month and include in each pay request. An excel version that will compute all totals can be obtained from the RD State Office that can be used as a working copy."



- G. Modify A.1.05.A.17: Add the following prior to the first sentence "Review and approve, or take other appropriate action, with respect to shop drawings, samples, and other required Contractor submittals to ensure compliance with AIS requirements and any subsequent statutes mandating domestic preference. Any iron and steel products included in any submittal by the Contractor, must include the Manufacturer's Certification Letter (Exhibit D) to verify the products were produced in the U.S. Copies of these letters must be kept in the Engineer's project file and on site during construction."
- H. Article A.1.05.A.18: Add the following at the end of the paragraph as amended by Kentucky Bulletin 1780-1 "Prior to approval of any substitute "or equal" obtain the Manufacturer's Certification Letter (Exhibit D) to verify the products were produced in the U.S. Manufacturers' certification letters must be kept in Engineer's project file and on site during construction to ensure compliance with AIS requirements and any subsequent statutes mandating domestic preference, if applicable."
- I. Add subparagraph A.1.05.A.19.d: "Receive and review all manufacturers' certification letters for materials required to comply with AIS and any subsequent statutes mandating domestic preference to verify the products were procured in the U.S. Manufacturers' certification letters must be kept in the Engineer's project file on site during construction."
- J. Add subparagraph (c) to the end of A.1.05.A.20: (c) Review change proposals to ensure compliance with AIS requirements and any subsequent statutes mandating domestic preference."
- K. Add item "a" as a deliverable under paragraph A.1.05.A.25: (s) Obtain the Contractor's Certification Letter (Exhibit C) and copies of manufacturers' certification letters for all AIS used in the project. Upon substantial completion, provide copies of Engineer's, Contractor's, and all manufacturers' certification letters to the Owner. Attach Contractor's Certification Letter (Exhibit C) and a final AIS Materials List (Exhibit J) with letter of substantial completion and submit it to the Agency."
- L. Add the following language to B.2.02: "Owners are ultimately responsible for compliance with AIS and any subsequent statutes mandating domestic preference and will be responsible for the following:
  - 1. Signing loan resolutions, grant agreements and letter of intent to meet conditions which include AIS language, accepting AIS requirements in those documents and in the letter of conditions.
  - 2. Signing change orders (i.e. C-941 of EJCDC or RD Form 1924-7) and partial pay estimates (C-620 of EJCDC or RD Form 1924-18) and thereby acknowledging responsibility for compliance with AIS requirements.
  - 3. Obtaining all certification letters from the Engineer upon substantial completion of the project and maintaining this documentation for the life of the loan.

4. Where the Owner provides their own engineering and/or construction services, provide copies of Engineer's, and Contractor's certification letters to the Agency, and obtain all manufacturers' certification letters as required. All certification letters must be kept in the Engineer's project file and on site during construction. For Owner Construction (Force Account), all clauses from Section 11 must be included in the Agreement or Engineering Services.
5. Where the Owner directly procures AIS products, including AIS clauses in the procurement contracts and obtaining manufacturers' certification letters and providing copies to consulting engineers and contractors.

M. Add subparagraph D.1.01.C.11.g: "(g) Maintain all manufacturers' certification letters in the project file and on site during construction to ensure compliance with AIS requirements and any subsequent statutes mandating domestic preference, as applicable."

N. Add the following at the end of D.1.01.c.11b: Daily reports should document installation of an AIS material and verify by picture or statement on the report that the manufacturer was the same as that listed on the AIS materials list and complied with AIS requirements.

11. BIDDING AND CONSTRUCTION CONTRACT DOCUMENTS (EJCDC C-SERIES, 2013)

A. Advertisement for Bids (C-111)

Add at the end of C-111 prior to the Owner's name: "Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A- Agriculture, Rural Development, Food and Drug Administration, and Related Agencies, Appropriations Act, 2017) and subsequent statutes mandating domestic preference applies to American Iron and Steel requirement to this project. All listed iron and steel products used in this project must be produced in the United States. The term "iron and steel products" means the following products made primarily of iron and steel: lines or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. The de minimis and minor components waiver {all project specific waivers as applicable} apply to this contract."

B. Instruction to Bidders (C-200)

1. Article 5.01.C: Delete the semicolon at the end of the article and insert the following "included but not limited to the AIS requirements as mandated and any subsequent statutes mandating domestic preference which apply to the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.
2. Article 11.01: Modify article as previously amended by Kentucky Bulletin 1780-1 by inserting the following sentence after "Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. Each such request shall include the Manufacturer's Certification Letter (Exhibit D) for compliance with AIS requirements and any subsequent statutes mandating domestic preference, if applicable.



3. Article 24.02: Add paragraph 24.02:Section 746 of Title VII Consolidated Appropriations Act of 2017 (Division A- Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and any subsequent statues mandating domestic preference applies an American Iron and Steel requirement to this project. All iron and steel products used in this project must be procured in the United States. "Iron and Steel Products" is defined in Section 1.b.2. The de minimis and minor components waivers {add project specific waivers as applicable} apply to this contract."
- C. Bid Form (C-410)
1. Article 3.01.C: Add language at the end of the sentence "...and including all AIS requirements.
  2. Article 7.01: Add 7.01.K "Manufacturer's Certification Letter (Exhibit D) on any approved "or equal" or substitute request to ensure compliance with AIS requirements and any subsequent statutes mandating domestic preference.
- D. Supplementary General Conditions (C-800)
1. SC 1.01.A.51: "Manufacture's Certification Letter (Exhibit D) is documentation provided by the manufacturer, supplier, distributor, vendor, fabricator, etc. to various entities stating that the AIS products to be used in the project are produced in the U.S. in accordance with the AIS requirements.
  2. SC 1.01.A.52: "AIS refers to requirements mandated by Section 746 Title VII of the Consolidated Appropriation s Act of 2017 and any subsequent statutes mandating domestic preference. "Iron and Steel Products" is defined in Section 1.b.2.
  3. SC 7.03: Add sentence "all iron and steel must meet AIS requirements.
  4. SC 7.04.B.1: "Contractor shall include the Manufacturer's Certification Letter (Exhibit D) for compliance with AIS requirements to support data, if applicable. In addition, Contractor shall maintain an updated AIS Materials List (Exhibit J), to ensure that for de minimis waiver, cost is less than 5% of total materials cost for project and for minor components waiver, the cost of the non-domestically produced component is less than 5% of the total materials cost of the product." An excel version that will compute all totals can be obtained from the RD State Office that can be used as a working copy.
  5. SC 7.05.A.3.a4: "4) comply with AIS by providing the Manufacturer's Certification Letter (Exhibit D), if applicable.
  6. SC 7.11.A: Modify by inserting the following after "written interpretations and clarifications,"; "Manufacturer's Certification Letter (Exhibit D) is documentation provided by the manufacturer, supplier, distributor, vendor, fabricator, etc. to various entities stating that the iron and steel products to be used in the project are produced in the U.S. in accordance with AIS requirements.
  7. SC 7.16.A.1.e: "e. obtain the Manufacturer's Certification Letter (Exhibit D) for any item in the submittal subject to AIS requirements and include the certificate in the submittal.
  8. SC 7.16.D.9: "Engineer's review and approval of shop drawings or sample shall include review of compliance with AIS requirements, as applicable."

9. SC 7.17.E: "Contractor shall certify upon substantial completion that all work and materials has complied with AIS requirements as mandated and any subsequent statutes mandating domestic preference. Contractor shall provide Contractor's Certification Letter (Exhibit C) to Owner.
10. SC 10.10.A: "A: Services required to determine and certify that, to the best of the Engineer's knowledge and belief, all iron and steel products referenced in the engineering analysis, the plans, specifications, bidding documents, and associated bid addenda requiring design revisions are either produced in the U.S. or are the subject of an approved waiver. Services required to determine, to the best of the Engineer's knowledge and belief, that approved substitutes, equals, and all iron and steel products proposed in the shop drawings, change orders, and partial pay estimates are either produced in the U.S. or are the subject of an approved waiver under the Consolidate Appropriations Act of 2017.
11. SC 11.06.A.1: Modify by inserting the following sentence after "within 15 days after the submittal of the change proposal..." "Include supporting data (project name, name of manufacturer, city and state where the product was manufactured, description of product, signature of authorized manufacturer's representative) in the Manufacturer's Certification Letter (Exhibit D), as applicable."
12. SC 14.03G: Installation of materials that are non-compliant with AIS requirements shall be considered defective work.
13. SC 15.01.B.4: "4. By submitting materials for payment, Contractor is certifying that the submitted materials are compliant with AIS requirements. Manufacturers' Certification letter for Materials satisfy this certification. Refer to Manufacturer's Certification Letter provided in these Contract Documents.
14. SC 15.01.D.2: An updated AIS Materials List (See Exhibit J) included in these contract documents must be dated and signed and submitted with each pay request prior to payment being authorized. An excel version that will compute all totals can be obtained from the RD State Office that can be used as a working copy.
15. SC 15.01.C.2d: "d. The materials presented for payment comply with AIS requirements.
16. SC 15.03.A: Modify by adding the following "Services required to determine and certify that, to the best of the Contractor's knowledge and belief, all substitutes, equals, and iron and steel products proposed in the shop drawings, change orders, and partial payment estimates are produced in the U.S. or are the subject of an approved waiver. Services required to certify that, to the best of the Contractor's knowledge, all those products installed for the project are either produced in the U.S. or are the subject of an approved waiver.
17. SC19.14: Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A- Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and any subsequent statutes mandating domestic preference applies in AIS requirement to this project. All iron and steel products used in this project must be produced in the U.S. The term "iron and steel products" is defined in Section 1.b.2. The de minimis and minor components waivers {add project specific waivers as applicable} apply to this contract."

18. SC 19.15: add Definitions:

"Assistance recipient" is the entity that received funding assistance from programs required to comply with AIS requirements in the Consolidated Appropriations Act of 2017 and any subsequent statutes mandating domestic preference. This term includes owner and/or applicant.

"Certifications" means the following:

- *Manufacturers'* certification is the documentation provided by the manufacturer or fabricator to various entities stating that the iron and steel products to be used in the project are produced in the U.S. in accordance with AIS requirements. If items are purchased via a supplier, distributor, vendor, etc. vs. direct from the manufacturer or fabricator directly, then the supplier, distributor, vendor, etc. will be responsible for obtaining and providing these certification letters to the parties purchasing the product.
- *Engineer's* certification is documentation that plans, specifications, and bidding documents comply with AIS.
- *Contractors'* certification is documentation submitted upon substantial completion of the project that all iron and steel products installed were produced in the U.S.

"Coating" means a covering that is applied to the surface of an object. If a coating is applied to the external surface of a domestic iron or steel component, and the application takes place outside of the U.S., said product will be considered a compliant product under the AIS requirements. Any coating processes that are applied to the external surface of iron and steel components that would otherwise be AIS compliant would not disqualify the product from meeting the AIS requirements regardless of where the coating processes occur, provided that final assembly of the product occurs in the U.S. This exemption only applies to coatings on the *external surface* of iron and steel products, such as the lining of lined pipes. All manufacturing processes for lined pipes, including the application of pipe lining, must occur in U.S. for the product to be compliant with AIS requirements.

"Contractor" is the individual or entity with which the applicant has contracted (or is expected to) to perform construction services (or for water and waste projects funded by the programs which are subject to AIS requirements). This includes bidders and/or contractors that have received an award from the applicant and any party having a direct contractual relationship with the owner/applicant. A general contractor is often referred to as the prime contractor.

"Construction materials" are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not included mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel".

*Note:* Mechanical and electrical components, equipment, and systems are not considered construction materials. See definition of mechanical and electrical equipment.

"De minimis incidental components" are various miscellaneous low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. Examples of incidental components could include small washers, screws, fasteners (such as "off the shelf" nuts and bolts, miscellaneous wire, corner bead, ancillary tube, signage, trash bins, door hardware etc. Costs for de minimis incidental components cumulatively may comprise no more than a total of five percent of the total cost of the materials used in and incorporated into a project. The cost of an individual item may not exceed one percent of the total cost of the materials used in and incorporated into a project.

"Engineer" is an individual or entity with which the owner has contracted to perform engineering/architectural services for water and waste projects funded by the programs subject to AIS requirements.

"Iron and Steel Products" are defined as the following products made primarily of iron and steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. Only items on the above list made of primarily iron or steel, permanently incorporated into the project must be produced in the U.S. For example; trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

"Manufacturers" meaning supplier, fabricator, distributor, materialman, or vendor is an entity with which the applicant, general contractor or with any subcontractor has contracted to furnish materials or equipment to be incorporated in the project by the applicant, contractor or subcontractor.

"Manufacturing processes" are processes such as melting, refining, forming, rolling, drawing, finishing, and fabricating. Further, if a domestic iron and steel product is taken out of the U.S. for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone, and iron and steel scrap are not covered by the AIS requirements, and the material(s), if any, being applied as coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-U.S. sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-U.S. sources.

"Mechanical equipment" is typically that which has motorized parts and/or is powered by a motor. "Electrical equipment" is typically any machine powered by electricity and included components that are part of the electrical distribution system. AIS does not apply to mechanical equipment.

"Minor components" are components within an iron or steel product otherwise compliant with the AIS requirements. This is different from the de minimis definition where de minimis pertains to the entire project and the minor component definition pertains to a single product. This waiver would allow non-domestically produced miscellaneous minor components comprising up to five percent of the total material cost of an otherwise domestically produced iron and steel product to be used. However, unless a separate waiver for a product has been approved, all other iron and steel components in said product must still meet the AIS requirements. This waiver does not exempt the whole product from the AIS requirements. Only minor components within said product and the iron or steel components of the product must be produced domestically. Valves and hydrants are also subject to the cost ceiling requirements described here. Examples of minor components could include items such as pins and springs in valves/hydrants, bands/straps in couplings, and other low cost items such as small fasteners etc.

"Municipal castings" are cast iron and steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and solid waste infrastructure.

"National Office" refers to the office responsible for the oversight and administration of the program nationally. The National Office sets policy, develops program regulations, and provides training and technical assistance to help the state offices administer the program. The National Office is located in Washington, D.C.

"Owner" is the individual or entity with which the general contractor has contracted regarding the work, and which has agreed to pay the general contractor for the performance of the work pursuant to the terms of the contract for water and waste projects funded by the programs subject to AIS requirement. For the purpose of this Bulletin, the term is synonymous with the term "applicant" as defined in 7 CFR 1780.7 (a) (1), (2), and (3), and is an entity receiving financial assistance from the programs subject to AIS requirements.

"Primarily iron or steel" is defined as a product made of greater than 50 percent iron or steel, measured by cost. The cost should be based on the material costs. An exception to this definition is reinforced precast concrete (see Definition). All technical specifications and applicable industry standards (e.g. NIST, NSF, AWWA) must be met. If a product is determined to be less than 50 percent iron and steel, the AIS requirements do not apply.

For example, the cost of a fire hydrant includes:

1. The cost of materials used for the iron portion of the fire hydrant (e.g. bonnet, body, and shoe); and
2. The cost to pour and cast and create those components (e.g. labor and energy).

Not included in the cost are:

1. The additional material costs for the non-iron and steel internal working of the hydrant (e.g. stem, coupling, valve, seals, etc.); and
2. The cost to assemble the internal workings into the hydrant body.

"Produced in the United States" means that the production in the United States of the iron or steel products used in the project requires that all manufacturing processes must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives.

"Project" is the total undertaking to be accomplished for the applicant by consulting engineers, general contractors, and others, including the planning, study, design, construction, testing, commissioning, and start-up of which the work to be performed under the contract is a part. A project includes all activity that an applicant is undertaking to be financed in whole or part by programs subject to AIS requirements. The intentional splitting of projects to separate into smaller contracts or obligations to avoid AIS requirements is prohibited.

"Reinforced Precast Concrete" may not consist of at least 50 percent iron or steel, but the reinforcing bar and wire must be produced in the United States and meet the same standards for any other iron or steel product. Additionally, the casting of the concrete product must take place in the United States. The cement and other raw materials used in concrete production are not required to be of domestic origin. If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the United States.

"Steel" means an alloy that includes at least 50 percent iron between 0.02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel, and other specialty steels.



"Structural steel" is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I beams, channels, angles, tees, and zees. Other shapes include but are not limited to, H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

"United States" means each of the several states, the District of Columbia, and each Federally Recognized Indian Tribe.

## 12. PURCHASE OF EQUIPMENT AND MATERIALS

Irrespective of who purchases AIS products, owner, contractor or other parties must ensure that the products were produced in the United States as defined in this Bulletin. It is the manufacturers' responsibility to provide manufacturers' certification letters to ensure compliance with AIS requirements. The AIS requirements supersede any regulation on full and open free competition stated in 7 CFR 1780.70(b) and (d) and 2 CFR Part 200.319. For example, if an iron and steel product that is compliant with AIS is made by only one manufacturer, sole source procurement of said product may be used.

## 13. WAIVER PROCESS

### A. General

Each entity that receives financial assistance for the construction, alteration, maintenance, or repair of water and waste infrastructure from programs mandated to comply with the statute, must use iron and steel products produced in the United States. A waiver is a legal document granting a project an exception to AIS requirements, to use iron and steel products of non-domestic origin specified in the waiver(s). More than one waiver could be applied to a project.

Any funding recipient subject to AIS requirements are eligible to apply for waivers as outlined in the statute which states:

"A waiver may be granted by the Secretary of Agriculture or designee, if one or more of the following conditions are met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and Steel products are not produced in the United States in sufficient and reasonably available quantities or of satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the overall cost of the project by more than 25 percent."

Until a waiver is granted by USDA, the AIS requirement stands except with respect to municipalities covered by international agreements (see Section 17).

One public interest waiver has been granted by the Secretary of Agriculture or designee that addresses: (1) de minimis items and (2) minor components. This waiver is national in scope and applies to all projects. The term de minimis applies to products when they occur as a de minimis incidental components as intended for assistance recipients to use for their projects. The term minor components applies to minor components within an iron and/or steel product and is intended for manufacturers to certify that their products comply with AIS requirements. For definitions of de minimis and minor components see Definitions.

B. Application

To request a project specific waiver, proper and sufficient documentation must be provided by the assistance recipient (see Exhibit H).

To apply for a waiver under condition one (public interest), applicants and their consulting engineers must demonstrate definitive impacts on the community if a specified product is not utilized. Information must be submitted to the National Office (via [ESEEngineering@wdc.usda.gov](mailto:ESEEngineering@wdc.usda.gov)), copy to the RD State Engineer and approved by the Administrator of RUS. Public interest waivers national in scope will be identified and approved by the Administrator of RUS.

To apply for a waiver under special condition two (quality or quantity), applicants and their consulting engineers must submit information outlined in Exhibit I and J to the National Office (via [ESEEngineering@wdc.usda.gov](mailto:ESEEngineering@wdc.usda.gov)).

All waiver applications must be submitted to National Office. If RD State Office receives any waiver requests, the request must be submitted to National Office for approval.

C. Timing

Waivers should be submitted prior to and no later than the submission of final plans, specifications, and bidding documents for any iron and steel products of known foreign origin. All waiver requests must be approved by the Agency prior to authorization to advertise for bids. In the event that a waiver is requested during construction such as via change order, it must be approved by the Agency prior to installation.



D. Evaluation by USDA

After receiving an application for a waiver of the AIS requirements, USDA National Office will publish the request on its website for 15 days and receive informal comment. National Office will evaluate whether the application adequately documents the statutory basis cited for the waiver. The Secretary or designee will determine whether or not to grant the waiver.

Approved and disapproved waivers will be posted on the USDA AIS website.

For project specific waivers where EPA and USDA are co-funding and the applicant has already submitted a request to and received an approval waiver from EPA, USDA will review said waiver for the co-funded project. Applicants/owners or their representatives are required to submit approved waiver to EESEngineerig@wdc.usda.gov for USDA RD review and concurrence.

All approved waivers must be included in the bidding documents, any bid addenda, change orders, and partial estimates. All information presented in waiver requests are subject to verification. Waiver requests deliberately containing false information will be rejected.

14. MONITORING

In order to comply with the Executive Order 13788 "Buy American, Hire American", dated April 18, 2017, and AIS requirements, monitoring activities will be completed by the State Office and/or National Office.

15. NON-COMPLIANCE

No Federal funds made available for the rural water, waste water, waste disposal, and solid waste management programs authorized by sections 306, 306A, 306C, 306D, 306E, and 310B of the Consolidated Farm and Rural Development Act (7 U.S.C. 1926 et seq.) shall be used for a project for the construction, alteration, maintenance, or repair of a public utility system unless all of the iron and steel products used in the project are produced in the United States.

Noncompliance occurs when funds are used from these programs for construction, alteration, maintenance, or repair using non-domestic iron or steel products and the product is not covered by either a project-specific or a national waiver. Loan and grant recipients should avoid non-compliance at all times as it is a violation of a Federal statute.

Process for Noncompliance

- (1) Identify the noncompliant product.
- (2) The loan or grant recipient notifies appropriate USDA RD State or National Office contact.
- (3) If USDA RD State Office is notified, the Program Director will notify the National Office, Director of EES.
- (4) USDA will apply remedies for noncompliance as per 2 CFR 200 338-342.

16. INTERNATIONAL AGREEMENTS

The AIS requirements apply in a manner consistent with United States obligations under international agreements. In a few cases where such an agreement exists between a loan and/or grant recipient and an international entity, the recipient is under the obligation to determine the applicability of the AIS requirements and document the actions taken to comply with these requirements.

17. USE OF EXHIBITS

The following explains the purpose of each Exhibit to this Bulletin:

- A. AMERICAN IRON AND STEEL: Exhibit A is to be read by the RD Specialist at the pre-construction and signed by all parties subject to the AIS requirements on the project. Signature of this form will serve as certification of advisement and acknowledgement of the AIS requirements.
- B. ENGINEER'S CERTIFICATION OF COMPLIANCE: Exhibit B consists of a letter to be completed and signed by the consulting engineer certifying that he/she will ensure that plans, specifications, bidding documents, and associated bid addenda, executed contracts and change orders for this project will comply with the AIS requirements. This certification letter is to be submitted to the Agency for approval prior to the Advertisement for Bids and must be kept in the engineer's project file and on-site during construction.
- C. GENERAL (PRIME) CONTRACTOR'S CERTIFICATION OF COMPLIANCE  
Exhibit C consists of a letter to be completed and signed by the general contractor certifying that he/she will ensure that all iron and steel products installed for this project, comply with the AIS requirements. This includes not only installation and/or construction by their own company, but any and all subcontractors and manufacturers their company has contracted with on this project. This certification letter is to be submitted upon substantial completion of the project to the project engineer.
- D. EXAMPLE OF A MANUFACTURER'S CERTIFICATION LETTER OF COMPLIANCE: Exhibit D is an example of a letter to be completed and signed by the manufacturer certifying that he/she will ensure that all iron and steel products and/or materials shipped or provided for the subject project are in full compliance with the AIS requirements. This includes listing each individual item/product/material provided to the project and providing the location of this/these item(s) being manufactured, including assembly. All manufacturers' certification letters must be kept in the engineer's project file and on site during construction.
- E. EXAMPLES OF MUNICIPAL CASTINGS: Exhibit E provides a sample list of iron and steel products that are subject to the AIS requirements. This list is not exhaustive and is meant only to provide examples. A unique list should be completed for each specific project/contract.

- F. **EXAMPLES OF CONSTRUCTION MATERIALS:** Exhibit F provides a sample list of construction materials that are subject to the AIS requirements. This list is not exhaustive and is meant only to provide examples.
- G. **EXAMPLES OF NON-CONSTRUCTION MATERIALS:** Exhibit G provides a sample list of items that are not subject to AIS requirements. This list is not exhaustive and is meant only to provide examples.
- H. **INFORMATIONAL CHECKLIST FOR PROJECT SPECIFIC WAIVER REQUEST:** Exhibit I is a checklist that is to be completed by the applicant and/or consulting engineer to help ensure that all appropriate and necessary information is submitted with the request to USDA. This checklist should not be used for public interest waiver. It is for informational purposes only and does not need to be included as part of the waiver application. Project specific waivers may be requested if one or more of the following conditions applies: (1) The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of satisfactory quality; (2) The inclusion of iron and/or steel products produced in the United States will increase the overall cost of the project by more than 25 percent. All approved waivers must be included in the bidding documents, any bid addenda, change orders, and partial estimates. All information presented in waiver requests are subject to evaluation. Waiver requests deliberately containing false information will be rejected.
- I. **EXAMPLE COST TABLE FOR A PROJECT COST WAIVER:** Exhibit I is an example of a table that must be included with any cost based project waiver request. Information included in the table; product reference in the specification, brief description of the product, quantity, unit, unit price and two costs of the item: (1) cost of an AIS compliant product and (2) cost of a non-domestic product. The total cost for all items will be part of the evaluation. Waiver requests deliberately containing false information in order to receive a project cost waiver will be rejected.
- J. **AIS MATERIALS TRACKING:** Exhibit J is a spreadsheet to track all AIS products, de minimis components, and minor components. An updated list must be signed and dated and submitted to the Engineer by the Contractor with each pay request. Once reviewed for accuracy, the signed and updated list must be submitted to the Agency with each pay request. If an AIS qualifying or de minimis material is delivered more than once, a new line will be required for each delivery of that material. An excel version that will compute all totals can be obtained from the RD State Office that can be used as a working copy.

**AMERICAN IRON AND STEEL COMPLIANCE STATEMENT**

"Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A- Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference applies an American Iron and Steel requirement to this project.

All parties are required to comply with these requirements and to ensure that all iron and steel products used on this project are produced in the United States. The term "iron and steel products" means the following products made of primarily iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials."

\_\_\_\_\_  
**RD Specialist Signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Printed Name**

\_\_\_\_\_  
**Borrower Signature or Approved Representative**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Printed Name**

\_\_\_\_\_  
**Engineer's Signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Printed Name**

\_\_\_\_\_  
**Contractor's Signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Printed Name**

**ENGINEER'S CERTIFICATION LETTER**

DATE:

RE: APPLICANT  
PROJECT NAME  
CONTRACT NUMBER

I hereby certify that to the best of my knowledge and belief, iron and steel products referenced in the Plans, Specifications, and Bidding Documents for this project comply with Section 746 of Title VII of the Consolidated Appropriations Act of 2017 and any subsequent statutes mandating domestic preference or are the subject of a waiver approved by the Secretary of Agriculture or designee. This certification is not intended to be a warranty in any way, but rather the designer's professional opinion that to the best of their knowledge, the products comply.

I hereby commit that to the best of my ability, all iron and steel products that will be referenced in the Bid Addenda, Executed contracts, and Change Orders will comply with Section 746 of the Title VII of the Consolidated Appropriations Act, 2017 and any subsequent statutes mandating domestic preference or are/will be the subject of a waiver approved by the Secretary of Agriculture or designee.

---

Name of Engineering Firm (Print)

---

By Authorized Representative (Signature)

---

Title

This document is to be submitted prior to Agency authorization for Advertisement for Bids.

**CONTRACTOR'S CERTIFICATION LETTER**

DATE:

**RE: APPLICANT  
PROJECT NAME  
CONTRACT NUMBER**

I hereby certify that, to the best of my knowledge and belief, all iron and steel products installed for this project by my company and by any and all subcontractors and manufacturers my company has contracted with for this project, comply with Section 746 of Title VII of the Consolidated Appropriations Act of 2017 and any subsequent statutes mandating domestic preference or are the subject of a waiver approved by the Secretary of Agriculture or designee.

---

Name of Construction Company (Print)

---

By Authorized Representative (Signature)

---

Title

This certification is to be submitted upon completion of the project to the project engineer.

**MANUFACTURER'S CERTIFICATION LETTER**

Date:

Company Name:

Company Address:

Subject: AIS Step Certification for Project (X), Owner's Name, and Contract Number

I, (company representative), certify that the (melting, bending, galvanizing, cutting, etc.) processes for (manufacturing or fabricating) the following products and/or material shipped or provided for the subject project is in full compliance with the mandated AIS requirements.

Item, Products and/or Materials, and location of delivery (City, State)

- 1.
- 2.
- 3.

Such process for AIS took place in the following location:

---

City, State

This certification is to be submitted upon request to interested parties (e.g. municipalities, consulting engineers, general contractors, etc.)

If any of the above compliance statements change while providing materials to this project, please immediately notify the person(s) who is requesting to use your product(s).

---

Authorized Company Representative

(Note: Authorized signature shall be manufacturer's representative and not the materials distributor or supplier)

**EXAMPLES OF MUNICIPAL CASTINGS** *(includes but not limited to):*

Access Hatches  
Ballast Screen  
Benches (Iron or Steel)  
Bollards  
Cast Bases  
Cast Iron Hinged Hatches, Square and Rectangular  
Cast Iron Riser Rings  
Catch Basin Inlet  
Cleanout/Monument Boxes  
Construction Covers and Frames  
Curb Corner Guards  
Curb Openings  
Detectable Warning Plates  
Downspout Shoes (Boot, Inlet)  
Drainage Grates, Frames and Curb Inlets  
Inlets  
Junction Boxes  
Lampposts  
Manhole Covers, Rings and Frames, Risers  
Meter Boxes  
Service Boxes  
Steel Hinged Hatches, Square and Rectangular  
Steel Riser Rings  
Trash Receptacles  
Tree Grates  
Tree Guards  
Trench Grates  
Valve Boxes, Covers and Risers



**EXAMPLES OF CONSTRUCTION MATERIALS (included but not limited to)**

Wire rod, bar, angles  
Concrete reinforcing bar, wire, wire cloth  
Wire rope and cables  
Tubing  
Framing  
Joists  
Trusses  
Fasteners (i.e., nuts and bolts)  
Welding rods  
Decking  
Grating  
Railings  
Stairs  
Access ramps  
Fire escapes  
Ladders  
Wall panels  
Dome structures  
Roofing  
Ductwork  
Surface drains  
Cable hanging systems  
Manhole steps  
Fencing and fence tubing  
Guardrails  
Doors  
Stationary screens

**EXAMPLES OF NON-CONSTRUCTION MATERIALS-** (includes but not limited to):

(Note: includes appurtenances necessary for their intended use and operation and are not subject to AIS requirements)

Pumps  
Motors  
Gear Reducers  
Drives (including variable frequency drives (VFD's)  
Electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators).  
Mixers  
Gates (e.g. sluice and slide gates)  
Motorized screens (such as traveling screens)  
Blowers/aeration equipment  
Compressors  
Meters (flow and water meters)  
Sensors  
Controls and switches  
Supervisory control data acquisition (SCADA)  
Membrane filtration systems (includes RO package plants)  
Filters  
Clarifier arms and clarifier mechanisms  
Rakes  
Grinders  
Disinfection systems  
Presses (including belt presses)  
Conveyors  
Cranes  
HVAC (excluding network)  
Water heaters  
Heat exchangers  
Generators  
Cabinetry and housing (such as electrical boxes/enclosures)  
Lighting fixtures  
Electrical conduit  
Emergency life systems  
Metal office furniture  
Shelving  
Laboratory equipment  
Analytical instrumentation  
Dewatering equipment

**INFORMATIONAL CHECKLIST FOR PROJECT SPECIFIC WAIVER REQUEST**

Please reference the specifications of the product.

Information	<input type="checkbox"/>	Note
<b>General</b> <ul style="list-style-type: none"> <li>• Waiver request includes the following information: <ul style="list-style-type: none"> <li>— Description of the foreign and domestic construction materials</li> <li>— Unit of measure</li> <li>— Quantity</li> <li>— Price</li> <li>— Date that product is needed (e.g. time of delivery or availability)</li> <li>— Location of the construction project</li> <li>— Name and address of the proposed supplier</li> <li>— A detailed justification for the use of foreign construction materials</li> </ul> </li> <li>• Waiver request was submitted according to the instructions in the memorandum</li> <li>• Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime</li> </ul>		
<b>Cost Waiver Requests</b> <ul style="list-style-type: none"> <li>• Waiver request includes the following information: <ul style="list-style-type: none"> <li>— Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products (Exhibit J)</li> <li>— Relevant excerpts from the bid documents used by the contractors to complete the comparison</li> <li>— Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers</li> </ul> </li> </ul>		
<b>Availability Waiver Requests</b> <ul style="list-style-type: none"> <li>• Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: <ul style="list-style-type: none"> <li>— Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials</li> <li>— Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers.</li> <li>— Date that product is needed (e.g. time of delivery or availability) to provide justification</li> <li>— Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials</li> </ul> </li> <li>• Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought</li> <li>• Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?</li> </ul>		

### EXAMPLE COST TABLE FOR A PROJECT COST WAIVER

[illegible]

**TOTAL COST:**

**\$0.00**

**\$0.00**



This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

## STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



Endorsed by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

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# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
  3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  5. *Bidder*—An individual or entity that submits a Bid to Owner.
  6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
  7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
  8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
  9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
  10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision

regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and

submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the



result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

## 1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - a. does not conform to the Contract Documents; or
  - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
  3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2 – PRELIMINARY MATTERS

### 2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

### 2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

### 2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
2. a preliminary Schedule of Submittals; and
3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

#### 2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

#### 2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
  1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
  2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
  3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

#### 2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

### **ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE**

#### **3.01 *Intent***

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

#### **3.02 *Reference Standards***

- A. Standards Specifications, Codes, Laws and Regulations
  - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
  - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies:*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

#### B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
  - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
  - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

### 3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract

Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

### 3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
  - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
  - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

## **ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK**

### 4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

### 4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

### 4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or



requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

#### 4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
  - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
  - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

#### 4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
  - 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  - 2. abnormal weather conditions;
  - 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  - 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility

that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

## **ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

### **5.01 *Availability of Lands***

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

### **5.02 *Use of Site and Other Areas***

- A. *Limitation on Use of Site and Other Areas:*
  - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
  - 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise;



(b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

### 5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
  - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
  - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
  - 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
  - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and

procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

#### 5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments:*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or

decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
  - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
  - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
    - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
    - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
    - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
  3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
  4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
  1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
  2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

- c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
  - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
  - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
    - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
    - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
    - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
    - d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

#### 5.06 *Hazardous Environmental Conditions at Site*

##### A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
2. Technical Data contained in such reports and drawings.

##### B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

##### C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

##### D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

##### E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required

by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this



Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 6 – BONDS AND INSURANCE

### 6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

### 6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or

authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.



6.03 *Contractor's Insurance*

- A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
  - 4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
  - 1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  - 2. claims for damages insured by reasonably available personal injury liability coverage.
  - 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
  - 1. Products and completed operations coverage:
    - a. Such insurance shall be maintained for three years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
  - 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  - 3. Broad form property damage coverage.
  - 4. Severability of interest.
  - 5. Underground, explosion, and collapse coverage.
  - 6. Personal injury coverage.
  - 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
  - E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
  - F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
  - G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
  - H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
  - I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
    1. include at least the specific coverages provided in this Article.
    2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
    3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
  5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

#### 6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

#### 6.05 *Property Insurance*

- A. *Builder's Risk:* Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
  2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available

under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
  4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
  5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
  6. extend to cover damage or loss to insured property while in transit.
  7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
  8. allow for the waiver of the insurer's subrogation rights, as set forth below.
  9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
  10. not include a co-insurance clause.
  11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
  12. include performance/hot testing and start-up.
  13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will

provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

- E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

#### 6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
  - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
  - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of

recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

#### 6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

### ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

#### 7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

#### 7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.



- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

#### 7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

#### 7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

- 3) it has a proven record of performance and availability of responsive service; and
- 4) it is not objectionable to Owner.
- b. Contractor certifies that, if approved and incorporated into the Work:
  - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
  - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the proposed item as a substitute pursuant to Paragraph 7.05.

#### 7.05 Substitutes

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
  - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
  - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
  - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:



- a. shall certify that the proposed substitute item will:
    - 1) perform adequately the functions and achieve the results called for by the general design,
    - 2) be similar in substance to that specified, and
    - 3) be suited to the same use as that specified.
  - b. will state:
    - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
    - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
    - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
  - c. will identify:
    - 1) all variations of the proposed substitute item from that specified, and
    - 2) available engineering, sales, maintenance, repair, and replacement services.
  - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
  - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
  - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

#### 7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

#### 7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

#### 7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

#### 7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

### 7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

### 7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
  - 1. all persons on the Site or who may be affected by the Work;
  - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of

Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

#### 7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

#### 7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 7.16 *Shop Drawings, Samples, and Other Submittals*

- A. *Shop Drawing and Sample Submittal Requirements:*
  - 1. Before submitting a Shop Drawing or Sample, Contractor shall have:
    - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
    - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
    - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
    - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.



2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
  3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.
1. *Shop Drawings:*
    - a. Contractor shall submit the number of copies required in the Specifications.
    - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.
  2. *Samples:*
    - a. Contractor shall submit the number of Samples required in the Specifications.
    - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
  3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
  2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.



- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  - 1. observations by Engineer;
  - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
  - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  - 4. use or occupancy of the Work or any part thereof by Owner;
  - 5. any review and approval of a Shop Drawing or Sample submittal;
  - 6. the issuance of a notice of acceptability by Engineer;
  - 7. any inspection, test, or approval by others; or
  - 8. any correction of defective Work by Owner.
- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

#### 7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any

limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
  - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

#### 7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, 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 Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

### **ARTICLE 8 – OTHER WORK AT THE SITE**

#### 8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner

may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

#### 8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
  - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
  - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
  - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor

must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.
- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

## **ARTICLE 9 – OWNER'S RESPONSIBILITIES**

### **9.01 *Communications to Contractor***

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

### 9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

## **ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION**

### 10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

### 10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### 10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

### 10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.



10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

#### 10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

### **ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK**

#### 11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
  - 1. *Change Orders:*
    - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
    - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
  - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
  - 3. *Field Orders:* Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

#### 11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change



involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

#### 11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
  - 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
  - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
  - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
  - 1. a mutually acceptable fixed fee; or
  - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
    - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
    - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
    - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and

11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

- d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
  - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
  - 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole,

approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

#### 11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
  1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
  2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
  3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
  4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

#### 11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

## ARTICLE 12 – CLAIMS

### 12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
  - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
  - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
  - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
  - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
  - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
  - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval:* If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim:* If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction,

the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

- G. *Final and Binding Results:* If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

### 13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work:* The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
  2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
  2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
  - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
  - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
  - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
  - g. The cost of utilities, fuel, and sanitary facilities at the Site.
  - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.



- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

### 13.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:* Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

### 13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
  1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
  2. there is no corresponding adjustment with respect to any other item of Work; and
  3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

## **ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### 14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.



#### 14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
  - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
  - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
  - 3. by manufacturers of equipment furnished under the Contract Documents;
  - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
  - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

#### 14.03 Defective Work

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.

- C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

#### 14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

#### 14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

#### 14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

#### 14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

**ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD****15.01 Progress Payments**

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
  2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
  3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
  2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
    - a. the Work has progressed to the point indicated;
    - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for

Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

- c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
  - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
  - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. to supervise, direct, or control the Work, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
  - a. the Work is defective, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
  - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner:*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
  - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
  - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
  - c. Contractor has failed to provide and maintain required bonds or insurance;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
  - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
  - f. the Work is defective, requiring correction or replacement;
  - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - h. the Contract Price has been reduced by Change Orders;
  - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
  - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - l. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction



imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

#### 15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

#### 15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor

may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

#### 15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
  1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
  2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
  3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
  4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

#### 15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 15.06 *Final Payment*

- A. *Application for Payment:*
  1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of



inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
  - d. a list of all disputes that Contractor believes are unsettled; and
  - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

**B. *Engineer's Review of Application and Acceptance:***

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

- C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.
- D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer

(less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

#### 15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

#### 15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such other adjacent areas;
  - 2. correct such defective Work;
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with

respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## **ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION**

### **16.01 *Owner May Suspend Work***

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

### **16.02 *Owner May Terminate for Cause***

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
  1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
  2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
  3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
  4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
  1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
  2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs,

losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
  - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
  - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

#### 16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the

Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

## **ARTICLE 17 – FINAL RESOLUTION OF DISPUTES**

### **17.01 *Methods and Procedures***

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
  - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
  - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
  - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
  - 2. agree with the other party to submit the dispute to another dispute resolution process; or
  - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## **ARTICLE 18 – MISCELLANEOUS**

### **18.01 *Giving Notice***

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
  - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
  - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

### **18.02 *Computation of Times***

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

### **18.03 *Cumulative Remedies***

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of

them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.



**RD SUPPLEMENTARY GENERAL CONDITIONS TO EJCDC  
GENERAL CONDITIONS**



## **RD SUPPLEMENTAL GENERAL CONDITIONS TO EJCDC GENERAL CONDITIONS**

These Supplementary General Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

These revisions to the General Conditions are requirements of the funding agency, USDA Rural Development Utilities Service, and are applied in conjunction with the GRW Supplemental General Conditions.

The terms used in these Supplementary General Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary General Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary General Conditions is the same as the address system used in the General Conditions, with the prefix "SGC" added thereto.

### **SGC-1.01.A.8.**

**Add the following language to the end of Paragraph 1.01.A.8:**

The Change Order form to be used on this Project is EJCDC No. C-941. Agency approval is required before Change Orders are effective.

### **SGC-1.01.**

**Add the following language at the end of the last sentence of Paragraph 1.01.A.48:**

A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

### **SGC-1.01.**

**Add the following new Paragraph after Paragraph 1.01.A.48:**

49. *Abnormal Weather Conditions* – Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered Abnormal Weather Conditions.

### **SGC-1.01**

**Add the following new Paragraph after Paragraph 1.01.A.49:**

50. *Agency* - The Project is financed in whole or in part by USDA Rural Utilities Service pursuant to the Consolidated Farm and Rural Development Act (7 USC Section 1921 et seq.). The Rural Utilities Service programs are administered through the USDA Rural Development offices; therefore, the Agency

for these documents is USDA Rural Development.

## **SGC-2.02**

**Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:**

- A. Owner shall furnish to Contractor five copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

## **SGC-4.01**

**Delete the following sentence from Paragraph 4.01A:**

In no event will the Contract Times commence to run later than the ninetieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

## **SGC-4.05**

**Replace the phrase “abnormal weather conditions” from Paragraph 4.05.C.2 and replace with “Abnormal Weather Conditions”**

## **SGC-5.03**

**Add the following new paragraph after Paragraph 5.03B:**

If any geotechnical exploration for the project was performed and reported, said report will be included as an Appendix. The geotechnical report shall be used as a reference and all recommendations included therein shall be followed in full.

## **SGC-5.06**

**Add the following new paragraph immediately after Paragraph 5.06.A.2:**

- 3. If any Hazardous Conditions were reported, said report will be included as an Appendix.

## **SGC-6.03**

**Add the following paragraphs after Paragraph 6.03.J:**

- K. The insurance required by this Paragraph shall include specific coverage and be written for not less than the limits of liability and coverages tabulated in the prototype Certificate of Insurance included as Section 00 62 16, or as required by law, whichever is greater.

## **SGC-7.04**

**Amend the third sentence of Paragraph 7.04.A by deleting the following words:**

Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item is permitted

**SGC-7.04**

**Amend the last sentence of Paragraph 7.04.A.1.a.3 by striking out "and", and adding a period at the end of said paragraph.**

**SGC-7.04**

**Delete Paragraph 7.04.A.1.a.4 in its entirety and insert the following in its place:**

(Deleted)

**SGC-7.06**

**Amend Paragraph 7.06.A by adding the following text to the end of the Paragraph:**

The contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

**SGC-7.06**

**Delete Paragraph 7.06.B in its entirety and insert the following in its place.**

(Deleted)

**SGC-7.06**

**Amend the second sentence of Paragraph 7.06.E by striking out "Owner may also require Contractor to retain specific replacements; provided, however, that".**

**SGC-10.03.A.**

The Duties, Responsibilities, and Limitations of Authority of the Resident Project Representative will be as stated in the document attached to these Supplementary General Conditions.

**SGC-11.07**

**Add the following new paragraph immediately after Paragraph 11.07B:**

11.07.C All Contract Change Orders must be concurred in by Agency before they are effective.

**SGC-13.02**

**Delete Paragraph 13.02.C in its entirety and insert the following in its place:**

(Deleted)

**SGC-15.01**

**Amend the second sentence of Paragraph 15.01B.1 by striking out the following text: “a bill of sale, invoice or other”.**

**SGC-15.01**

**Add the following new paragraph after Paragraph 15.01.B.3:**

4. The Application for Payment form to be used on this Project is EJCDC No. C-620. The Agency must approve all Applications for Payment before payment is made.

**SGC-15.01**

**Add the following language at the end of Paragraph 15.01.B.3:**

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor.

**SGC-15.01**

**Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:**

The Application for Payment with Engineer’s recommendations will be presented to the Owner and Agency for consideration. If both Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due twenty (20) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

**SGC-15.02**

Amend Paragraph 15.02.A by striking out the following text: “no later than seven days after the time of payment by Owner” and inserting “no later than the time of payment by the Owner.”:

**SGC-18.11**

**Add the following new paragraph after Paragraph 18.10:**

18.11 *Tribal Sovereignty.*

- A. No provision of this Agreement will be construed by any of the signatories as abridging or debilitating any sovereign powers of the named Tribe; affecting the trust-beneficiary relationship between the Secretary of the Interior, Tribe and Indian landowner(s); or interfering with the government-to government relationship between the United States and the Tribe.

**SGC-19 Add a new Article 19, "Federal Requirements," after Article 18.****SGC-19.01****Add the following language at the beginning of Article 18 with the title "Agency Not a Party."**

- A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees is a party to this Contract.

**SGC-19.02****Add the following language after Article 19.01.A with the title "Contract Approval."**

- A. Owner and Contractor will furnish Owner's attorney such evidence as required so that Owner's attorney can complete and execute the following "Certificate of Owner's Attorney" (Exhibit GC-A) before Owner submits the executed Contract Documents to Agency for approval.
- B. Concurrence by Agency in the award of the Contract is required before the Contract is effective.

**SC 19.03****Add the following language after Article 19.02.B with the title "Conflict of Interest."**

- A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

**SC-19.04****Add the following language after Article 19.03.A with the title "Gratuities."**

- A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- B. In the event this Contract is terminated as provided in paragraph 19.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it

may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

#### **SC-19.05**

**Add the following language after Article 19.04.B with the title “Audit and Access to Records.”**

- A. Owner, Agency, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Engineer which are pertinent to the Agreement, for the purpose of making audits, examinations, excerpts, and transcriptions. Engineer shall maintain all required records for three years after final payment is made and all other pending matters are closed.

#### **SC-19.06**

**Add the following language after Article 18.05.A with the title “Small, Minority and Women’s Businesses.”**

- A. If Contractor intends to let any subcontracts for a portion of the work, Contractor shall take affirmative steps to assure that small, minority and women’s businesses are used when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall consist of: (1) including qualified small, minority and women’s businesses on solicitation lists; (2) assuring that small, minority and women’s businesses are solicited whenever they are potential sources; (3) dividing total requirements when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women’s businesses; (4) establishing delivery schedules, where the requirements of the work permit, which will encourage participation by small, minority and women’s businesses; (5) using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce; (6) requiring each party to a subcontract to take the affirmative steps of this section; and (7) Contractor is encouraged to procure goods and services from labor surplus area firms.

#### **SGC-19.07 Add the following after Article 19.06.A with the title “Anti-Kickback.”**

- A. Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States”). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

#### **SGC-19.08**

**Add the following after Article 19.07.A with the title “Clean Air and Pollution Control Acts.”**

- A. If this Contract exceeds \$100,000, Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h) and 42 USC 7401et. seq.), section 508 of the Clean Water Act (33 U.S.C. 1368) and Federal Water Pollution Control Act (33 USC 1251 et seq.), Executive Order 11738, and

Environmental Protection Agency regulations (40 CFR part 15) is required. Contractor will report violations to the Agency and the Regional Office of the EPA.

#### **SGC-19.09**

**Add the following after Article 19.08 with the title “State Energy Policy.”**

- A. Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized.

**SGC-19.10 Add the following after Article 19.09 with the title “Equal Opportunity Requirements.”**

- A. If this Contract exceeds \$10,000, Contractor shall comply with Executive Order 11246, “Equal Employment Opportunity,” as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and as supplemented by regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”
- B. Contractor’s compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the Contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting Contractor’s goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.
- C. Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed.

#### **SGC-19.11**

**Add the following after Article 19.10.C:**

**19.11 *Restrictions on Lobbying.***

- A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. This Law applies to the recipients of contracts and subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of

any agency, a member of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 USC 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

## **SGC-19.12**

### **Add the following after Article 19.11.A :**

#### **19.12 *Environmental Requirements.***

When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:

- A. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
- B. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
- C. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).
- D. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.
- E. Mitigation Measures – If the project had an Environmental Report, Environmental Assessment, or Environmental Impact Statement to meet the requirements of the National Environmental Policy Act, compliance with the mitigation measures, if any, in that document are hereby included as a condition of this contract.





**SECTION 01010****SUMMARY****PART 1 - GENERAL****1.01 SUMMARY**

- A. This Section includes the following:
  - 1. Work covered by the Contract Documents.
  - 2. Sequence of Operations.
  - 3. Utility Shutdowns
  - 4. Tie-ins and Disconnections
  - 5. Temporary Systems
  - 6. Use of premises.
  - 7. Specification formats and conventions.

**1.02 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The Contractor shall provide all material, services, labor, tools and equipment, necessary to construct this project. The following is a brief description of the major work items included in the contract: Construction of new pre-fabricated metal 72' x 34' office space, including asphalt parking lot and driveway for the Rattlesnake Ridge Water District, and all other related appurtenances as shown on the Drawings and described in the Specifications.
- B. The Contractor is responsible for obtaining all applicable permits (grading, plumbing, electrical, building) as required by local, state, and federal agencies.
- C. Contractor shall provide electrical, structural and mechanical shop drawings to Engineer for approval before construction can begin that meet all local, state, and federal codes as described in these specifications.
- D. A new septic tank system will be installed by the owner prior to construction beginning.
- E. All electrical work shall be performed by a certified electrical licensed in the state of Kentucky.
- F. All plumbing work shall be performed by a certified plumber licensed in the State of Kentucky.
- G. A geo-tech investigation of the site has been performed and the results are located in Appendix A.

**1.03 SEQUENCE OF OPERATIONS**

- A. The contractor shall notify the owner and engineer a minimum of one week prior to mobilizing on site.
- B. Contractor shall provide shop drawings for the foundation work prior to any excavation work being performed.

**1.04 UTILITY SHUTDOWNS**

- A. One-week advance notice to the Owner is required prior to performing any utility shutdown unless of an emergency in nature.
- B. Contractor shall know where all existing valves are located on KY 7 and shall be able to shut down expeditiously in case of line breaks.

**1.05 TIE-INS AND DISCONNECTIONS**

- A. Contractor shall furnish all materials and shall provide excavation, de-watering, scaffolding and support operations to support tie-ins.

**1.06 TEMPORARY SYSTEM (S)**

- A. All temporary water lines and hoses shall be depressurized and all temporary electrical lines and equipment de-energized when not in use and at the end of each workday.

**1.07 SPECIFICATION FORMATS AND CONVENTIONS**

- A. Specification Format: The Specifications are organized into Division and Sections using the 17-division format.

**PART 2 - PRODUCTS**

Not used

**PART 3 - EXECUTION**

Not used

END OF SECTION

**SECTION 01015****WORK SEQUENCE****PART 1 - GENERAL****1.01 WORK INCLUDED**

The Contractor shall submit to the Engineer for review and acceptance a complete schedule of his proposed sequence of construction operations prior to commencement of work. However, the Engineer shall not accept a construction schedule that fails to utilize the entire time allocated for the construction of the water system extension. This schedule requirement in no way prevents the Contractor from completing the project in a shorter time frame than scheduled. The construction schedule shall be submitted and approved by the Owner prior to the submittal of the first partial payment request. A revised construction schedule shall be submitted with every subsequent partial payment request. This revised schedule must be approved by the Owner prior to payment. The contractor shall use the following sequence of construction while working on the new pre-fabricated metal office space for the Rattlesnake Ridge Water District – Contract 5- New Office Building.

1. Notify Rattlesnake Ridge Water District, Inc. a minimum of 48 hours prior to any construction activity which could impact use of existing facilities
2. Provide construction access to existing facilities as needed
3. Coordinate work between new and existing facilities in order to limit impacts.
4. Complete new construction and site work
5. Final cleanup

**1.02 RELATED WORK**

- A. Section 01010 - Summary of Work.

**1.03 ADDITIONAL INFORMATION**

Any delays caused by the Contractor shall be at his expense and at no cost to the Owner or Engineer.

- END OF SECTION -



**SECTION 01016****OCCUPANCY****PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. The Contractor shall be aware that after each major portion of the project is completed, the Contractor shall notify the Engineer that those specific operations are complete and prior to replacing that portion of the work into service shall request an interim inspection of the work to be returned to or placed into service.
- B. The interim inspection requested by the Contractor shall not preclude or supersede the final inspection of the project or reduce the Contractor's responsibility for the completed portion prior to final acceptance of the work by the Owner.
- C. The Contractor shall provide all necessary temporary controls and other items required for operation of all work placed into service prior to final acceptance as required. At such time as new controls, etc. are complete and functioning, the Contractor shall remove all temporary installed items.

- END OF SECTION -



**SECTION 01025****MEASUREMENT AND PAYMENT****PART 1 - GENERAL****1.01 WORK INCLUDED**

The Contractor shall furnish all necessary labor, machinery, tools, apparatus, equipment, materials, equipment, service, other necessary supplies and perform all work, including all excavation and backfilling (without additional compensation, except where specifically set out in these specifications) at the unit or lump sum prices for the following items.

**1.02 PROGRESS AND PAYMENTS SCHEDULES**

- A. Within ten (10) days after the date of formal execution of the AGREEMENT, the Contractor shall prepare and submit to the Engineer, for approval, a construction schedule which depicts the Contractor's plan for completing the contract requirements and show work placement in dollars versus contract time. The Contractor's construction schedule must be approved by the Engineer before any payments will be made on this contract.
- B. Within ten (10) days after the date of formal execution of the CONTRACT AGREEMENT, the Contractor shall prepare and submit to the Engineer, for approval, a periodic estimate which depicts the Contractor's cost for completing the contract requirements and show by major unit of the project work, the Contractor's dollar value for the material and the labor (two separate amounts) to be used as a basis for the periodic payments. The Contractor's periodic estimate must be approved by the Engineer before any payments will be made on this contract.
- C. The Engineer's decision as to sufficiency and completeness of the Contractor's construction schedule and periodic estimate will be final.
- D. The Contractor must make current, to the satisfaction of the Engineer, the construction schedule and periodic estimate each time he requests a payment on this contract.
- E. The Contractor's construction schedule and periodic estimate must be maintained at the construction site available for inspection and shall be revised to incorporate approved change orders as they occur.
- F. When the Contractor requests a payment on this contract, it must be on the approved periodic estimate and be current. Further, the current periodic estimate and construction schedule (both updated and revised) shall be submitted for review and approval by the Engineer before monthly payments will be made by the Owner. The Contractor shall submit six (6) current copies of each (periodic estimate and construction schedule) when requesting payment.

**1.03 CONDITIONS FOR PAYMENT**

- A. The Owner will make payments for acceptable work in place and materials properly stored on-site. The value of payment shall be as established on the approved construction schedule and periodic estimate, EXCEPT the Owner will retain ten percent (10%) of the work in place and a percentage as hereinafter listed for items properly stored or untested.
- B. No payment will be made for stored materials unless a proper invoice from the supplier is attached to the pay request. Further, no item whose value is less than \$1,000 will be considered as stored materials for pay purposes.



- C. Payment for pipeline items shall be limited to eighty percent (80%) of the bid price until the pipeline items have been tested and clean up has been completed and accepted by the Engineer.
- D. Payment for equipment items shall be limited to eighty-five percent (85%) of their scheduled value (materials portion only) until they are set in place. Eighty-five percent (85%) for stored materials and equipment shall be contingent on proper on-site storage as recommended by the manufacturer or required by the Engineer.
- E. Payment for equipment items set in place shall be limited to ninety percent (90%) of their scheduled value until they are ready for operation and have been certified by the manufacturer. Ninety percent (90%) payment for installed equipment shall be contingent on proper routine maintenance of the equipment in accordance with the manufacturer's recommendations.
- F. Payment for equipment items set in place and ready for operation shall be limited to ninety-five percent (95%) of their scheduled value until all acceptance tests have been completed and the required manufacturer's pre-startup operator's training has been completed.
- G. Payment for the labor portion of equipment items will be subject only to the degree of completeness and the appropriate retainage.
- H. The retainage shall be an amount equal to 10% of said estimate. The retainage on the equipment items shall be 10% as defined hereinbefore.
- I. If at any time thereafter when the progress of the WORK is not satisfactory or determine that the Contractor is not making satisfactory progress, additional amounts may be retained.
- J. **Steel and iron on this project shall be American made.**

#### **1.04 CLAIMS FOR EXTRA WORK**

- A. If the Contractor claims that any instructions by Drawings or otherwise involve extra cost, he shall give the Engineer written notice of said claim within ten (10) days after the receipt of such instructions and, in any event before proceeding to execute the work, stating clearly and in detail the basis of his claim or claims. No such claim shall be valid unless so made.
- B. Claims for additional compensation for extra work, due to alleged errors in spot elevations, contour lines or bench marks, will not be recognized unless accompanied by certified survey data, made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted, or would result, in handling more material or performing more work than would reasonably be estimated from the Drawings and topographical maps issued.
- C. Any discrepancies which may be discovered between actual conditions and those represented by the topographical maps and Drawings shall at once be reported to the Engineer, and work shall not proceed, except at the Contractor's risk, until written instructions have been received by him from the Engineer.
- D. If, on the basis of the available evidence, the Engineer determines that an adjustment of the Contract Price or time is justifiable, the procedure shall then be as provided herein for "Changes in the Work".
- E. By execution of this Contract, the Contractor warrants that he has visited the site of the proposed work and fully acquainted himself with the conditions there existing relating to construction and labor, and that he fully understands the facilities, difficulties and restrictions attending the execution of the work under this Contract. The Contractor further warrants that he has

thoroughly examined and is familiar with the Drawings, Specifications and all other documents comprising the Contract. The Contractor further warrants that by execution of this Contract his failure when he was bidding on this Contract to receive or examine any form, instrument or document, or to visit the site and acquaint himself with conditions there existing, in no way relieves him from any obligation under the Contract, and the Contractor agrees that the Owner shall be justified in rejecting any claim based on facts regarding which he should have been on notice as a result thereof.

## **1.05 DETERMINATION OF THE VALUE OF EXTRA (ADDITIONAL) OR OMITTED WORK**

- A. The value of extra (additional) or omitted work shall be determined in one or more of the following ways:
  - 1. On the basis of the actual cost of all the items of labor (including on-the-job supervision), materials and use of equipment, plus a maximum 20% for added work or a minimum 20% for deleted work which shall cover the Contractor's general supervision, overhead and profit. In case of subcontracts, the sum of total overhead amounts of the subcontractors and Contractor, plus total profit amounts for the subcontracts and Contractor shall not exceed 25% of the cost. Subcontractors shall be limited to 15% and Contractors shall be limited to 10% for combined overhead and profit. The cost of labor shall include required insurance, taxes and fringe benefits. Contractor to provide detailed breakdown of all cost as justification of change in work. Equipment costs shall be based on current rental rates in the areas where the work is being performed, but in no case shall such costs be greater than the current rates published by the Associated Equipment Distributors, Chicago, Illinois.
  - 2. By estimate and acceptance in a lump sum.
  - 3. By unit prices named in the Contract or subsequently agreed upon.
- B. Provided, however, that the cost or estimated cost of all extra (additional) work shall be determined in advance of authorization by the Engineer and approved by the Owner.
- C. All extra (additional) work shall be executed under the conditions of the original Contract. Any claim for extension of time shall be adjusted according to the proportionate increase or decrease in the final total cost of the work unless negotiated on another basis.
- D. Except for over-runs in contract unit price items, no extra (additional) work shall be done except upon a written change Order from the Engineer, and no claim on the part of the Contractor for pay for extra (additional) work shall be recognized unless so ordered in writing by the Engineer.

## **PART 2 - PRODUCTS**

### **2.01 SITE WORK**

Payment is lump sum for all site work associated with the construction of a new office building, and shall include all costs associated with insurance, mobilization, demobilization, materials, equipment, submittals, certifications, license, submittals and all other work as related to the plans and specifications. This shall also include the paving, sidewalks, curbs, landscaping, seeding, straw, grading and drainage.

## **2.02 RENOVATIONS TO EXISTING GARAGE (INCLUDING CARPORT AND REAR SHED)**

Payment is lump sum for all renovation work associated with the existing garage, existing carport, and rear shed, and shall include all costs associated with insurance, mobilization, demobilization, materials, equipment, submittals, certifications, license, submittals and all other work as related to the plans and specifications. Payment shall also include the prefinished standing seam roof, soffit and gutters, down spouts, rakes, paint, infill of two (2) windows, replacement of existing aluminum door with steel flush door, and new opening and door in CMU wall.

## **2.03 NEW OFFICE BUILDING ADDITION**

Payment is lump sum for all work associated with the construction of a new office building and shall include all costs associated with insurance, mobilization, demobilization, materials, equipment, submittals, certifications, license, fees, submittals and all other work as related to the plans and specifications. Payment shall also include all work required to complete a 2555 SF office building, including the plumbing, mechanical, electrical, foundation, interior and exterior piping, HVAC equipment, lighting, excavation, steel reinforcement, back fill, relocation of the antenna and existing MTU from the existing office and all other related items necessary for the complete installation as shown on the plans and other related items necessary for the complete installation not enumerated elsewhere.

## **3.02 QUANTITIES OF ESTIMATE**

- A. Wherever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents, including the Bid Proposal, they are given for use in comparing bids and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this Contract, and such increase or diminution shall not give cause for claims or liability for damages. The Engineer will not be financially responsible for any omissions from the Contract Documents and therefore not included by the Contractor in his proposal.
- B. Aerial photographs utilized for plan sheets in the Contract Documents are indicated at an approximate scale and shall not be scaled for quantity take-offs. The pipeline quantities listed in the Bid Schedule are given for use in comparing bids and may not be the actual quantities to be installed. It is the Contractor's responsibility to field verify the length and quantities of pipeline to be installed prior to the ordering of materials. Payment on unit price contracts are based on actual quantities installed. The Owner or Engineer will not be financially responsible for any shortage of pipe or overrun of pipe ordered for the pipeline quantities.
- C. The actual quantities of all materials to be used for this project shall be field verified prior to the Contractor ordering the necessary materials. The quantity listed in the bid schedule is given for use in comparing bids and may increase or diminish as may be deemed necessary or as directed by the Owner. Any such increase or diminution shall not give cause for claims or liability for damages. The Engineer or Owner will not be financially responsible for any charges incurred for restocking of materials ordered.

- END OF SECTION -

**SECTION 01030****LABOR PROVISIONS****PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. The Contractor shall conform to all provisions of the Kentucky Department of Labor, Wage Decisions (latest revisions), relative to minimum wages and hours as they may apply to the work to be accomplished under these specifications.
- B. In addition to the above, certain Federal laws and regulations shall govern the work and shall supplement or supplant the Kentucky Department of Labor Wage Decisions cited above, as the case may be.

**1.02 RELATED SECTIONS**

- A. Section 3 - Part 1 Hours and Wages

**1.03 WAGE RATES**

**Prevailing wage rates apply to this job.** The Contractor will utilize, when feasible, local labor and will pay them wages commensurate with the wages prevailing in the Community.

**1.04 LABOR PREFERENCE**

Where feasible, the Contractor will utilize local labor.

**1.05 HOURS OF WORK**

- A. Hours of work shall be as set out in Kentucky Department of Labor Wage Decisions (latest revisions); that is, not more than eight (8) hours in one calendar day, nor more than forty (40) hours in one week, except in case of emergency caused by fire, flood or damage to life and property.
- B. Any laborer, workman, mechanic, helper, assistant or apprentice working in excess of forty (40) hours per week, except in case of emergency, shall be paid not less than 1-1/2 times the wage rate. Whenever overtime work is scheduled, the Contractor shall give prior notice to the Owner.

- END OF SECTION -



**SECTION 01040****COORDINATION****PART 1 - GENERAL****1.01 COORDINATION OF THE WORK**

The Contractor shall coordinate the work of all the crafts, trades and subcontractors engaged on the Work, and he shall have final responsibility as regards the schedule, workmanship and completeness of each and all parts of the Work.

All crafts, trades and subcontractors shall be made to cooperate with each other and with others as they may be involved in the installation of work which adjoins, incorporates, precedes or follows the work of another. It shall be the Contractor's responsibility to point out areas of cooperation prior to the execution of subcontract agreements and the assignment of the parts of the Work. Each craft, trade and subcontractor shall be made responsible to the Owner, for furnishing embedded items, giving directions for doing all cutting and fitting, making all provisions for accommodating the Work, and for protecting, patching, repairing and cleaning as required to satisfactorily perform the Work.

The Contractor shall be responsible for all cutting, digging and other action of his subcontractors and workmen. Where such action impairs the safety or function of any structure or component of the Project, the Contractor shall make such repairs, alterations and additions as will, in the opinion of the Engineer, bring said structure or component back to its original design condition at no additional cost to the Owner.

Each subcontractor is expected to be familiar with the General Requirements and all sections of the Detailed Specifications for all other trades and to study all Drawings applicable to his work to the end that complete coordination between trades will be affected. Each Contractor shall consult with the Engineer if conflicts exist on the Drawings.

The Contractor shall conduct testing of water lines in a timely manner. The Contractor shall make provisions to test all water lines regardless of whether or not planned pump stations have been delivered and/or installed.

- END OF SECTION -



## **DIVISION 1 GENERAL REQUIREMENTS**

### **01100 SPECIAL CONDITIONS**

#### **1.01 THE PROJECT**

Work covered by Contract Documents: Material, equipment and tools, and services for: Site Work; Demolition; General Construction; Plumbing; HVAC; and, Electrical work for the construction of:

Office Building Addition for Rattlesnake Ridge Water District  
Grayson, KY

A general description of the project:

Construct a 1-story office addition to an existing shop facility. Modifications to the existing parking lot and driveways will be included as part of the project, as well as additional site improvements.

Contractor shall review the entire set of Contract Documents for the preparation of the bid.

#### **1.02 GENERAL CONDITIONS**

These Specifications and Drawings accompanying them describe the work to be done and the materials to be furnished for the construction of the project. Bidders, before submitting proposals shall visit and examine the site of the work to satisfy themselves as to the nature and scope of the new construction, and any difficulties attending the execution of said work. The submission of a proposal will be construed as evidence that a visit and examination of the work have been made. Later claims for labor, equipment, or materials required or difficulties encountered which could have been foreseen had such examination been made will not be recognized.

The Drawings and Specifications are intended to be fully explanatory and supplementary. However, should anything be shown, indicated or specified on one and not the other, it shall be done the same as if shown, indicated, or specified in both.

It shall be the responsibility of all contractors and subcontractors to carefully examine all Drawings, Specifications, and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractor may foresee all requirements for coordination of their work. Submission of a bid shall be construed as evidence that such examination has been made. Claims based on unforeseen requirements or items missed due to failure to review the entire set of drawings and specifications will not be considered.

Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Architect for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.

The Contractor and each Subcontractor shall be responsible for verification of all measurements at the building before ordering any materials or doing any work. No extra charge or compensation shall be allowed due to differences between actual dimensions and dimensions indicated on the Drawings. Any such discrepancy in dimensions which may be found shall be submitted to the Architect for his consideration before the Contractor proceeds with the work in the affected area.

Contractors shall follow sizes in Specifications or figures on the Drawings, in preference to scale measurements, and follow detail drawings in preference to general drawings.

Where it is obvious that a drawing illustrates only a part of a given work or a number of items, the remaining shall be deemed repetitious and so constructed.

“Or Equal” clause: The materials, products, and equipment detailed, described, or referenced to manufacturer’s



## **DIVISION 1 GENERAL REQUIREMENTS**

or vendor's names, trade names, catalogue numbers, etc., are intended to establish a standard of required function, dimension, appearance and quality. Material, article, or equipment of other manufacturers and vendors which will perform satisfactorily the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion and judgment of the Architect, of equal function, dimension, appearance and quality.

### **1.03 THE ARCHITECT**

Wherever in these Contract Documents reference is made to the Architect, it shall be understood to mean Johnson Early Architects, or their duly authorized representatives.

Johnson Early Architects  
131 Prosperous Place, Suite 19B  
Lexington, Kentucky 40509  
859.259.1515 (Phone)  
859.231.5060 (Fax)  
Contact: Brian Early, Principal  
Email: [earlyjb@jearchitects.net](mailto:earlyjb@jearchitects.net)

### **1.04 TIME OF COMPLETION**

The Contractor shall commence work under this Contract ten days following the Owner's written contract and shall complete all work and reach substantial completion within (330) calendar days from and including the starting day of the work order. Following Substantial Completion and its related punch list, the Contractor shall have (30) calendar days to complete the work described on said punch list.

Work which is required to complete the Substantial Completion Punch List following Owner occupancy must be scheduled to be performed without interference with occupant activities.

### **1.05 LIQUIDATED DAMAGES**

There will be no Liquidated Damages clause for this project.

### **1.06 CONTRACT DOCUMENTS**

The Contract Documents consist of the Invitation for Bids, General Conditions, Proposal to Construct, Performance and Payment Bond, Contract Agreement, the Specifications and Drawings, including all modifications thereof in the Documents before their execution. These Documents form the Contract.

The successful Contractor will receive twenty (10) sets of plans and specifications "to build by". Contractor will be required to pay for cost of duplication for additional sets. The Owner will duplicate the additional sets required and the Contractor will reimburse the Owner for the cost of reproduction.

All Documents and copies thereof, are the property of the Architect. They are not to be used on other Work.

### **1.07 CONTRACT AREA**

At the issuance of the Owner's written work order, the Contract area will be released to the Contractor. This Area shall include all areas indicated on the drawings. The Contractor shall assume full responsibility for the area subject to all contract stipulations until the work is completed and accepted and shall provide and properly maintain protection as required by all governing laws, rules, regulations and ordinances in effect at the location and as necessary for the safety of workman, Owner personnel and the public, if any.

## **DIVISION 1 GENERAL REQUIREMENTS**

Contractor shall provide any necessary protection, including site fencing, temporary enclosures, and other devices designed to isolate the construction for the purposes of dust, noise, and safety. Contractor shall keep the access road to the property clear and free of debris. Parking areas for construction vehicles shall be approved by the Owner.

### **1.08 CONDUCT AND WORKMANSHIP OF WORKERS**

The conduct of all personnel performing work or operations related to the work is the responsibility of the Contractor. The consumption of alcohol and/or drugs on the job by any worker is strictly prohibited. Any workmen apprehended under the influence of alcohol and/or drugs on the premises at any time shall be subject to automatic dismissal by the Contractor. Improper conduct of any kind will not be permitted and may result in the offending workmen, Subcontractor and/or Contractor being barred from the project's premises.

Workmen or supervisors judged by the Architect to be incapable of performing their trade in a manner commensurate with the quality of workmanship required by these specifications and accompanying drawings shall be immediately removed from this project when directed by the Architect.

Firearms, drugs, alcoholic beverages shall be prohibited from the site.

### **1.09 ORDERING MATERIALS**

Immediately following the contract award, the Contractor shall determine the source of supply for all materials and the length of time required for delivery, including materials of all subcontractors, and orders shall be placed for such materials promptly.

If for any reason an item specified will not be available when needed, and the Contractor can show that he has made a reasonable effort to obtain the item in question, he may recommend an alternate source of supply or make an appropriate substitute within the terms of the Contract for approval by the Architect. These delivery problems should be brought to the attention of the Architect within 10 days of contract signing, beyond which point the original materials will be expected to be provided within the time and terms of the contract.

### **1.10 PROGRESS MEETINGS**

For the purpose of expediting construction, regular scheduled monthly meetings will be scheduled by the Architect to be attended by representatives of (a) Architect, (b) General Contractor and Subcontractors as may be interested or affected and, (c) Owner's representatives. Location of the meetings will be determined at a later date.

### **1.11 SUBMITTALS**

Following the signing of the Contract, the following items shall be submitted to the Architect. Contractor shall submit: Cost Breakdown of Materials and Labor costs for each Specification section; Lists of Sub-Contractors names, addresses and phone numbers; and, Project Schedule Bar Graph.

### **1.12 SHOP DRAWINGS**

The Contractor shall furnish for the Architect's use a minimum of seven (7) prints of each applicable shop drawing and schedule. The Architect will check these with reasonable promptness for conformance with the design concept and compliance with information given in the Contract Documents only and return them to the Contractor. Four copies will be retained by the Architect. It is the responsibility of the Contractor to verify all dimensions and quantities for inclusion in the work.

## **DIVISION 1 GENERAL REQUIREMENTS**

Samples, manufacturer's literature, etc. shall be furnished and submitted to the Architect as specified herein, in the number requested.

Contractor's stamp of approval shall appear on all shop drawings, schedules, and manufacturer's literature submitted to the Architect/Engineer for review.

Incomplete drawings, inadequate details or failure to comply with the requirements of this section of the specifications will result in disapproval.

Color selections shall be made by the Architect. Color samples shall be actual color samples and not photographic representations.

### **1.13 RECORD DRAWINGS**

The Contractor shall keep one copy of all Contract Documents, drawings, specifications and shop drawings on the site, in good condition, and a qualified representative of the Contractor and each Subcontractor shall record on these prints, from day to day as the Work progresses, all changes and deviations from the Contract Documents. This set will be delivered to the Architect upon completion of the project. Approval of final payments will be contingent upon compliance with these provisions.

### **1.14 OWNER/CONTRACTOR COMMUNICATION**

All communication from the Owner to the Contractor shall be issued through the Architect.

### **1.15 ORDINANCES AND CODES**

All Work shown on the Plans and in the Specifications shall be executed in compliance with all local, state or federal regulations and codes having jurisdiction. The Contractor shall be responsible for all aspects of safety on the project relating to his work.

### **1.16 HAZARDOUS MATERIALS**

The Owner and the Contractor will be under the requirements of the OSHA Hazard Communication Standard (29) CFR 1910.1200.

The Contractor shall have available for the Owner's review a list of any hazardous chemicals that will be utilized in the work. The Contractor shall provide the Owner with copies of Material Safety Data Sheets (MSDS) upon request.

In the event the Contractor encounters on the Site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop work in the area affected and report the condition to the Architect in writing.

### **1.17 CONTRACTOR COORDINATION**

General and Sub-Contractors shall coordinate their work to expedite the progress of the work. All Sub-Contractors shall refer to the drawings and specifications of other trades involved and coordinate their particular work before proceeding. Any work installed which conflicts with another trade and has not been brought to the attention of the Architect shall be removed at no additional expense to the Owner. The General Contractor shall ultimately coordinate all aspects of the Work to ensure a complete project as indicated in the Contract Documents.

## **DIVISION 1 GENERAL REQUIREMENTS**

### **1.18 CUTTING AND PATCHING**

Cutting and patching shall be performed by craftsmen skilled and experienced in the trade or craft that installed or furnished the original work. Work that cannot be satisfactorily repaired shall be removed and replaced.

Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

### **1.19 TESTING**

Contractor shall schedule and pay for all testing of materials or workmanship as required by the Contract Documents. Failure to schedule testing in a timely manner and in coordination with the performance of the work will not be reason for project delay. Contractor shall immediately fax test results to the Architect, and appropriate consultants.

### **1.20 HVAC BALANCING**

Upon completed installation of the building's HVAC system, the Contractor shall obtain competitive bids for this work, pay and assign a balancing company to the project.

### **1.21 TEMPORARY FACILITIES AND CONTROLS**

Job Sign: Not required for this project.

Field Office: Required for this project.

Temporary Sanitary Facilities: Required for this project.

Temporary Utilities: The Contractor shall be responsible for all utilities utilized in the construction of the work. Contractor shall furnish labor and devices required to convey these temporary services from point of connection to point of use desired by Contractor or his Subcontractors. Devices used to convey temporary utilities shall conform to applicable codes for such temporary services. Conveyance devices shall be maintained in proper operating condition and shall not obstruct or interfere with traffic on adjacent roadways while the work is being performed. Removal of temporary services is the responsibility of the Contractor.

Trash Removal and Cleaning: The General Contractor shall be responsible for removing all trash from the project on a timely basis in covered containers in a safe and orderly manner. Handling of special waste materials shall be in accordance with all applicable standards. Prior to occupancy of the building by the Owner and as a condition of acceptance of Substantial Completion, all exterior areas, including roads, parking areas, walkways and lawn surfaces shall receive a final cleaning. The Contractor shall use his own conveyance to dispose of trash which shall be properly removed from the premises of the site. Each Subcontractor shall collect and deposit his debris in the containers. Failure to comply with the above requirements shall be cause for stopping all work until the condition is corrected.

Final Project Cleaning: Upon completion of the work and as a condition of approval of Substantial Completion, the Contractor shall thoroughly clean all parts of the project, including interior and exterior areas. The Contractor shall employ the services of an established cleaning service to clean the areas where work has been done or any areas which have been affected by the work.

Construction and Safety Devices: The Contractor shall provide safety controls for protection of life and health of occupants. He shall utilize precautionary methods for the prevention of damage to property, materials, supplies, and equipment, and for avoidance of work interruptions in the performance of this Contract. In order

## **DIVISION 1 GENERAL REQUIREMENTS**

to provide such safety control aforesaid, the Contractor shall comply with all pertinent provisions of the Kentucky Safety Standards of the Division of Occupational Safety and Health, Department of Labor, and Federal Occupational Safety and Health Construction Standards that are in effect at the time this Contract is to be performed. The Contractor shall also take or cause to be taken such additional measures as the Division of Occupational Safety may determine to be reasonably necessary for the purpose.

Compliance with the provisions of the foregoing pertinent provisions by Subcontractors and all other workmen shall be the responsibility of the General Contractor. The General Contractor shall relieve the Owner and Architect of any responsibility for the compliance, administration or enforcement of these provisions.

### **1.22 CONSTRUCTION STAGING AREA**

The Contractor shall confine his operations, including delivery and unloading of material and equipment to the areas of the site which are designated to be part of the project. No storage or work will be permitted outside these limits unless approved in writing by the Owner.

### **1.23 CARE OF THE WORK**

After the Contract is issued but before work by the Contractor is started, the Contractor shall conduct a walk-through of the area to document the condition of the area. All damaged surfaces or other defective items, including condition of all public or private access roads to and adjacent to the site, shall be recorded to prevent subsequent disputes of responsibility for such damages. Contractor shall document any existing damaged or defective items and bring such items to the immediate attention of the Architect and Owner. Failure to identify, document, and bring to the attention of authorized persons will constitute acceptance and resultant responsibility for the damaged or defective items.

The Contractor shall have full charge of the areas within which new work is to be constructed, as well as the work itself, until completion and final acceptance.

The Contractor shall be responsible for all injury to work in process of construction, and for all property and materials stored on the premises that may be injured or stolen while work is in his care, and he shall make good such damage or loss without expense to the Owner.

The Contractor shall at a minimum provide one (1) 2.5 gallon pressurized water fire extinguisher and one (1) ten (10) pound CO2 fire extinguisher for each floor of the construction area.

### **1.24 MATERIALS AND EQUIPMENT**

Unless otherwise specified, all materials shall be new and of types, grades or classes as specified herein. All materials shall be free from defects. All materials shall be carefully handled to preclude damage and shall be properly stored at the site to prevent damage. There will be no space available for material or equipment storage outside of the construction area itself. Damaged or deteriorated materials shall be promptly removed from the site.

### **1.25 PROJECT COMPLETION**

At the completion of the work the contract area shall be complete, clean and free of all damage, dirt and other imperfections with all operable equipment functioning properly.

The Contractor shall remove all materials or rubbish resulting from his work and leave the site clean to the satisfaction of the Architect upon completion of the work and before final acceptance of the job can be made.

The Contractor shall transmit the final record set to the Architect.

## **DIVISION 1 GENERAL REQUIREMENTS**

The Contractor shall request and deliver the occupancy inspection and certificate.

The Contractor shall submit all warranties and guarantees required by the Contract Documents.

The Contractor shall remove all temporary barriers, services and devices.

After all work is completed, a final inspection shall be made by the Owner and the Architect. Any work not up to the standard shall be removed and replaced before final payment is made.

The Contractor will be given a letter by the Architect setting forth the date of acceptance when all work is completed, inspected and accepted by the Owner.

### **1.26 PERIOD OF LIABILITY**

The Period of Liability is for one year after completion and acceptance of this project. The Contractor shall repair any defects due to faulty workmanship or materials which may occur within this period. All guarantees/warranties shall be for complete replacement or "repaired like new" at no cost to the Owner.

### **1.27 UTILITY OUTAGES**

Interruption of Utilities and Services: No utilities may be interrupted without full consent and prior scheduling of the Owner.

### **1.28 SEQUENCE OF CONSTRUCTION**

The Contractor shall coordinate any road and sidewalk closings, utility disruptions, etc. which will affect the use of adjacent building(s) and facilities with the Owner prior to commencing that work. The Contractor shall coordinate construction activity to assure the safety of those who must cross the project site and shall provide and maintain the necessary barriers and accommodations for a completely safe route of accessibility.



**SECTION 01300****SUBMITTALS****PART 1 - GENERAL****1.01 WORK INCLUDED**

Shop drawings, descriptive literature, project data and samples (when samples are specifically requested) for all manufactured or fabricated items shall be submitted by the Contractor to the Engineer for examination and review in the form and in the manner required by the Engineer. All SUBMITTALS shall be furnished in at least six (6) copies and shall be checked, reviewed and signed by the Contractor before submission to the Engineer. The review of the Drawings by the Engineer shall not be construed as a complete check but only for conformance with the design concept of the Project and for compliance with information given in the Contract Documents. Review of such drawings will not relieve the Contractor of the responsibility for any errors that may exist, as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work.

**1.02 RELATED REQUIREMENTS SPECIFIED ELSEWHERE**

- A. General Provision.
- B. Section 01720 - Project Record Documents (As-Built).

**1.03 DEFINITIONS**

The term "submittals" shall mean shop drawings, manufacturer's drawings, catalog sheets, brochures, descriptive literature, diagrams, schedules, calculations, material lists, performance charts, test reports, office and field samples, and items of similar nature which are normally submitted for the Engineer's review for conformance with the design concept and compliance with the Contract Documents.

**1.04 GENERAL CONDITIONS**

- A. Review by the Engineer of shop drawings or SUBMITTALS of material and equipment shall not relieve the Contractor from the responsibilities of furnishing same of proper dimension, size, quality, quantity, materials and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Review shall not relieve the Contractor from responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents.
- B. Review of shop drawings shall not be construed as releasing the Contractor from the responsibility of complying with the Specifications.

**1.05 GENERAL REQUIREMENTS FOR SUBMITTALS**

- A. Shop Drawings:
  - 1. Shop drawings shall be prepared by a qualified detailer. Details shall be identified by reference to sheet and detail numbers shown on Contract Drawings. Where applicable, show fabrication, layout, setting and erection details.
  - 2. Shop drawings are defined as original drawings prepared by the Contractor, subcontractors, suppliers, or distributors performing work under this Contract. Shop



drawings illustrate some portion of the work and show fabrication, layout, setting or erection details of equipment, materials and components. The Contractor shall, except as otherwise noted, have prepared the number of reviewed copies required for his distribution plus two (2) which will be retained by the Engineer. Shop drawings shall be folded to an approximate size of 8-1/2" x 11" and in such manner that the title block will be located in the lower righthand corner of the exposed surface.

- B. Project data shall include manufacturer's standard schematic drawings modified to delete information which is not applicable to the Project, and shall be supplemented to provide additional information applicable to the Project. Each copy of descriptive literature shall be clearly marked to identify pertinent information as it applies to the Project.
- C. Where samples are required, they shall be adequate to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged. Provide sufficient size and quantity to clearly illustrate functional characteristics of product and material, with integrally related parts and attachment devices, along with a full range of color samples.
- D. All submittals shall be referenced to the applicable item, section and division of the Specifications, and to the applicable Drawing(s) or Drawing schedule(s).
- E. The Contractor shall review and check SUBMITTALS, and shall indicate his review by initials and date.
- F. If the submittals deviate from the Contract Drawings and/or Specifications, the Contractor shall advise the Engineer, in letter of transmittal of the deviation and the reasons therefor. All changes shall be clearly marked on the submittal with a bold red mark. Any additional costs for modifications shall be borne by the Contractor.
- G. In the event the Engineer does not specifically reject the use of material or equipment at variance to that which is shown on the Drawings or specified, the Contractor shall, at no additional expense to the Owner, and using methods reviewed by the Engineer, make any changes to structures, piping, controls, electrical work, mechanical work, etc., that may be necessary to accommodate this equipment or material. Should equipment other than that on which design drawings are based be accepted by the Engineer, shop drawings shall be submitted detailing all modification work and equipment changes made necessary by the substituted item.
- H. Additional information on particular items, such as special drawings, schedules, calculations, performance curves, and material details, shall be provided when specifically requested in the technical Specifications.
- I. Submittals for all electrically operated items (including instrumentation and controls) shall include complete wiring diagrams showing leads, runs, number of wires, wire size, color coding, all terminations and connections, and coordination with related equipment.
- J. Equipment shop drawings shall indicate all factory or shop paint coatings applied by suppliers, manufacturers and fabricators; the Contractor shall be responsible for insuring the compatibility of such coatings with the field-applied paint products and systems.
- K. Fastener specifications of manufacturer shall be indicated on equipment shop drawings.
- L. Where manufacturers' brand names are given in the Specifications for building and construction materials and products, such as grout, bonding compounds, curing compounds, masonry cleaners, waterproofing solutions and similar products, the Contractor shall submit names and descriptive literature of such materials and products he proposes to use in this Contract.

- M. No material shall be fabricated or shipped unless the applicable drawings or submittals have been reviewed by the Engineer and returned to the Contractor.
- N. All bulletins, brochures, instructions, parts lists, and warranties packaged with and accompanying materials and products delivered to and installed in the Project shall be saved and transmitted to the Owner through the Engineer.

#### **1.06 CONTRACTOR RESPONSIBILITIES**

- A. Verify field measurements, field construction criteria, catalog numbers and similar data.
- B. Coordinate each submittal with requirements of Work and of Contract Documents.
- C. Notify Engineer, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.
- D. Begin no work, and have no material or products fabricated or shipped which required submittals until return of submittals with Engineer's stamp and initials or signature indicating review.

- END OF SECTION -



**SECTION 01380****DVD****PART 1 - GENERAL****1.01 WORK INCLUDED**

The Contractor shall be responsible for video taping the entire project site both prior to construction and immediately after completion and acceptance of all work. DVD's shall be produced by a videographer acceptable to the Engineer and of a professional quality.

**1.02 VIDEO TAPE**

The video tape shall be of a high quality DVD format. Video tapes shall show the time, date, and project location on screen during playback.

**1.03 SUBMITTALS**

The Contractor shall provide two copies of the project DVD with jackets. The DVD's and jackets shall be clearly labeled with project name start date and completion date as shown below.

Project Name and Contract No.

Owner Name

Start Date: \_\_\_\_\_

Completion Date: \_\_\_\_\_

-END OF SECTION-



**SECTION 01450**  
**QUALITY CONTROL**

**PART 1 - GENERAL**

**1.01 QUALITY CONTROL**

- A. Work of all crafts and trades shall be laid out to lines and elevations as established by the Contractor from the Drawings or from instructions by the Engineer.
- B. Unless otherwise shown, all work shall be plumb and level, in straight lines and true planes, parallel or square to the established lines and levels. The Work shall be accurately measured and fitted to tolerance as established by the best practices of the crafts and trades involved, and shall be as required to fit all parts of the Work carefully and neatly together.
- C. All equipment, materials and articles incorporated into the Work shall be new and of comparable quality as specified. All workmanship shall be first-class and shall be performed by mechanics skilled and regularly employed in their respective trades.

**1.02 TESTS, INSPECTIONS, AND CERTIFICATIONS OF MATERIALS**

- A. Tests, inspections and certifications of materials, equipment, subcontractors or completed work, as required by the various sections of the Specifications shall be obtained by the Contractor and all costs shall be included in the Contract Price.
- B. The Contractor shall submit to the Engineer the name of testing laboratory to be used.
- C. Contractor shall deliver written notice to the Engineer at least 24 hours in advance of any inspections or tests to be made at the Project site. All inspections, tests, samples for water quality or other procedures requiring the Engineer to attest to be conducted in the field shall be done in the presence of the Engineer or his representative.
- D. Certifications by independent testing laboratories may be by copy of the attestation(s) and shall give scientific procedures and results of tests. Certifications by persons having interest in the matter shall be by original attest properly sworn to and notarized.

- END OF SECTION -



**SECTION 01500****TEMPORARY FACILITIES AND CONTROLS****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. The Contractor shall make his own provisions for temporary electricity and water and maintain strict supervision of use of temporary utility services as follows:
  - 1. Enforce compliance with applicable standards.
  - 2. Enforce safety practices
  - 3. Prevent abuse of services.
  - 4. Pay all utility charges required.

**1.02 REQUIREMENTS OF REGULATORY AGENCIES**

- A. The Contractor shall obtain and pay for all permits as required by governing authorities.
- B. Obtain and pay for temporary easements required across property other than that of Owner or that is shown on the Contract Drawings.
- C. The Contractor shall comply with applicable codes.

**1.03 REMOVAL**

- A. The Contractor shall completely remove temporary materials, equipment, and offices upon completion of construction.
- B. The Contractor shall repair damage caused by installation and restore to specified or original condition.

**1.04 TEMPORARY LIGHTING**

- A. The Contractor shall furnish and install temporary lighting required for:
  - 1. Construction needs.
  - 2. Safe and adequate working conditions.
  - 3. Public Safety.
  - 4. Security lighting.
  - 5. Temporary office and storage area lighting.
- B. Service periods for safety lighting shall be as follows:
  - 1. Within construction area: All times that authorized personnel are present.



- 2. Public areas: At all times.
- C. Costs of Installation and Preparation: Contractor shall pay all installation, maintenance and removal costs of temporary lighting.
- D. Maintenance of temporary lighting service (replacement of bulbs, etc.) shall be the sole responsibility of the General Contractor.

#### **1.05 TEMPORARY WATER**

The Contractor shall provide the water necessary for testing and disinfection. Water purchased from the owner for flushing and testing shall be paid for at the whole sale price by the contractor. The Contractor shall supply his own hoses, chlorine for disinfection, etc.

#### **1.06 SANITARY FACILITIES**

Contractor shall provide sanitary facilities as set forth in General Provisions (GP-2.04.Sanitary Regulations).

#### **1.07 FIELD OFFICE (Office Trailer not Required for this Contract)**

The Contractor shall make his own provisions for providing the electricity, telephone, gas, water, sewer, and other utilities to his office trailer that are required or as necessary for completion of the work.

The Contractor shall be responsible for all utility charges.

### **PART 2 - PRODUCTS**

Not used.

### **PART 3 – EXECUTION**

#### **3.01 IMPLEMENTATION**

- B. The Contractor shall provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to storm drains, adjacent areas and walkways prior to the start of any site work.
- C. Straw bale dikes, silt fencing and synthetic filter fabric shall be used as necessary to protect adjacent lands, surface waters, and vegetation to achieve environmental objectives.
- D. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Soil deposited on pavement by construction and other contractor vehicles shall be removed and the pavement swept as required.
- F. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- G. Minimize amount of bare soil exposed at one time.
- H. Provide temporary measures such as berms, dikes, drains, hay bales, gabions, etc., as directed by the Engineer so as to minimize siltation due to runoff.

- I. Construct fill and waste areas by selective placement to avoid erosive exposed surface of silts or clays.
- J. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

### **3.02 OPERATION AND MAINTENANCE**

- A. The Contractor shall inspect, repair, and maintain erosion and sediment control measures until final stabilization has been established.

### **3.03 REMOVAL OF FACILITIES**

- A. The Contractor shall remove the temporary facilities after final stabilization has been established. Used devices (including old straw bales) shall be disposed of as Construction & Demolition debris.

### **3.04 DUST CONTROL**

- A. Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

- END OF SECTION -



**SECTION 01530**

**BARRIERS**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

Temporary Railing: Temporary railing shall be provided around open pits and other locations where needed, to prevent accidents or injury to persons.

**1.02 COST**

The Contractor shall pay all costs for temporary railing.

- END OF SECTION -



**SECTION 01540**

**SECURITY**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. Provide barricades, lanterns and other such signs and signals as may be necessary to warn of the dangers in connection with open excavation and obstructions.
- B. Provide an adequate and approved system to secure the Project area at all times, especially during non-construction periods; the Contractor shall be solely responsible for taking proper security measures.

**1.02 COSTS**

Contractor shall pay all costs for protection and security systems.

- END OF SECTION -



**SECTION 01570**  
**TRAFFIC REGULATION**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS INCLUDED**

- A. Construction parking control.
- B. Flagmen.
- C. Flares and lights.
- D. Haul routes.
- E. Traffic signs and signals.
- F. Removal.

**1.02 RELATED REQUIREMENTS**

- A. Section 01530 - Barriers.
- B. Section 01580 - Project Identification and Signs.

**PART 2 - PRODUCTS**

**2.01 SIGNS, SIGNALS AND DEVICES**

- A. Post-mounted and wall-mounted traffic control and informational signs as specified and required by local jurisdictions.
- B. Automatic Traffic Control Signals: As approved by local jurisdictions.
- C. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
- D. Flagman Equipment: As required by local jurisdictions.

**PART 3 - EXECUTION**

**3.01 CONSTRUCTION PARKING CONTROL**

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in nondesignated areas.



**3.02 TRAFFIC CONTROL**

- A. Whenever and wherever, in the Engineer's opinion, traffic is sufficiently congested or public safety is endangered, Contractor shall furnish uniformed officers to direct traffic and to keep traffic off the highway area affected by construction operations.
- B. Contractor shall abide by City regulations governing utility construction work.
- C. Traffic control shall be provided according to the Kentucky Department of Highways Manual on Uniform Traffic Control Devices for Streets and Highways.

**3.03 FLAGMEN**

Provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes.

**3.04 FLARES AND LIGHTS**

Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

**3.05 HAUL ROUTES**

- A. Consult with authorities, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

**3.06 TRAFFIC SIGNS AND SIGNALS**

- A. At approaches to site and on site, install appropriate signs at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate 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.

**3.07 REMOVAL**

Remove equipment and devices when no longer required. Repair damage caused by installation. Remove post settings to a depth of 2 feet.

- END OF SECTION -

**SECTION 01580****PROJECT IDENTIFICATION AND SIGNS****PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. The Contractor shall provide all signs required by these specifications near the site of the work. The sign shall set forth the description of the work and the names of the Owner, Engineer and Contractor as shown on the Plans or in these Specifications.
- B. The Contractor shall furnish and install one (1) sign on the Project. Each sign shall conform to the specifications and painted as shown on Figure I and II on the following pages. The location of signs shall be determined by the Owner and/or Engineer at the pre-construction meeting.

**PART 2 - PRODUCT****2.01 SIGN**

The sign shall be constructed of 3/4" thick APA A-B Exterior grade or marine plywood. Posts shall be 4" x 4" of fencing type material. Prime all wood with white primer. Sign shall be as shown in Figure I and II.

**PART 3 - EXECUTION****3.01 MAINTENANCE**

The sign shall be maintained in good condition until completion of the Project.

**3.02 LOCATION**

The location of the project signs shall be determined at the pre-construction conference after the contract has been awarded.



**SECTION 01610****TRANSPORTATION AND HANDLING****PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. Handling and Distribution:
  - 1. The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the work, as necessary or required; shall provide suitable and adequate storage room for materials and equipment during the progress of the work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by him, until the final completion and acceptance of the work.
  - 2. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.
- B. Storage of Materials and Equipment: All excavated materials and equipment to be incorporated in the work shall be placed so as not to injure any part of the work or the existing facilities and so that free access can be had at all times to all parts of the work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

- END OF SECTION -



**SECTION 01700**  
**PROJECT CLOSEOUT**

**PART 1 - GENERAL**

**1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE**

A. Liquidated Damages: General Provisions-11.20. CHARGES FOR DELAY CAUSED BY THE CONTRACTOR

B. Cleaning: Section 01710.

C. Project Record Documents: Section 01720.

**1.02 SUBSTANTIAL COMPLETION**

A. Contractor:

1. Submit written certification to Engineer that project is substantially complete.
2. Submit list of major items to be completed or corrected.

B. Engineer will make an inspection within seven days after receipt of certification, together with Owner's Representative.

C. Should Engineer consider that work is substantially complete:

1. Contractor shall prepare, and submit to Engineer, a list of items to be completed or corrected, as determined by the inspection.
2. Engineer will prepare and issue a Certificate of Substantial Completion, containing:
  - a. Date of Substantial Completion.
  - b. Contractor's list of items to be completed or corrected, verified and amended by Engineer.
  - c. The time within which Contractor shall complete or correct work of listed items.
  - d. Time and date Owner will assume possession of work or designated portion thereof.
  - e. Responsibilities of Owner and Contractor for:
    - (1) Insurance
    - (2) Utilities
    - (3) Operation of mechanical, electrical and other systems.
    - (4) Maintenance and cleaning.
    - (5) Security

- f. Signatures of:
  - (1) Engineer.
  - (2) Contractor.
  - (3) Owner.
- 3. Owner occupancy of Project or Designated Portion of Project:
  - a. Contractor shall:
    - (1) Obtain certificate of occupancy.
    - (2) Perform final cleaning in accordance with Section 01710.
  - b. Owner will occupy Project, under provisions stated in Certificate of Substantial Completion.
- 4. Contractor shall complete work listed for completion or correction, within designated time.
- D. Should Engineer consider that work is not substantially complete.
  - 1. He shall immediately notify Contractor, in writing, stating reasons.
  - 2. Contractor shall complete work, and send second written notice to Engineer, certifying that Project, or designated portion of Project is substantially complete.
  - 3. Engineer will reinspect work.

### **1.03 FINAL INSPECTION**

- A. Contractor shall submit written certification that:
  - 1. Contract Documents have been reviewed.
  - 2. Project has been inspected for compliance with Contract Documents.
  - 3. Work has been completed in accordance with Contract Documents.
  - 4. Equipment and systems have been tested in presence of Owner's Representative and are operational.
  - 5. Project is completed and ready for final inspection.
- B. Engineer will make final inspection within seven (7) days after receipt of certification.
- C. Should Engineer consider that work is finally complete in accordance with requirements of Contract Documents, he shall request Contractor to make Project Closeout submittals.
- D. Should Engineer consider that work is not finally complete:
  - 1. He shall notify Contractor, in writing, stating reasons.
  - 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to Engineer certifying that work is complete.

3. Engineer will reinspect work.

**1.04 FINAL CLEAN UP**

The Work will not be considered as completed and final payment made until all final clean up has been done by the Contractor in a manner satisfactory to the Engineer. See Section 01710 for detailed requirements.

**1.05 CLOSEOUT SUBMITTALS**

Project Record Documents: To requirements of Section 01720.

**1.06 FINAL APPLICATION FOR PAYMENT**

Contractor shall submit final applications in accordance with requirements of GENERAL PROVISIONS.

**1.07 FINAL CERTIFICATE FOR PAYMENT**

- A. Engineer will issue final certificate in accordance with provisions of GENERAL PROVISIONS.
- B. Should final completion be materially delayed through no fault of Contractor, Engineer may issue a Semi-Final Certificate for Payment.

- END OF SECTION -





## SECTION 01710

### CLEANING

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. During its progress the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes, structures, by work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.
- C. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organics in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- D. The Contractor shall thoroughly clean all materials and equipment installed by him and his subcontractors, and on completion of the work shall deliver it undamaged and in fresh and new appearing condition.
- E. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition equal or better than that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

##### 1.02 DESCRIPTION

- A. Related Requirements Specified Elsewhere:
  - 1. Project Closeout: Section 01700.
  - 2. Cleaning for Specific Products or Work: Specification Section for that work.
- B. On a continuous basis, maintain premises free from accumulations of waste, debris, and rubbish, caused by operations.

- C. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave Project clean and ready for occupancy.

### **1.03 SAFETY REQUIREMENTS**

- A. Hazards Control:
  - 1. Store volatile wastes in covered metal containers, and remove from premises daily.
  - 2. Prevent accumulation of wastes, which create hazardous conditions.
  - 3. Provide adequate ventilation during use of volatile or noxious substances.
- B. Conduct cleaning and disposal operations in compliance with local ordinances and anti-pollution laws.
  - 1. Do not burn or bury rubbish and waste materials on Project site without written permission from the Owner.
  - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or fuel in open drainage ditches or storm or sanitary drains.
  - 3. Do not dispose of wastes into streams or waterways.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

## **PART 3 - EXECUTION**

### **3.01 DURING CONSTRUCTION**

- A. Execute cleaning to ensure that grounds and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to minimize blowing dust.
- C. At reasonable intervals during progress of Work, clean site and public properties, and dispose of waste materials, debris and rubbish.
- D. Provide on-site containers for collection of waste materials, debris and rubbish.
- E. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off construction site.
- F. The Contractor shall thoroughly clean all materials and equipment installed.

**3.02 FINAL CLEANING**

- A. Employ experienced workmen, or professional cleaners, for final cleaning.
- B. In preparation for substantial completion, conduct final inspection of project area(s).
- C. Broom clean paved surfaces; rake clean other surfaces of grounds.
- D. Maintain cleaning until Project, or portion thereof, is accepted by Owner.

- END OF SECTION -



**SECTION 01720****PROJECT RECORD DOCUMENTS****PART 1 - GENERAL****1.01 WORK INCLUDED**

The Contractor shall obtain from the Engineer, one (1) set of prints of the Contract Drawings. These prints shall be kept and maintained in good condition at the project site and a qualified representative of the Contractor shall enter upon these prints, from day-to-day, the actual "as-built" record of the construction progress. Entries and notations shall be made in a neat and legible manner and these prints shall be delivered to the Engineer upon completion of the construction. APPROVAL FOR FINAL PAYMENT WILL BE CONTINGENT UPON COMPLIANCE WITH THIS PROVISION.

**1.02 RELATED REQUIREMENTS SPECIFIED ELSEWHERE:**

- A. Section 01300 - Submittals.
- B. General Provisions – Kentucky Engineering Group, PLLC

**1.03 MAINTENANCE OF DOCUMENTS**

- A. Maintain at job site, one copy of:
  - 1. Contract Drawings
  - 2. Specifications
  - 3. Addenda
  - 4. Reviewed Shop Drawings
  - 5. Change Orders
  - 6. Other Modifications to Contract
- B. Store documents in approved location, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
- D. Maintain documents in clean, dry legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by Engineer and Owner.

**1.04 MARKING DEVICES**

Provide colored pencil or felt-tip marking pen for all marking.

**1.05 RECORDING**

- A. Label each document "PROJECT RECORD" in 2-inch high printed letters.

- B. Keep record documents current.
- C. Do not permanently conceal any work until required information has been recorded.
- D. Contract Drawings: Legibly mark to record actual construction:
  - 1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
  - 2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
  - 3. Field changes of dimension and detail.
  - 4. Changes made by Change Order or Field Order.
  - 5. Details not on original Contract Drawings.
- E. Specifications and Addenda: Legibly mark up each Section to record:
  - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
  - 2. Changes made by Change Order or Field Order.
  - 3. Other matters not originally specified.
- F. Shop Drawings: Maintain as record documents; legibly annotate Shop Drawings to record changes made after review.

#### **1.06 SUBMITTAL**

- A. At completion of project, deliver record documents to Engineer.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
  - 1. Date.
  - 2. Project Title and Number.
  - 3. Contractor's Name and Address.
  - 4. Title and Number of each Record Document.
  - 5. Certification that each Document as Submitted is Complete and Accurate.
  - 6. Signature of Contractor, or his authorized Representative.

- END OF SECTION -

**DIVISION 1**  
**GENERAL REQUIREMENTS**

01732 SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Demolition and removal of selected portions of a building or structure.
  - 2. Demolition and removal of selected site elements.
  - 3. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
  - 1 Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
  - 2. Division 15 Sections for demolishing, cutting, patching, or relocating mechanical items.
  - 3. Division 16 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.
- B. Historic 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 Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
  - 1. Coordinate with Owner's historical adviser, who will establish special procedures for removal and salvage.

1.5 SUBMITTALS

- A. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.



**DIVISION 1  
GENERAL REQUIREMENTS**

- B. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, which might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

**1.6 QUALITY ASSURANCE**

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in contract documents.

**1.7 PROJECT CONDITIONS**

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
  - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for condition of areas to be selectively demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 2. Before selective demolition, Owner will remove the following items:
    - a. All items to be salvaged for re-use, such as furniture, records, displays, etc.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

**DIVISION 1**  
**GENERAL REQUIREMENTS**

**1.8 WARRANTY**

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
  - 1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.
    - a. Processed concrete finishes.
    - b. Stonework and stone masonry.
    - c. Preformed metal panels.
    - d. Roofing.
    - e. Firestopping.
    - f. Window wall system.
    - g. HVAC enclosures, cabinets, or covers.

**PART 2 - PRODUCTS**

**2.1 REPAIR MATERIALS**

- A. Use repair materials identical to existing materials.
  - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

**DIVISION 1**  
**GENERAL REQUIREMENTS**

**3.2 UTILITY SERVICES**

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
  - 1. Provide at least 36 hours' notice to Owner if shut down of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
  - 2. Arrange to shut off indicated utilities with utility companies.
  - 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
  - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

**3.3 PREPARATION**

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, walkways, 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.
  - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
  - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
  - 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

**DIVISION 1**  
**GENERAL REQUIREMENTS**

2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

**3.4 POLLUTION CONTROLS**

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
  2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

**3.5 SELECTIVE DEMOLITION**

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

**DIVISION 1**  
**GENERAL REQUIREMENTS**

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly.
  10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
- C. Removed and Salvaged Items: Comply with the following:
1. Clean salvaged items.
  2. Pack or crate items after cleaning. Identify contents of containers.
  3. Store items in a secure area until delivery to Owner.
  4. Transport items to Owner's storage area designated by Owner.
  5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items: Comply with the following:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
  2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  3. Protect items from damage during transport and storage.
  4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

## **DIVISION 1 GENERAL REQUIREMENTS**

- F. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.
- G. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- H. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- I. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- J. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
  - 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- K. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.
- L. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

### **3.6 PATCHING AND REPAIRS**

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section "Cutting and Patching."
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
  - 1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
  - 1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
  - 2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.

**DIVISION 1**  
**GENERAL REQUIREMENTS**

3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

F. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION

**SECTION 01740**  
**WARRANTIES AND BONDS**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. Compile specified warranties and bonds.
- B. Compile specified service and maintenance contracts.
- C. Co-execute submittals when so specified.
- D. Review submittals to verify compliance with Contract Documents.
- E. Related requirements specified elsewhere:
  - 1. Bid Bond: Instructions to Bidders.
  - 2. Performance and Payment Bonds: General Provisions.
  - 3. Guaranty: General Provisions.
  - 4. General Warranty of Construction: General Provisions.
  - 5. Project Closeout: Section 01700.
  - 6. Warranties and Bonds required for specific products: As listed herein.
  - 7. Provisions of Warranties and Bonds, Duration: Respective specification sections for particular products.
  - 8. Operating and Maintenance Data: Section 01730.

**1.02 SUBMITTALS REQUIREMENTS**

- A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers and subcontractors.
- B. Furnish two (2) original signed copies.
- C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
  - 1. Product, equipment or work item.
  - 2. Firm name, address and telephone number.
  - 3. Scope



4. Date of beginning of warranty, bond or service and maintenance contract.
5. Duration of warranty, bond or service and maintenance contract.
6. Provide information for Owner's personnel:
  - a. Proper procedure in case of failure.
  - b. Instances which might affect the validity of warranty or bond.
7. Contractor name, address and telephone number.

### **1.03 FORM OF SUBMITTALS**

- A. Prepare in duplicate packets.
- B. Format:
  1. Size 8-1/2 in. x 11 in., punch sheets for 3-ring binder: Fold larger sheets to fit into binders.
  2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
    - a. Title of Project.
    - b. Name of Contractor.
- C. Binders: Commercial quality, three-ring, with durable and cleanable plastic covers.

### **1.04 TIME OF SUBMITTALS**

- A. For equipment or component parts of equipment put into service during progress of construction: Submit documents within 10 days after inspection and acceptance.
- B. Otherwise, make submittals within 10 days after date of substantial completion, prior to final request for payment.
- C. For items of work, where acceptance is delayed materially beyond the Date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing the date of acceptance as the start of the warranty period.

### **1.05 SUBMITTALS REQUIRED**

Submit warranties, bonds, service and maintenance contracts as specified in the respective sections of the Specifications.

- END OF SECTION -

## SECTION 02000

### SITE WORK

#### 02000 - SITE WORK

##### 1.01 DESCRIPTION

- A. These general site work requirements apply to all site work operations. Refer to Division 2 specification sections for specific general, product, and execution requirements.

##### 1.02 QUALITY ASSURANCE

- A. Comply with all applicable local, state, and federal requirements regarding materials, methods of work, and disposal of excess and waste materials.
- B. Obtain and pay for all required inspections, permits, and fees. Provide notices required by governmental authorities.

##### 1.03 PROJECT CONDITIONS

- A. Contractor shall locate and identify existing underground and overhead services and utilities within contract limit work areas prior to commencement of work to verify utility location or omissions on plans. Provide adequate means of protection of utilities and services designated to remain. It shall be the Contractor's responsibility to contact all utility companies to verify location of existing utilities. Repair utilities damaged during site work operations at Contractor's expense.
- B. Arrange for disconnection, disconnect and seal or cap all utilities and services designated to be removed before start of site work operations. Perform all work in accordance with the requirements of the applicable utility company or agency involved.
- C. When uncharted or incorrectly charted underground piping or other utilities and services are encountered during site work operations, notify the applicable utility company and Landscape Architect immediately to obtain procedure directions. Cooperate with the applicable utility company in maintaining active services in operation.
- D. Locate, protect, and maintain bench marks, monuments, control points and project engineering reference points. Re-establish disturbed or destroyed items at Contractor's expense. Contractor shall be responsible for staking and layout of all improvements and shall be included in Base Bid.
- E. Perform site work operations and the removal of debris and waste materials to assure minimum interference with streets, walks, and other adjacent facilities.
- F. Obtain governing authorities written permission when required to close or obstruct street, walks and adjacent facilities. Provide alternate routes around closed or obstruct street, walks and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways when required by governing authorities.
- G. Control dust caused by the work. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.
- H. Protect existing buildings, paving, and other services or facilities on site and adjacent to the site from damage caused by site work operations. Cost of repair and restoration of damaged items at Contractor's expense.

## **SECTION 02000**

### **SITE WORK**

- I. Protect and maintain street lights, utility poles and services, traffic signal control boxes, curb boxes, valves and other services, except items designated for removal. Remove or coordinate the removal of traffic signs, parking meters and postal mail boxes with the applicable governmental agency. Provide for temporary relocation when required to maintain facilities and services in operation during construction work.

#### **2.01 MATERIALS AND EQUIPMENT**

- A. Materials and equipment: As selected by Contractor, except as indicated.

#### **3.01 PREPARATION**

- A. Examine the areas and conditions under which site work is performed. Do not proceed with the work until unsatisfactory conditions are corrected.
- B. Consult the records and drawings of adjacent work and of existing services and utilities which may affect site work operations.

END

**SECTION 02100**  
**SITE PREPARATION**

**02100 - SITE PREPARATION**

**1.01 DESCRIPTION**

A. Perform site preparation work as shown and specified. The work includes:

1. Protecting existing trees to remain.
2. Removing trees and other vegetation.
3. Stripping lawn areas.
4. Stripping and stockpiling topsoil.
5. Removing designated site improvements.

B. Related work:

1. Section 02200: Earthwork.
2. Section 02490: Trees, Plants, and Ground Covers.

**1.02 QUALITY ASSURANCE**

A. Comply with Section 02000 requirements.

**1.03 PROJECT CONDITIONS**

A. Perform site preparation work before commencing site construction.

B. Locate by contacting utility companies, protect, and maintain active utilities and site improvements to remain.

C. Provide necessary barricades, coverings, and protection to prevent damage to existing improvements indicated to remain.

D. Restore to original grades and conditions, areas adjacent to site disturbed or damaged as a result of site preparation work.

**2.01 MATERIALS**

A. Materials and equipment: As selected by the Contractor, except as indicated.

**3.01 CLEARING**

A. Locate and suitably identify trees and improvements indicated to remain.

B. Clear and grub areas within contract limits as required for site access and execution of the work.

C. Remove trees, plants, undergrowth, other vegetation, and debris, except items indicated to remain. Strip weeds and grass.

## SECTION 02100

### SITE PREPARATION

1. Fell trees in a manner to prevent injury to adjacent facilities and to trees scheduled to remain.
  2. Use hand methods for grubbing inside the drip line of trees to remain. Strip grass materials to a maximum depth of 1" under tree canopies. Carefully till or scarify existing grade to a depth of 1".
  3. Remove stumps and roots to a clear depth of 36" below subgrades. Remove stumps and roots to their full depth within 5'-0" of underground structures, utility lines, footings, and paved areas.
- D. Protect existing trees scheduled to remain against injury or damage, including cutting, breaking, or skinning of roots, trunks or branches; smothering by stockpiled construction materials, excavated materials or vehicular traffic within branch spread.
1. Protect designated trees with temporary wood snow fence enclosure. Provide a minimum 8'-0" radius from center of tree trunk. Increase enclosure size as directed for large trees.
  2. Erect temporary fencing before commencing site preparation work. Maintain fencing during full construction period. Remove temporary fencing when no longer needed or when acceptable to Landscape Architect.
  3. Interfering branches of trees scheduled to remain may be removed when acceptable to the Architect.
  4. Repair trees scheduled to remain and damaged by construction operations in a manner acceptable to the Architect. Repair damaged trees promptly to prevent progressive deterioration caused by damage.
  5. Replace trees scheduled to remain and damaged beyond repair by construction operations, as determined by the Architect, with trees of similar size and species. Cost for tree replacement shall be determined in accordance with the Tree Evaluation Formula as described in "A Guide to the Professional Evaluation of Landscape Trees, Specimen Shrubs, and Evergreens", published by the International Society of Arboriculture.,
  6. Repair and replacement of trees scheduled to remain and damaged by construction operations or lack of adequate protection during construction operations shall be at Contractor's expense.

#### 3.02 STRIPPING TOPSOIL

- A. Strip topsoil to its full depth at building areas, and all areas to be regraded, resurfaced, or paved within contract limit work area.
- B. Stockpile topsoil in a location acceptable to the Architect, for use in finish grading and preparation of lawns and planting beds.
  1. Stockpiled topsoil shall be free from trash, brush, stones over 3" diameter, and other extraneous matter.

## SECTION 02100

### SITE PREPARATION

2. Grade and slope stockpiles for proper drainage and to prevent erosion.
  3. No topsoil shall be removed from the site.
- C. Protect all areas, which are not to be resurfaced or regraded, and adjacent areas outside of the contract limits from damage due to site preparation work.

#### 3.03 SITE IMPROVEMENTS

- A. Remove existing site improvements within contract limits as indicated. Include the following:
1. Remnants of existing razed Church, house and associated out buildings.
  2. Remnants of driveways and any other associated pavement.
  3. Utility services to razed Church and house.
- B. Existing Utilities:
1. Information on the drawings relating to existing utility lines and services is from the best sources presently available. All such information is furnished only for information and is not guaranteed. Excavate test pits as required to determine exact locations of existing utilities. Verify location of all existing utilities prior to commencement of work by contacting utility companies.
  2. Perform work and provide necessary materials to disconnect or relocate existing utilities as indicated. Record existing utility termination points before disconnecting.
  3. Fill abandoned piping with an 8" thick concrete plug or mortar jointed masonry bulkhead.
  4. Remove abandoned utility poles within contract limits.
  5. Relocate and reinstall designated utility poles. Coordinate and perform the work in accordance with the applicable utility company requirements.
  6. Coordinate utility work with electrical work performed under Division 16, Electrical.
- C. Remove existing sidewalks, curbs, and paving, including all base material, as required to accommodate new construction. Cut existing sidewalks, curbs, and paving in neat, straight lines to provide uniform, even transition from new to adjacent existing work. Cut back existing paving a sufficient distance to permit forming and installation of new work.
- D. Remove, temporarily relocate during construction, and reinstall in final location street signs, parking meters, mail boxes, traffic signal control boxes, and other designated items. Coordinate the work with applicable governing authorities. Comply with all requirements concerning temporary installation and permanent reinstallation.

## **SECTION 02100**

### **SITE PREPARATION**

- E. Existing building (s):
  - 1. Demolish remnants of existing razed buildings. Remove foundations to a minimum of 2'0" below finished grade for open areas and entirely for areas to receive new structures. Remove all wood, metal, and organic materials.
  - 2. Fill below grade voids with clean earth fill free of wood, metal, and organic materials. Install and compact fill in layers not exceeding 6" in. loose depth.

#### **3.04 DISPOSAL OF WASTE MATERIALS**

- A. Stockpile, haul from site, and legally dispose of waste materials and debris. Accumulation is not permitted.
- B. Maintain disposal routes clear, clean, and free of debris.
- C. On-site burning of combustible cleared materials is not permitted.

#### **3.05 CLEANING**

- A. Upon completion of site preparation work, clean areas within contract limits, remove tools, and equipment. Provide site clear, clean, and free of materials and debris and suitable for site work operations.

END

## **SECTION 02200**

### **EARTHWORK**

#### **02200 - EARTHWORK**

##### **1.01 DESCRIPTION**

- A. Perform earthwork as shown and specified. The work includes:
  - 1. Site grading and filling to indicated elevations and contours.
  - 2. Excavating and backfilling structure footings and foundations.
  - 3. Subgrade preparation for structure slabs, curbs, walks and paving.
  - 4. Topsoil distribution and finish grading.
  - 5. Granular base under structure slabs-on-grade.
  - 6. Erosion control
- B. Related Work:
  - 1. Section 02000: Site Preparation.
  - 2. Section 02400: Site Drainage.
  - 3. Section 02410: Sub-drainage Systems.
  - 4. Section 02485: Seeding.
  - 5. Section 02487: Sodding.
  - 6. Section 02490: Trees, Plants, and Ground Covers.
  - 7. Section 02513: Asphaltic Concrete Paving.
  - 8. Section 02515: Concrete Curbs, Walks, and Paving.

##### **1.02 QUALITY ASSURANCE**

- A. Comply with Section 02200 requirements.
- B. Testing and inspection: Performed by a qualified independent testing laboratory, under the supervision of a registered professional engineer, specializing in soils engineering.
- C. Provide and pay for testing and inspection during earthwork operations. Laboratory, inspection service, and Soils Engineer shall be acceptable to the Landscape Architect.
- D. Materials and methods of construction shall comply with the following standards:



## **SECTION 02200**

### **EARTHWORK**

1. Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
2. American Society for Testing and Materials, (ASTM).
3. American Association of State Highway and Transportation Officials, (AASHTO).
4. National Fire Protection Association, (NFPA).

#### **1.03 SUBMITTALS**

- A. Provide samples of materials proposed for use. Forward samples to testing laboratory for testing as directed by the Soils Engineer.
- B. Submit reports and certifications for testing and inspection of the following:
  1. Fill and backfill materials.
  2. Subgrade surfaces.
  3. Foundation excavations and footing subgrade.
  4. Compaction operations.

#### **1.04 PROJECT CONDITIONS**

- A. Known underground and surface utility lines are indicated on the drawing. Contractor is responsible for verifying location of existing utilities.
- B. Protect existing trees, plants, lawns, and other features designated to remain as part of the landscaping work.
- C. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods, as required to prevent cave-ins or loose dirt from entering excavations. Barricade open excavations and post warning lights at work adjacent to public streets and walks.
- D. Underpin adjacent structure (s), including utility service lines, which may be damaged by excavation operations.
- E. Promptly repair damage to adjacent facilities caused by earthwork operations. Cost of repair at Contractor's expense.
- F. Promptly notify the Landscape Architect of unexpected sub-surface conditions.
- G. Protect bottoms of excavations and soil beneath and around foundation from frost and freezing.
- H. Grade at excavations to prevent surface water draining into excavated areas.

## SECTION 02200

### EARTHWORK

#### 2.01 MATERIALS

- A. All fill material is subject to testing and inspection.
- B. Fill materials: Inert subsoil material free of organic matter, rubbish, debris, and rocks greater than 6" diameter and meeting the following requirements:
  - 1. Plastic index of not more than 30 - ASTM D424.
  - 2. Minimum laboratory dry weight at optimum moisture content of 110 pounds per cu. ft.
  - 3. Utilize on-site borrow fill material, if available, when borrow fill is required to complete the work. Verify on-site borrow fill material and locations with the Architect. Re-grade and restore areas used for on-site borrow fill as directed by the Architect.
  - 4. Proposed fill material shall be inspected prior to use in the work.
  - 5. Suitable excavated materials removed to accommodate new construction may be used as fill material subject to Engineer's inspection and approval.
- C. Granular base: AASHTO M43, #57 clean uniformly graded stone or gravel.
- D. Granular fill:
  - 1. AASHTO M43, #57 clean uniformly graded stone or gravel.
- E. Topsoil: Natural, friable, fertile soil characteristic of productive soil in the vicinity, reasonably free of stones, clay lumps, roots, and other foreign matter.
  - 1. Utilize on-site stockpiled topsoil as required to complete the work.
  - 2. Proposed topsoil material shall be acceptable to the Landscape Architect.
- F. Other materials required for proper completion of work: As selected by Contractor and acceptable to Architect.
- G. Silt fence: Amoco 2130 or equal.

#### 3.01 PREPARATION

- A. Establish extent of grading and excavation by area and elevation. Designate and identify datum elevation and project engineering reference points. Set required lines, levels, and elevations.
- B. Do not cover or enclose work of this Section before obtaining required inspections, tests, approvals, and location recording.

## SECTION 02200

### EARTHWORK

#### 3.02 EXISTING UTILITIES

- A. Before starting grading and excavation, establish the location and extent of underground utilities in the work area by contacting utility companies. Exercise care to protect existing utilities during earthwork operations. Perform excavation work near utilities by hand and provide necessary shoring, sheeting, and supports as the work progresses.
- B. Maintain, protect, relocate, or extend as required existing utility lines to remain which pass through the work area. Pay costs for this work, except as covered by the applicable utility companies.
- C. Protect active utility services uncovered by excavation.
- D. Remove abandoned utility service lines from areas of excavation. Cap, plug, or seal abandoned lines and identify termination points at grade level with markers.
- E. Accurately locate and record abandoned and active utility lines rerouted or extended on project record documents.

#### 3.03 SITE GRADING

- A. Perform grading within contract limits, including adjacent transition areas, to new elevations, levels, profiles, and contours indicated. Provide subgrade surfaces parallel to finished surface grades. Provide uniform levels and slopes between new elevations and existing grades.
- B. Grade surfaces to assure areas drain away from structures and to prevent ponding and pockets of surface drainage. Provide subgrade surfaces free from irregular surface changes and as follows:
  - 1. Rough grading: Plus or minus 0.10 ft. subgrade tolerance. Finish required will be that ordinarily obtained from either blade-grader or scraper operations.
  - 2. Provide subgrade surface free of exposed boulders or stones exceeding 4" in greatest dimension in paved areas; 1" lawn and planting areas.
  - 3. Lawn and planting areas: Allow for minimum 4" average depth of topsoil at lawn areas, and 12" depth at planting areas, except as otherwise indicated on the drawings.
  - 4. Paved areas: Shape surface of subgrade areas to line, grade, and cross-section indicated. Provide compacted subgrade suitable to receive paving base materials. Subgrade tolerance plus 0, minus 1/2".
  - 5. Granular base: Grade subgrade surface smooth and even, free of voids to the required subgrade elevation. Provide compacted subgrade suitable to receive granular base materials. Tolerance 1/2" in 10'-0".

## SECTION 02200

### EARTHWORK

- C. Grading at existing trees to remain:
  - 1. Perform grading, within branch spread of existing trees to remain, by hand methods to elevations indicated.
  - 2. Cut roots cleanly to depth 3" below proposed finish grade. Coat cut roots with tree paint.

#### 3.04 EXCAVATING

- A. Excavate for structures to elevations and dimensions shown. Extend excavation a sufficient distance from foundations to permit placing and removal of formwork, installation of materials, services, and inspection. Hand trim foundation excavations to final grade just before concrete is placed. Remove loose, soft materials, and all organic matter. Footings shall bear on approved undisturbed bearing soil.
- B. Obtain inspection and testing of foundation excavations by Engineer before concrete is placed.
- C. Excavate for curbs, walks, and paving to elevations and grades indicated. Allow for base material.
- D. Earth excavation shall include the satisfactory removal and disposal of all materials encountered, regardless of the nature of the materials, the condition of the materials at the time they are excavated, or the manner in which they were excavated. All excavation shall be unclassified. Refer to the Geotechnical Report.
- E. Extra excavation: Excavate unsatisfactory soil materials extending below required elevations to depth as directed. Such extra excavation will be paid for as a change in work. Obtain Architect's written authorization before performing extra excavation work.
- F. Unauthorized excavation: Backfill and fill all over excavation to proper grades. Fill over excavation at footings with 1,500 psi concrete. Additional labor and material for unauthorized excavation and remedial work at Contractor's expense.
- G. Shore, sheet, or brace excavations as required to maintain them secure. Remove shoring and bracing as backfilling progresses, when banks are safe against caving.
- H. Do not excavate footings or slabs to the full depth when freezing temperature may be expected, unless footings or slabs are placed immediately after the excavation has been completed. Protect excavation bottoms from freezing when the placing of concrete is delayed.
- I. The use of explosives is not permitted.
- J. When necessary, cut away rock in bottom of excavations to form level beds that follow natural strata. Form with sharp steps when steps are indicated. In utility trenches, excavate 6" below invert elevation of pipe and 24" wider than pipe diameter, minimum 36" trench width. Remove loose materials to sound base.

## SECTION 02200

### EARTHWORK

- K. Existing sewerage: Where existing sewers pass beneath new paving, remove existing earth fill to the top of the sewer pipe or to a depth as directed by the Soils Engineer. Install an approved backfill material compacted in maximum 8" layers. Extend compacted fill from top of sewer pipe to proposed paving subgrade elevation.
- 3.05 DRAINAGE
- A. Provide necessary pumps and drainage lines and maintain excavations, including footings and pits, free from water, ice and snow during excavating and subsequent work operations.
  - B. Provide drainage of the working area all times.
- 3.06 FILLING, BACKFILLING, AND COMPACTING
- A. Obtain inspection and approval of subgrade surfaces by Engineer prior to filling operations. Scarify, dry, and compact soft and wet areas; remove and replace unsuitable subgrade materials with an approved compacted fill material. Take corrective measures before placing fill materials.
    - 1. Topsoil not permitted as fill or backfill material within structure limits or under paved areas.
  - B. Soil stabilization: When exposed subgrade surfaces become spongy during construction operations and soil stabilization is required, stabilize subgrade materials as directed by the Soils Engineer. Soil stabilization will be paid for as a change in work. Obtain Architect's written authorization before performing soil stabilization work.
  - C. Spread approved fill material uniformly in layers not greater than 8" of loose thickness over entire fill area.
    - 1. Lift thickness requirements may be modified by Soil Engineer to suit equipment and materials or other conditions when required to assure satisfactory compaction.
    - 2. Moisture-condition fill material by aerating or watering and thoroughly mix material to obtain moisture content permitting proper compaction.
    - 3. Place and compact each layer of fill to indicated density before placing additional fill material. Repeat filling until proposed grade, profile, or contour is attained.
    - 4. Suspend fill operations when satisfactory results cannot be obtained because of environmental or other unsatisfactory site conditions. Do not use muddy or frozen subgrade surface. Do not place fill material on muddy or frozen subgrade surface.
    - 5. Maintain surface conditions, which permit adequate drainage of rainwater and prevent ponding of surface water in pockets. When fill placement is interrupted by rain, remove wet surface materials or permit to dry before

## SECTION 02200

### EARTHWORK

placing additional fill material.

- D. Filling at existing trees to remain:
  - 1. Minor fills or 6" or less: Fill with topsoil; hand grade to required finish grade elevation.
  - 2. Moderate fills of 12" or less: Place layer of 3/4" to 1-1/2" stone or gravel on grade. Provide aggregate depth 1/2 of fill height, minimum of 3". Cover drainage fill with polypropylene filter fabric or 1" thickness straw choke. Fill remaining depth with loose topsoil; hand grade to required finish grade elevations.
- E. Place backfill materials in uniform layers not greater than 8" loose thickness over entire backfill area.
  - 1. Use hand tampers or vibrating compactors at foundation walls, retaining walls, and similar locations. Do not use large rolling equipment adjacent to foundation walls and retaining walls.
  - 2. Do not backfill against foundation walls or retaining walls until walls for bearing surfaces have reached design strength or are properly braced, and backfilling operations approved. Provide clean backfill materials, except where granular materials are indicated. Compact in maximum 8" layers.
- F. Fill all areas of settlement to proper grade before subsequent construction operations are performed.
- G. Compaction:
  - 1. Provide compaction control for all fill and backfill.
  - 2. Compact top 12" of subgrade and each layer of fill or backfill material at foundations, slabs-on-grade retaining walls, and paved areas to 95% of maximum dry density at optimum moisture content in accordance with ASTM D698 Standard Proctor Method. Extend compaction at least 5'-0" at both sides of foundations and retaining walls and at least 1'-0" beyond slabs-on-grade and paving.
  - 3. Compact top 6" of subgrade and each layer of fill material at lawns and unpaved areas to 85% of maximum dry density at optimum moisture content in accordance with ASTM D698 Standard Proctor Method.
  - 4. Water settling, puddling, and jetting of fill and backfill materials as a compaction method are not acceptable.
  - 5. Maintain moisture content of materials, during compaction operations within required moisture range to obtain indicated compaction density.
  - 6. Provide adequate equipment to achieve consistent and backfill materials.

## SECTION 02200

### EARTHWORK

- H. Provide minimum 4" depth of granular base under structure concrete slabs-on-grade. Refer to Section 02513 for asphaltic concrete paving base and Section 02515 for concrete walks and paving base.

#### 3.07 EROSION CONTROL

- A. Provide erosion control measures as indicated on plans including installation of silt fencing, installation of silt check inlet controls and sod lined channels and basins with specified materials.
  - 1. Install silt fence in areas indicated on plans to conform with specified details. Silt fencing shall be installed prior to all grading activity.
- B. Contractor shall provide continual maintenance of erosion control structures, including but not limited to:
  - 1. Removal of silt, trash, mud, debris from ditches, channel and from silt fences and check dams.
  - 2. Replacement of silt fence that has been damaged or destroyed.
  - 3. Removal of erosion control structures at the end of construction or as specified.
- C. Contractor shall provide seeding and mulching as required in Section 02485 as soon as disturbed area has been graded to final elevations specified.
- D. Contractor shall keep all public roads free of silt, dirt, mud and debris throughout the entire project. Contractor shall remove and clean any silt, dirt, mud and debris from roadways at their expense.
- E. The Contractor shall be named a co-permittee of the KPDES permit and shall agree to the following certification:

"I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System (NPDES) permit that authorized the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

The Contractor shall be responsible for preparing and submitting the Notice of Intent to governing agency.

#### 3.08 FINISH GRADING

- A. Uniformly distribute and spread stockpiled topsoil. Provide minimum 4" average depth at lawn areas, 12" at planting areas. Provide additional imported topsoil as required to complete the work. Use loose, dry topsoil. Do not use frozen or muddy topsoil. Place during dry weather. Do not grade topsoil with equipment that will over compact topsoil preventing the adequate root growth of proposed turf.
- B. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles, and contours of subgrades.

## SECTION 02200

### EARTHWORK

- C. Remove stones, roots, weeds, and debris while spreading topsoil materials. Rake surface clean of stones 1" or larger in any dimension and all debris. Provide surfaces suitable for soil preparation provided under lawn and planting work.
- D. Architect shall be notified a minimum of 2 days prior to placement of topsoil so that an inspection of proper topsoil placement is being performed by Contractor.
- E. Maintenance:
  - 1. Protect finish graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded, and damaged areas.
  - 2. Where completed areas are disturbed by construction operations or adverse weather, scarify, re-shape, and compact to required density.

#### 3.09 FIELD QUALITY CONTROL

- A. Provide field quality control soils testing and inspection during earthwork operations.
- B. Contractor shall provide adequate notice, cooperate with, provide access to the work, obtain samples, and assist testing agency and their representatives in execution of their function.
- C. Fill materials: Test proposed materials to verify suitability for use, gradation of material, moisture-density relation by ASTM D698 Standard Proctor Method, design bearing value, and percent of organic materials.
- D. Subgrade surfaces: Based on visual examination at the site, provide bearing tests as required to verify subgrade surfaces are adequate and meet or exceed design bearing values.
  - 1. Structure slabs and paved areas: Make at least 1 test for each 2,000 sq. ft. of slab or paved area.
- E. Compaction operations: Provide full-time inspection and testing during structure slabs and paved areas filling and compaction operations. Test each lift to fill to verify compaction meets specified requirements. Provide periodic inspection and testing during site area filling and compaction operations.
  - 1. Structure slabs and paved areas: Make at least 1 test for each 2,000 sq. ft. of slab or paved area.
  - 2. Foundation wall and retaining wall backfill: Make at least 2 tests at locations and elevations directed by the Soils Engineer.
- F. Foundation excavations: Based on visual examination at the site, provide bearing tests as required to verify bearing surfaces are adequate and meet or exceed design bearing values.



## **SECTION 02200**

### **EARTHWORK**

1. Make at least 2 tests at locations directed by the Engineer.

- G. When, during progress of work, field tests or observations indicate that installed compacted materials do not meet specified requirements, provide additional compaction until specified density is achieved, or remove and replace defective materials with new materials as directed by the Landscape Architect. Cost of additional labor, materials, and testing to attain specified density at Contractor's expense.

#### **3.10 DISPOSAL OF WASTE MATERIALS**

- A. Stockpile, haul from site, and legally dispose of waste materials, including excess excavated materials, rock, trash, and debris.
- B. Maintain disposal route clear, clean, and free of debris. Disposal in any floodplain is not allowed.

#### **3.11 CLEANING**

- A. Upon completion of earthwork operations, clean areas within contract limits, remove tools, and equipment. Provide site clear, clean, free of debris, and suitable for site work operation.

END

## SECTION 02210

### SOIL TREATMENT

#### 02210 – SOIL TREATMENT

##### 1.01 DESCRIPTION

- A. Provide soil treatment as shown and specified. The work includes:
  - 1. Soil treatment for subterranean termite control at structure slabs-on grade, foundation walls, and paving adjacent to structures.
- B. Related work:
  - 1. Section 02200: Earthwork.

##### 1.02 QUALITY ASSURANCE

- A. Comply with Section 02000 Site Work requirements.
- B. Applicator: A licensed pest control company, specializing in the application of soil treatment solutions for termite control.
- C. Materials and methods of application standards: Comply with current HUD Manual of Acceptable Practices Publication and with recommendations contained in USDA H & G Bulletin # 64.

##### 1.03 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions.
- B. Submit certification of applicator's qualifications.
- C. Submit applicators warranty.

##### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened labeled containers.
- B. Store and handle soil toxicants in accordance with manufacturer's recommendations. Exercise care to prevent damage to installed materials and work.

##### 1.05 PROJECT CONDITIONS

- A. Apply soil toxicants only after excavating, filling, and grading operations are completed, except as otherwise required in construction operations and acceptable to applicator.

##### 1.06 WARRANTY

- A. Provide a written warranty, signed by the Contractor and applicator, certifying the following provisions:
  - 1. Soil treatment has been performed in accordance with the specification requirements.
  - 2. Effectiveness of treatment will continue for not less than 5 years after treatment date.
  - 3. All evidence of termite infestation within warranty period shall be retreated in accordance with these specifications at no additional cost to the Owner.
  - 4. Damage to each structure caused by termites within warranty period shall be corrected without cost the Owner.

## SECTION 02210

### SOIL TREATMENT

#### 2.01 MATERIALS

- A. Use only water-based emulsion soil chemicals. Solutions shall not be injurious to plantings.
- B. Provide working solutions containing one of the following chemicals at the listed concentrations:
  - 1. Aldrin: 0.5% applied in water emulsion.
  - 2. Chlordane: 1.0% in water emulsion.
  - 3. Dieldrin: 0.5% applied in water emulsion.
  - 4. Heptachlor: 0.5% in applied in water emulsion.

#### 3.01 INSPECTION

- A. Examine substrates and installation conditions. Verify soil treatment work can properly commence. Do not start soil treatment work until unsatisfactory conditions are corrected.

#### 3.02 APPLICATION

- A. Apply soil treatment solutions in accordance with manufacturer's installation instructions. Comply with manufacturer's recommendations for subgrade preparation and application of materials.
- B. Apply soil toxicants adjacent to foundation walls by rodding or trenching. When trenching, mix chemical with soil as it is replaced in the trench. When rodding, insert rod at 12" on center spacing to the base of the footing and apply chemical by pressure through rod.
- C. Slab-on-grade construction: Apply soil poisoning chemical solution under entire surface of slab at the rate of 1 gal. per 10 sq. ft. Provide 1 1/2 gal. per 10 sq. ft. when fill is coarse granular material.
- D. Basement floor slabs: Apply soil poisoning chemical solution under entire surface of floor slab at the rate of 1-1/2 gal. per 10 sq. ft.
- E. Foundation walls: Apply soil poisoning chemical solution uniformly at entire inside perimeter of foundation walls and penetrations at rate of 4 gal. per 10 lin. ft. Apply at entire exterior perimeter at rate of 4 gal. per 10 lin. ft.
- F. Treat all voids in hollow masonry foundation walls at the rate of 2 gal. per 10 lin. ft. of wall.
- G. Apply soil poisoning chemical solution uniformly under entrance platforms, sidewalks and other paved areas abutting and within 5'-0" of the structure at rate of 2 gal. per 10 sq. ft.

#### 3.03 CLEANING

- A. Upon completion of soil treatment work, remove tools and equipment. Provide site clear, clean, free of debris, and suitable for site work operations.

#### 3.04 PROTECTION

- A. Provide signs at application areas; remove when treated areas are covered by other work.
- B. Cover and protect treated surfaces under slabs until covering slabs are placed.

END

## **SECTION 02400**

### **SITE DRAINAGE**

#### **02400 - SITE DRAINAGE**

##### **1.01 DESCRIPTION**

A. Provide site drainage as shown and specified. The work includes:

1. Drainage structures and piping.
2. Trench drains and yard inlets as indicated.
3. Excavating and backfilling site drainage work.

B. Related work:

1. Section 02200: Earthwork.
2. Section 02410: Sub-drainage Systems.

##### **1.02 QUALITY ASSURANCE**

A. Comply with Section 02000 requirements.

B. Materials and methods of construction shall comply with the following standards:

1. Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
2. American Society for Testing and Materials, (ASTM).
3. American Association of State Highway and Transportation Officials, (AASHTO).
4. American Concrete Pipe Association, (ACPA).

C. Excavating, backfilling, and compacting operations: Comply with Section 02200 requirements and as specified.

D. Obtain Engineer's acceptance of installed and tested site drainage system prior to installing backfill materials.

##### **1.03 SUBMITTALS**

A. Product data:

1. Submit complete materials list of items proposed for the work.
2. Submit site specific shop drawings for all fabricated drainage structures/pipes and/or precast drainage structures.

B. Submit detention basin outlet structure overflow grating shop drawings.

C. Provide site drainage record drawings:

## SECTION 02400

### SITE DRAINAGE

1. Legibly mark drawings to record actual construction.
2. Indicate horizontal and vertical locations, referenced to permanent surface improvements.
3. Identify field changes of dimension and detail and changes made by Change Order.

#### 1.04 PROJECT CONDITIONS

- A. Known underground and surface utility lines are indicated on the drawings. Contractor is responsible for verifying location of existing utilities with utility companies and coordinating with other subcontractors for conflicts with their work.
- B. Protect existing trees, plants, lawns, and other features designated to remain as part of the landscape work.
- C. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods, as required to prevent cave-ins or loose dirt from entering excavations. Barricade open excavations and post warning lights at work adjacent to public streets and walks.
- D. Underpin adjacent structures, including utility service lines, which may be damaged by excavation operations.
- E. Promptly repair damage to adjacent facilities caused by site drainage earthwork operations. Cost of repair at Contractor's expense.
- F. Promptly notify the Architect of unexpected subsurface conditions.
- G. Warranties: All materials and workmanship shall be warranted for a period of 12 months from the date of substantial completion of work. Should materials or any component of the work become defective as a result of defective materials, non-compliant materials, or due to poor workmanship, the Contractor shall replace all and any materials deemed defective as non-compliant or shall remedy any situation or condition that is not performing by plans and specifications at no cost to the Owner within the 12 month period. Defective materials or non-performing conditions as a result of action by the Owner or other than Contractor, Contractor's subcontractors or material suppliers is not the responsibility of the Contractor.

#### 2.01 MATERIALS

- A. Site drainage piping: Provide types and sizes indicated. Provide matching couplings, fittings, and accessory components to ensure continuity of the site drainage system.
  1. Corrugated polyethylene pipe: ASTM F-677 and AASHTO M294-852 with smooth interior and shall be ADS N-12 or equal.
  2. Reinforced concrete pipe and fittings: ASTM C76 Class IV pipe or of equal strength sufficient to attain D-load, 0.01" of 2,000 lbs. with ASTM C443 "O"-ring seals or compression type rubber gasket joints. Sizes to 10" diameter may be non-reinforced with equivalent strength.

## SECTION 02400

### SITE DRAINAGE

3. Perforated plastic drainage pipe: ASTM D3350 heavy duty polyethylene (HDPE) 1,500 lb. crush drain pipe, perforated, or ASTM F405 corrugated polyethylene (PE) drainage tubing.
- B. Trench drains, manholes, catch basins, inlets: Provide type and sizes indicated.
  1. Frames, grates, and covers: ASTM A48 gray cast iron, asphalt coated by Neenah Foundry Co. or equal.
  2. Precast concrete manhole barrels and cones: ASTM C478, 5" wall thickness with ASTM C443 "0"-ring gasket joints.
  3. Mortar:
    - a. Mortar for jointing concrete pipe and for laying and parging concrete masonry: 1 part portland cement and 2 parts sand.
  4. In-line drains and drain basins by Nyloplast or an approved equal.
- C. Granular fill:
  1. AASHTO M43 #57 clean uniformly graded stone or gravel.
- D. Concrete: 3,500 psi air entrained concrete complying with Section 03300 requirements.
- E. Earth fill: Natural sandy-clay subsoil, soil-rock mixtures, or approved excavated materials, free of foreign matter, organic material, and debris.
  1. Excavated materials removed in site drainage trenching operation may be used as backfill when acceptable to the Engineer.
- F. Soil separator: Rot resistant polypropylene filter fabric, water permeable, and unaffected by freezing and thawing.

#### 3.01 PREPARATION

- A. Lay out site drainage work and establish extent of excavation by area and elevation. Designate and identify datum elevation and project engineering reference points. Set required lines, levels, and elevations.
- B. Do not cover or enclose work of this Section before obtaining required inspections, tests, approvals, and location recording.
- C. Remove existing paving, including base material, as required to accommodate site drainage work. Saw cut existing paving to provide uniform straight transition at new to existing paving.

#### 3.02 EXISTING UTILITIES

- A. Before starting excavation, establish the location and extent of underground utilities in the work area. Exercise care to protect existing utilities during earthwork operations. Perform

## SECTION 02400

### SITE DRAINAGE

excavation work near utilities by hand and provide necessary shoring, sheeting, and supports as work progresses.

- B. Protect active utility services uncovered by excavation.

#### 3.03 INSTALLATION

- A. Perform excavating and backfilling as required to install site drainage work.
- B. Provide trench wall support and pumping of surface and ground water as required to provide suitable conditions for performing the work.
- C. Excavate trenches to accommodate indicated bedding conditions and material. Trim and shape trench bottoms to proper line grade, free of irregularities. Remove unstable material and replace with compacted fill.
- D. Install site drainage system true to grade and alignment indicated.
  - 1. Provide necessary equipment for lowering pipe safely into trenches. Handle pipe and accessories to prevent damage. Damaged materials replaced at Contractor's expense.
  - 2. Do not place pipe in water, nor when trench or weather is unsuitable for site drainage work.
  - 3. Remove all dirt and foreign material from pipe before installation. Provide bulkheads as required to prevent entrance of dirt or water after installation.
  - 4. Lay and fit pipe sections to provide a smooth, uniform invert, with sealed joints and full bearing in bedding material. Provide continuous fall in flow direction.
  - 5. Excavate bell holes under each bell to ensure uniform bedding for all types of bell and spigot piping.
  - 6. Install pipe joint gaskets in accordance with manufacturer's recommendations. Install concrete pipe in accordance with ACPA "Concrete Pipe Field Manual". Install HDPE pipe in accordance with applicable manufacturer's recommendations.
  - 7. Cut pipe ends entering structures flush with inner face of structures.
  - 8. Provide soil separator over granular backfill at perforated site drainage piping.
  - 9. Extend site drainage system to outfall indicated and make required connection.
  - 10. Obtain required inspections and perform testing prior to backfilling. Remove obstructions, replace damaged components, and retest as required. Provide a satisfactory free flowing site drainage system.
- E. Backfill trenches with an approved backfill material, free from large clods, stones, and debris.

## **SECTION 02400**

### **SITE DRAINAGE**

1. Backfill trenches in 8" compacted layers until there is a cover of not less than 24" over piping. Place remaining backfill material in 12" compacted layers.
  2. Backfill evenly on both sides of piping for its full depth. Provide thorough compaction of fill under pipe haunches.
  3. Provide granular backfill at all paved areas.
  4. Provide concrete encasement where indicated.
- F. Mechanically compact backfill in accordance with Section 02200 requirements. Water settling, puddling, and jetting as a compaction method are not acceptable.
- G. Fill, compact, and restore to original level and condition all settlement.
- H. Replace paving, lawns, and finished surfaces removed to accommodate the site drainage system, except where new surfaces are provided as part of the work.
- I. Construct trench drains, catch basins, manholes, inlets, and other drainage structures as indicated.

#### **3.04 DISPOSAL OF WASTE MATERIAL**

- A. Stockpile, haul from site, and legally dispose of waste materials, including excess excavated materials, rock, trash, and debris.
- B. Maintain disposal route clear, clean, and free of debris.

#### **3.05 CLEANING**

- A. Maintain site drainage piping and structures in a clean workable condition during construction operations.
- B. Flush site drainage system with water in sufficient volume to obtain free flow through each line. Remove all silt, trash, and debris just prior to acceptance of work.
- C. Upon completion of site drainage work, remove tools and equipment. Provide site clear, clean, free of debris, and suitable for site work operations.

END





**SECTION 02410**  
**SUBDRAINAGE SYSTEMS**

02410 - SUBDRAINAGE SYSTEMS

1.01 DESCRIPTION

A. Provide sub-drainage systems as shown and specified. The work includes:

1. Piping, fitting, and accessories.
2. Drainage fill.

B. Related work:

1. Section 02200: Earthwork.
2. Section 02400: Site Drainage.

1.02 QUALITY ASSURANCE

A. Comply with Section 02000 requirements.

B. Obtain Architect's acceptance of installed and tested sub-drainage system prior to installing drainage fill materials.

1.03 SUBMITTALS

A. Submit manufacturer's product data for each type of drainage pipe required. Show types and sizes of fittings and accessories proposed for the work.

1.04 PROJECT CONDITIONS

A. Coordinate installation of the sub-drainage system with excavating and backfilling work performed under Earthwork, Section 02200.

2.01 MATERIALS

A. Sub-drainage piping: Provide types and sizes indicated. Provide matching reducers, adaptors, couplings, fittings, and accessory components to ensure continuity of the sub-drainage system.

1. Polyvinyl chloride (PVC) pipe: ASTM D2729 plastic sewer pipe, perforated.

B. Drainage fill: AASHTO M43 #6 (3/8" to 3/4") clean uniformly graded stone or gravel.

C. Earth fill: Natural sandy-clay subsoil, soil-rock mixtures or approved excavated materials, free of foreign matter, organic material, and debris.

1. Excavated materials removed in earthwork excavation operations may be used as backfill when acceptable to the Landscape Architect.

D. Soil Separator: Rot resistant polypropylene filter fabric, water permeable and unaffected by freezing and thawing, as specified on the drawings.

**SECTION 02410**  
**SUBDRAINAGE SYSTEMS**

**3.01 INSPECTION**

- A. Examine substrates and installation conditions. Do not start sub-drainage work until unsatisfactory conditions are corrected.

**3.02 INSTALLATION**

- A. Provide a compacted earth base. Hand trim excavations to required elevation. Place and compact earth fill as required to fill low areas and provide a positive drainage flow.
- B. Install minimum 4" layer of drainage fill over compacted earth base for bedding drainage pipe.
- C. Lay drainpipe with perforations down, joints closed, and firmly bedded in drainage fill material. Provide full bearing for each pipe section. Provide continuous slope in the direction of flow.
  - 1. Provide collars and couplings for all in-line joints and all, elbow, or bend sections for all corners and changes in directions.
  - 2. Provide recesses to receive bell and spigot ends.
  - 3. Provide unperforated run out pipe. Extend drainage system to out fall indicated and make connection.
- D. Obtain required inspections and perform testing before backfilling. Remove obstructions, replace damaged components, and retest system as required. Provide a satisfactory free flowing sub-drainage system.
- E. Place drainage fill over drain piping after satisfactory testing and acceptance. Compact drainage fill in layers not exceeding 3" in loose depth. Exercise care to avoid damage or displacement of installed piping.
  - 1. Completely cover drain lines to width of at least 6" on each side of pipe and above top of pipe to within 12" of finish grade.
  - 2. Provide soil separator over granular backfill.
- F. Install earth fill over compacted drainage fill. Compact earth fill in layers not exceeding 6" in loose depth. Extend earth fill to indicated finish grade elevations. Slope earth fill away from building.

**3.03 CLEANING**

- A. Upon completion of sub-drainage work, remove tools and equipment. Provide site clear, clean, free of debris, and suitable for site work operations.

END

## SECTION 02485

### SEEDING

#### 02485 - SEEDING

##### 1.01 DESCRIPTION

- A. Provide seeded lawns as shown and specified. Renovated lawn areas refer to existing lawn areas disturbed by construction.
  - 1. Soil preparation.
  - 2. Seeding lawns and disturbed areas.
  - 3. Mulching.
  - 4. Maintenance.
- B. Related work:
  - 1. Section 02200: Earthwork.
  - 2. Section 02490: Trees, Plants, and Ground Covers.

##### 1.02 QUALITY ASSURANCE

- A. Comply with Section 02000 requirements.
- B. Provide and pay for materials testing. Testing agency shall be acceptable to the Architect. Provide the following data:
  - 1. Test representative material samples proposed for use.
  - 2. Topsoil:
    - a. pH factor.
    - b. Mechanical analysis.
    - c. Percentage of organic content.
    - d. Recommendations on type and quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

##### 1.03 SUBMITTALS

- A. Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight, and percentages of purity, germination, and weed seed for each grass species.
- B. Submit the following material samples:
  - 1. Seed.

## SECTION 02485

### SEEDING

C. Submit the following materials certification:

1. Fertilizer (s) analysis.
2. Tackifier.

D. Submit materials test report.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver seed and fertilizer materials in original unopened containers, showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

#### 1.05 PROJECT CONDITIONS

- A. Work notification: Notify Architect at least 7 working days prior to start of seeding operations.
- B. Protect existing utilities, paving, and other facilities from damage caused by seeding operations.
- C. Perform seeding work only after planting and other work affecting ground surface has been completed.
- D. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.
- E. Provide hose and lawn watering equipment as required.

#### 1.06 WARRANTY

A. Provide a uniform stand of grass by watering, mowing, and maintaining seeded areas until final acceptance. Reseed areas, with specified materials, which fail to provide a uniform stand of grass until all affected areas are accepted by the Landscape Architect.

#### 2.01 MATERIALS

A. Lawn seed: Fresh, clean, and new crop seed mixture.

1. Mixed by an approved method.
2. Composed of the following varieties, mixed to the specified proportions by weight and tested to minimum percentages of purity and germination. Poa Annua, bent grass, and noxious weed seed free.

B. RATE: 6 LBS. PER 1,000 S.F.

Blend	Parts	Purity	Minimum Germination
Rebel D Fescue	100%	98%	90%

## SECTION 02485

### SEEDING

- C. Fertilizer:
  - 1. Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.
    - a. Type A: Starter fertilizer containing 20% nitrogen, 26% phosphoric acid, and 6% potash by weight, or similar approved composition.
    - b. Type B: Top dressing fertilizer containing 31% nitrogen, 3% phosphoric acid, and 10% potash by weight or similar approved composition.
- D. Ground limestone: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20 mesh sieve.
- E. Straw mulch: Clean oat or wheat straw well seasoned before bailing, free from mature seed-bearing stalks or roots of prohibited or noxious weeds.
- F. Tackifier: Liquid concentrate diluted with water forming a transparent 3-dimensional film like crust permeable to water and air and containing no agents toxic to seed germination.  
  
POLYBIND DLR: CELTITE, INC., CLEVELAND, OH  
  
CURASOLAK: AMERICANHOECHSTCORP, ELK GROVE, IL
- G. Water: Free of substance harmful to seed growth. Hoses or other methods of transportation furnished by Contractor.

#### 3.01 INSPECTION

- A. Examine finish surfaces, grades, topsoil quality, and depth. Do not start seeding work until unsatisfactory conditions are corrected.

#### 3.02 PREPARATION

- A. Limit preparation to areas, which will be immediately seeded.
- B. Loosen topsoil of lawn areas to minimum depth of 4". Remove stones over 1" in any dimension and sticks, roots, rubbish, and extraneous matter.
- C. Grade lawn areas to a smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain. Do not compact topsoil
- D. Apply limestone, at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 nor more than 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
- E. Apply Type A fertilizer to indicated turf areas at a rate equal to 1.0 lb. of actual nitrogen per 1,000 sq. ft. (220 lbs./acre).
- F. Apply fertilizers to renovated lawn areas by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 3" by discing or other approved

## SECTION 02485

### SEEDING

method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.

- G. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to seeding.

#### 3.03 INSTALLATION

##### A. Seeding:

1. Seed immediately after preparation of bed. Spring seeding between March 1 and June 1 and fall seeding between August 15 and October 15 or at such other times acceptable to the Architect.
2. Seed indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.
3. Perform seeding operations for renovated lawn areas when the soil is dry and when winds do not exceed 5 miles per hour velocity.
4. Apply seed to renovated lawn areas with a rotary or drop type distributor. Install seed evenly by sowing equal quantities in 2 directions, at right angle to each other.
5. Sow grass seed at a rate of 6.0 lbs per 1,000 sq. ft. (260 lbs/acre).
6. After seeding, rake or drag surface of soil lightly to incorporate seed into top 1/8" of soil. Roll with light lawn roller.

##### B. Mulching:

1. Place straw mulch on seeded areas within 24 hours after seeding.
2. Place straw mulch uniformly in a continuous blanket at the rate of 2-1/2 tons per acre, or 2- 50 lb. bales per 1,000 sq. ft. of area. A mechanical blower may be used for straw mulch application when acceptable to the Architect.
3. Crimp straw into soil by mechanical means.
4. Anchor straw with liquid tackifier applied uniformly at a rate of 60 gal. per acre.
5. Protect buildings, paving, plantings, and all non-seeded areas from liquid tackifier over-spray.

- C. Provide straw bale checking in ditches or problem swales at intervals required to adequately slow water velocity and impede soil loss.

#### 3.04 RECONDITIONING EXISTING LAWNS

- A. Recondition existing lawn areas damaged by Contractor's operations, including storage of materials or equipment and movement of construction vehicles, and existing lawn areas as indicated.

## SECTION 02485

### SEEDING

- B. Provide fertilizer, seed and soil amendments as specified for new lawns and as required to provide a satisfactorily reconditioned lawn. Provide topsoil as required to fill low areas and meet new finish grades.
- C. Cultivate bare and compacted areas thoroughly.
- D. Remove diseased or unsatisfactory lawn areas. Do not bury into soil. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, stone, gravel and other construction materials.
- E. Where substantial but thin lawn remains, rake, aerate if compacted, and cultivate soil; fertilizer and seed.
- F. Water newly seeded areas. Maintain adequate soil moisture until new grass is established.

#### 3.05 MAINTENANCE

- A. Maintenance of installed and accepted seeded lawns will be performed by the Owner.
- B. Maintain seeded lawn areas, including watering, spot weeding, mowing, applications of herbicides, fungicides, insecticides, and re-seeding until a full, uniform stand of grass free of weeds, undesirable grass species, disease, and insects is achieved and accepted by the Architect.
  - 1. Water daily to maintain adequate surface soil moisture for proper seed germination. Continue daily watering for not less than 30 days. Thereafter apply 1/2" of water twice weekly until acceptance.
  - 2. Repair, rework, and re-seed all areas that have washed out, are eroded, or do not catch.
  - 3. Mow lawn areas as soon as lawn top growth reaches a 3" height. Cut back to 2" in height. Repeat mowing as required to maintain specified height.
  - 4. Apply Type B fertilizer to lawns approximately 30 days after seeding at a rate equal to 1.0 lb. of actual nitrogen per 1,000 sq. ft. (140 lbs./acre.). Apply with mechanical rotary or drop type distributor. Thoroughly water into soil.
- C. Maintain seeded banks, ditches, medians, and fields to the extent of establishment only. Re-grade and re-seed washed out or eroded areas as required until a suitable cover is established.

#### 3.06 ACCEPTANCE

- A. Inspection to determine acceptance of seeded lawns will be made by the Architect, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
  - 1. Seeded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, uniform, close stand of the specified grass is established free of weeds, undesirable grass species, disease, and insects.



## **SECTION 02485**

### **SEEDING**

2. No individual lawn areas shall have bare spots or unacceptable cover totaling more than 2% of the individual areas, in areas requested to be inspected.
- B. Upon acceptance, the Owner will assume lawn maintenance.

### **3.07 CLEANING**

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from seeding operations.

END

## SECTION 02487

### SODDING

#### 02487 - SODDING

##### 1.01 DESCRIPTION

A. Provide sodded lawns as shown and specified. The work includes:

1. Soil preparation.
2. Sodding lawns and other indicated areas.
3. Maintenance.

B. RELATED WORK OTHER SECTIONS

1. Section 02200: Earthwork.
2. Section 02485: Seeding.
3. Section 02490: Trees, Plants, and Ground Covers.

##### 1.02 QUALITY ASSURANCE

A. Comply with Section 02000 requirements.

B. Sod: Comply with American Sod Producers Association (ASPA) classes of sod materials.

C. Provide and pay for materials testing. Testing agency shall be acceptable to the Architect. Provide the following data:

1. Test representative materials samples proposed for use.
2. Topsoil:
  - a. pH factor.
  - b. Mechanical analysis.
  - c. Percentage of organic content.
  - d. Recommendations on type and quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

##### 1.03 SUBMITTALS

A. Submit sod grower's certification of grass species. Identify source location.

B. Submit the following materials certification:

1. Fertilizer(s) analysis.

C. Submit materials test report.

## SECTION 02487

### SODDING

- D. Upon sodded lawn acceptance, submit written maintenance instructions recommending procedures for maintenance of sodded lawns.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Cut, deliver, and install sod within a 24-hour period.
  - 1. Do not harvest or transport sod when moisture content may adversely affect sod survival.
  - 2. Protect sod from sun, wind, and dehydration prior to installation.
  - 3. Do not tear, stretch, or drop sod during handling and installation.

#### 1.05 PROJECT CONDITIONS

- A. Work notification: Notify Architect at least 7 working days prior to start of sodding operations.
- B. Protect existing utilities, paving, and other facilities from damage caused by sodding operations.
- C. Perform sodding work only after planting and other work affecting ground surface has been completed.
- D. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.
- E. Provide hose and lawn-watering equipment as required.

#### 1.06 WARRANTY

- A. Provide a uniform stand of grass by watering, mowing, and maintaining lawn areas until final acceptance. Re-sod areas, with specified materials, which fail to provide a uniform stand of grass until all affected areas are accepted by the Architect.

#### 2.01 MATERIALS

- A. Sod: An "approved" nursery grown blend of improved Rebel tall fescue or other approved varieties.
  - 1. Sod containing Common Bermuda grass, Quack grass, Johnson grass, Poison Ivy, Nutsedge, Nimblewill, Canada Thistle, Timothy, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorrel, or Bromegrass weeds will not be acceptable.
- B. Provide well-rooted, healthy sod, free of diseases, nematodes and soil borne insects. Provide sod uniform in color, leaf texture, density, and free of weeds, undesirable grasses, stones, roots, thatch, and extraneous material; viable and capable of growth and development when planted.

## SECTION 02487

### SODDING

1. Furnish sod machine stripped in square pads or strips not more than 3'-0" long; uniformly 1" to 1-1/2" thick with clean-cut edges. Mow sod before stripping.
- C. Fertilizer:
  1. Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.
    - a. Type A: Starter fertilizer containing 20% nitrogen, 26% phosphoric acid, and 6% potash by weight or similar approved composition.
    - b. Type B: Top dressing fertilizer containing 31% nitrogen, 3% phosphoric acid, and 10% potash by weight or similar approved composition.
- D. Ground Limestone: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20 mesh sieve.
- E. Stakes
  1. Softwood, 3/4" dia. x 8" long or,
  2. Steel, tee shaped pins, 4" head x 8" leg.
- F. Water: Free of substance harmful to sod growth. Hoses or other methods of transportation furnished by Contractor.

#### 3.01 INSPECTION

- A. Examine finish surfaces, grades, topsoil quality, and depth. Do not start sodding work until unsatisfactory conditions are corrected.

#### 3.02 PREPARATION

- A. Limit preparation to areas, which will be immediately sodded.
- B. Loosen topsoil of lawn areas to minimum of 4". Remove stones over 1" in any dimension and sticks, roots, rubbish, and extraneous matter.
- C. Grade lawn areas to smooth, free draining and even surface with a loose, uniformly fine texture. Roll and rake; remove ridges and fill depressions as required to drain. Do not compact topsoil.
- D. Apply limestone at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 nor more than 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
- E. Apply Type A fertilizer at the rate equal to 1.0 lb. of actual nitrogen per 1,000 sq. ft. Apply fertilizer by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with the soil to a depth of 3" by discing or other approved methods. Fertilize areas inaccessible to power equipment with hand tools and incorporate it into soil.

## SECTION 02487

### SODDING

- F. Dampen dry soil prior to sodding.
- G. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to sodding.

#### 3.03 INSTALLATION

- A. Sodding:
  - 1. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips. Do not overlay edges. Stagger strips to offset joints in adjacent courses. Remove excess sod to avoid smothering of adjacent grass. Provide sod pad top flush with adjacent curbs, sidewalks, drains, and seeded areas.
  - 2. Do not lay dormant sod or install sod on saturated or frozen soil.
  - 3. Install initial row of sod in a straight line, beginning at bottom of slopes, perpendicular to direction of the sloped area. Place subsequent rows parallel to and lightly against previously installed row.
  - 4. Peg sod on slopes greater than 3 to 1 to prevent slippage at a rate of 2 stakes per yd. of sod.
  - 5. Water sod thoroughly with a fine spray immediately after laying.
  - 6. Roll with light lawn roller to ensure contact with sub-grade.
- B. Sod indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.

#### 3.04 MAINTENANCE

- A. Maintain sodded lawns until completion and acceptance of the entire project.
- B. Maintain sodded lawn areas, including watering, spot weeding, mowing, application of herbicides, fungicides, insecticides and re-sodding until a full, uniform stand of grass free of weed, undesirable grass species, disease, and insects is achieved and accepted by the Landscape Architect.
  - 1. Water sod thoroughly every 2 to 3 days, as required to establish proper rooting.
  - 2. Repair, rework, and re-sod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod.
  - 3. Mow lawn areas as soon as lawn top growth reaches a 3" height. Cut back to 2" height. Repeat mowing as required to maintain specified height. Not more than 40% of grass leaf shall be removed at any single mowing.
  - 4. Apply Type B fertilizer to lawns approximately 30 days after sodding at a rate equal to 1.0 lb. of actual nitrogen per 1,000 sq. ft.(140 lbs/acre). Apply with a mechanical rotary or drop type distributor. Thoroughly water into soil.

## **SECTION 02487**

### **SODDING**

5. Apply herbicides as required to control weed growth or undesirable grass species.
6. Apply fungicides and insecticides as required to control diseases and insects.
7. Remove sod pegs.

#### **3.05 ACCEPTANCE**

- A. Inspection to determine acceptance of sodded lawns will be made by the Architect, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
  1. Sodded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, even colored viable lawn is established, free of weeds, undesirable grass species, disease, and insects.
- B. Upon acceptance, the Owner will assume lawn maintenance.

#### **3.06 CLEANING**

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from sodding operations.

END



## SECTION 02490

### TREES, PLANTS, AND GROUND COVERS

#### 02490 - TREES, PLANTS, AND GROUND COVERS

##### 1.01 DESCRIPTION

- A. Provide trees, plants, and ground covers as shown and specified. The work includes:
  - 1. Soil preparation.
  - 2. Trees, shrubs, and other plants indicated on drawings.
  - 3. Planting mixes.
  - 4. Mulch and planting accessories.
  - 5. Maintenance.
- B. Related Work:
  - 1. Section 02200: Earthwork.
  - 2. Section 02485: Seeding.

##### 1.02 QUALITY ASSURANCE

- A. Comply with Section 02000 requirements.
- B. Plant names indicated, comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.
- C. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock". A plant shall be dimensioned as it stands in its natural position.
- D. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.
- E. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional cost, and providing that the larger plants will not be cut back to size indicated. Provide plants indicated by two measurements so that only a maximum of 25% are of the minimum size indicated and 75% are of the maximum size indicated.
- F. Provide "specimen" plants with a special height, shape, or character of growth. Tag specimen trees or shrubs at the source of supply. The Architect will inspect specimen selections at the source of supply for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.
- G. Plants may be inspected and approved at the place of growth, for compliance with specification requirements for quality, size, and variety.
  - 1. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work.



## SECTION 02490

### TREES, PLANTS, AND GROUND COVERS

#### 1.03 SUBMITTALS

- A. Provide plant material record drawings:
  - 1. Legibly mark drawings to record actual construction.
  - 2. Indicate horizontal and vertical locations, referenced to permanent surface improvements.
  - 3. Identify field changes of dimension and detail and changes made by Change Order.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.
- B. Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Spray deciduous plants in foliage with an approved "Anti-Desiccant" immediately after digging to prevent dehydration. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival, the certificate shall be filed with the Architect. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Architect. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.
- C. Cover plants transported on open vehicles with a protective covering to prevent wind burn.
- D. Provide dry, loose topsoil for planting bed mixes. Frozen or muddy topsoil is not acceptable.

#### 1.05 PROJECT CONDITIONS

- A. Work notification: Notify Architect at least 7 working days prior to installation of plant material.
- B. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.
- C. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.

#### 1.06 WARRANTY

- A. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of 1 year after completion and acceptance of entire project.
  - 1. Inspection of plants will be made by the Architect at completion of planting.
- B. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Architect, are in an unhealthy or unsightly condition, and have lost their

## SECTION 02490

### TREES, PLANTS, AND GROUND COVERS

natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at Contractor's expense. Warrant all replacement plants for 1 year after installation.

- C. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, floods, freezing rains, lightning storms, or winds over 75 miles per hour, winter kill caused by extreme cold and severe winter conditions not typical of planting area; acts of vandalism or negligence on the part of the Owner.
- D. Remove and immediately replace all plants, as determined by the Landscape Architect, to be unsatisfactory during the initial planting installation.

#### 2.01 MATERIALS

- A. Plants: Provide plants typical of their species or variety; with normal, densely-developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sun scald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces. Plants held in storage will be rejected if they show signs of growth during storage.
  - 1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock". Cracked or mushroomed balls are not acceptable.
  - 2. Bare-root plants: Dug with adequate fibrous roots, covered with a uniformly thick coating of mud by being puddled immediately after they are dug, or packed in moist straw or peat moss.
  - 3. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.
    - a. No plants shall be loose in the container.
    - b. Container stock shall not be pot bound.
  - 4. Provide tree species that mature at heights over 25 feet with a single main trunk. Trees that have the main trunk forming a "Y" shape are not acceptable.
  - 5. Plants planted in rows shall be matched in form.
  - 6. Plants larger than those specified in the plant list may be used when acceptable to the Architect.
    - a. If the use of larger plants is acceptable, increase the spread of roots or root ball in proportion to the size of the plant.
  - 7. The height of the trees, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated in the plant list.
  - 8. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.

## SECTION 02490

### TREES, PLANTS, AND GROUND COVERS

9. Evergreen trees shall be branched to the ground.
10. Shrubs and small plants shall meet the requirements for spread and height indicated in the plant list.
  - a. The measurements for height shall be taken from the ground level to the height of the top of the plant and not the longest branch.
  - b. Single stemmed or thin plants will not be accepted.
  - c. Side branches shall be generous, well-twigged, and the plant as a whole well-bushy to the ground.
  - d. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.

#### 2.02 ACCESSORIES

- A. Topsoil for Planting Beds: Fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, and other foreign materials, with acidity range of between pH 6.0 and 6.8 and a minimum organic matter content of 1% and meeting the definition of topsoil of the Kentucky Department of Transportation.
  1. Topsoil that has been stripped and stockpiled on site shall be the topsoil to be utilized on this project.
  2. Provide topsoil free of substances harmful to the plants that will be grown in the soil.
- B. Fertilizer:
  1. Plant Fertilizer Type "A": Commercial type approved by the Architect, containing 5% nitrogen, 10% phosphoric acid, and 5% potash by weight. 1/4 of nitrogen in the form of nitrates, 1/4 in form of ammonia salt, and 1/2 in form of organic nitrogen.
- C. Anti-Desiccant: Protective film emulsion providing a protective film over plant surfaces; permeable to permit transpiration. Mixed and applied in accordance with manufacturer's instructions.
- D. Mulch: 6 month old well rotted shredded native hardwood bark mulch not larger than 4" in length and 1/2" in width, free of wood chips and sawdust.
- E. Water: Free of substances harmful to plant growth. Hoses or other methods of transportation furnished by Contractor.
- F. Stakes for Staking: Hardwood, 2" x 2" x 8'-0" long or as indicated on drawings.
- G. Twine: Two-ply jute material.

#### 3.01 INSPECTION

- A. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

## SECTION 02490

### TREES, PLANTS, AND GROUND COVERS

#### 3.02 PREPARATION

- A. Time of planting:
  - 1. Evergreen material: Plant evergreen materials between September 1 and November 1 or in spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-desiccant prior to planting operations.
  - 2. Deciduous material: Plant deciduous materials in a dormant condition. If deciduous trees are planted in-leaf, they shall be sprayed with an anti-desiccant prior to planting operation.
  - 3. Planting times other than those indicated shall be acceptable to the Architect.
- B. Planting shall be performed only by experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.
- C. Locate plants as indicated or as approved in the field after staking by the Contractor. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.
- D. Excavate circular plant pits with sloped sides, except for plants specifically indicated to be planted in beds. Provide pits at least twice the diameter of the root system for trees and shrubs unless otherwise indicated on contract drawings. Depth of pit shall accommodate the root system. Provide undisturbed subgrade to hold root ball at nursery grade as shown on the drawings. Remove excavated materials from the site.
- E. Provide pre-mixed planting mixture for use around the balls and roots of the plants consisting of planting topsoil and 1/2 lb. plant fertilizer Type "A" for each cu. yd. of mixture.

#### 3.03 INSTALLATION

- A. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set plant material 2"-3" above the finish grade. No filling will be permitted around trunks or stems. Backfill the pit with planting mixture. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.
- B. After balled and burlapped plants are set, muddle planting soil mixture around bases of balls and fill all voids.
  - 1. Remove all burlap, ropes, and wires from the tops of balls.
- C. Mulching:
  - 1. Mulch tree and shrub planting pits and shrub beds with required mulching material 3" deep immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

## SECTION 02490

### TREES, PLANTS, AND GROUND COVERS

- D. Staking:
  - 1. Inspect trees for injury to trunks, evidence of insect infestation, and improper pruning before wrapping.
  - 2. Staking:
    - a. When high winds or other conditions, which may effect tree survival or appearance, occur, the Landscape Architect may require immediate staking.
  - 3. All work shall be acceptable to the Architect.
- E. Pruning:
  - 1. Remove or cut back broken, damaged, and unsymmetrical growth of new wood.
  - 2. Multiple leader plants: Preserve the leader which will best promote the symmetry of the plant. Cut branches flush with the trunk or main branch, at a point beyond a lateral shoot or bud a distance of not less than 1/2 the diameter of the supporting branch. Make cut on an angle.

#### 3.04 MAINTENANCE

- A. Maintain plantings until completion and acceptance of the entire project.
- B. Maintenance shall include pruning, cultivating, weeding, watering, and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.
  - 1. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
  - 2. Tighten and repair guy wires and stakes as required.
  - 3. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.
  - 4. Water trees, plants, and ground cover beds within the first 24 hours of initial planting, and not less than twice per week until final acceptance.

#### 3.05 ACCEPTANCE

- A. Inspection to determine acceptance of planted areas will be made by the Architect, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
  - 1. Planted areas will be accepted provided all requirements, including maintenance, have been complied with and plant materials are alive and in a healthy, vigorous condition.
- B. Upon acceptance, the Owner will assume plant maintenance.

## **SECTION 02490**

### **TREES, PLANTS, AND GROUND COVERS**

#### **3.06 CLEANING**

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soils, debris, and equipment. Repair damage resulting from planting operations.

END



## SECTION 02513

### ASPHALTIC CONCRETE PAVING

#### 02513 - ASPHALTIC CONCRETE PAVING

##### 1.01 DESCRIPTION

A. Provide asphaltic concrete paving as shown and specified. The work includes:

1. Final subgrade preparation and paving base.
2. Roadway and parking paving.
3. Asphalt edge key.
4. Parking blocks.
5. Pavement striping and markings.

B. Related work:

1. Section 02200: Earthwork.
2. Section 02400: Site Drainage.

##### 1.02 QUALITY ASSURANCE

A. Comply with Section 02000 requirements.

B. Materials and methods of construction shall comply with the following standards:

1. Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
2. American Society for Testing and Materials, (ASTM).
3. American Association of State Highway and Transportation Officials, (AASHTO).
4. Asphalt Institute, (AI).
5. National Crushed Stone Association, (NCSA).
6. International Slurry Seal Association, (ISSA).

C. Provide material furnished by a bulk asphaltic concrete producer regularly engaged in the production of hot-mix, hot-laid asphaltic concrete paving materials.

D. Tolerances:

1. In-place compacted thickness:
  - a. Base course: Maximum 1/2" plus, minus 0".
  - b. Surface course: Maximum 1/4" plus, minus 0".



## SECTION 02513

### ASPHALTIC CONCRETE PAVING

- 2. Finished surface smoothness:
    - a. Base course: Maximum 3/8" in 10'-0".
    - b. Surface course: Maximum 1/4" in 10'-0", any direction.
  - E. Construct street and access driveway curb cuts and entrance apron paving in accordance with local requirements.
- 1.03 SUBMITTALS
- A. Product data:
    - 1. Submit complete materials list of items proposed for the work. Identify materials source.
    - 2. Submit parking block, pavement striping paint, and soil sterilizer product data.
  - B. Submit reports for testing and inspection of the following:
    - 1. Subgrade surfaces.
    - 2. Base materials.
    - 3. Surface materials.
    - 4. Compaction operations.
- 1.04 DELIVERY, STORAGE, AND HANDLING
- A. Deliver manufactured products in manufacturer's original, unopened, and undamaged containers with labels intact and legible.
  - B. Store and handle manufactured products to prevent damage and deterioration.
- 1.05 PROJECT CONDITIONS
- A. Weather limitations:
    - 1. Do not install base course materials over wet or frozen subgrade surfaces.
    - 2. Do not apply tack coat materials when temperature is 50 degrees F. or below. Do not apply to wet base surface.
    - 3. Install asphalt surface materials only when base is dry and air temperature is 40 degrees F. or above.
  - B. Grade control: Establish and maintain the required lines and grades, including crown, inverted crown, and cross-slopes, for each course during paving operations.
  - C. Provide temporary barricades and warning lights as required for protection of project work and public safety.

## SECTION 02513

### ASPHALTIC CONCRETE PAVING

- D. Protect adjacent work from damage, soiling, and staining during paving operations.

#### 2.01 MATERIALS

- A. Subgrade fill: Inert subsoil material free of organic matter, rubbish, debris, and rocks greater than 4" diameter.
- B. Aggregate base: dense grade aggregate. Comply with Section 805 of the Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction.
- C. Tack coat: Comply with Section 806 of the KYDOH Standard Specifications for Highway and Bridge Construction.
- D. Asphaltic base course: Complying with Section 806 of the KYDOH Standard Specifications for Highway and Bridge Construction.
- E. Asphaltic surface course: Complying with Section 806 of the KYDOH Standard Specifications for Highway and Bridge Construction.
- F. Pavement marking paint: Factory-mixed, quick-drying, non-bleeding paint specifically formulated for marking asphaltic concrete surfaces, white color. Blue for handicap spaces.
- G. Parking blocks: Pre-cast reinforced concrete with minimum of 2 anchor pin holes. Provide 1/2" diameter x 24" length hot dip galvanized finished steel anchor pins for securing parking blocks.

#### 2.02 EQUIPMENT

- A. Paving equipment: Spreading, self-propelled asphalt paving machines capable of maintaining line, grade, and thickness shown.
- B. Compacting equipment: Self-propelled rollers, minimum 10 ton weight.
- C. Hand tools: Rakes, shovels, tampers, and other miscellaneous equipment required to complete the work.
- D. Pavement marking equipment: Provide spray machines specifically designed for pavement marking.

#### 3.01 INSPECTION

- A. Examine subgrades and installation conditions. Do not start asphaltic concrete paving work until unsatisfactory conditions are corrected.

#### 3.02 PREPARATION

- A. Proof roll the subgrade and do all necessary rolling and compacting to obtain firm, even subgrade surface. Fill and consolidate depressed areas. Remove uncompactible materials, replace with clean fill, and compact to 100% of the maximum dry density in accordance with ASTM D698 Standard Proctor Method.

## SECTION 02513

### ASPHALTIC CONCRETE PAVING

- B. Frame adjustments:
  - 1. Verify frames for manholes, catch basins, and other such units, within areas to be paved, are at their proper elevation.
  - 2. Adjust frames as required to match paving. Provide temporary closures over openings until completion of rolling operations. Remove closures at completion of the work. Set covers to grade, flush with the surface of adjoining pavement surface.
- C. Field verify extent and location of paving scheduled for replacement, repair, and resurfacing. The work includes:
  - 1. Removal and replacement of existing asphaltic concrete pavement surface and base materials where indicated.
  - 2. Filling trenches in existing paving, repairing pavement seams and providing pavement butt type joint paving where indicated.
  - 3. Provide edge key at edge of existing asphalt road where driveway connects.
- D. Coordinate junction of new and existing pavement. Saw cut existing pavement to provide a uniform straight line transition. Mill existing asphalt pavement 1" to provide asphalt edge key. Maintain drainage slopes. Feathering of transitions is not acceptable.

#### 3.03 INSTALLATION: GENERAL

- A. Comply with Asphaltic Institute (AI) MS-3 Asphalt Plant Manual for material storage, control and mixing, and for plant equipment and operation.
- B. Transport asphaltic concrete mixtures from the mixing plant to the project site in trucks with tight, clean compartments.
- C. Pavement seams:
  - 1. Remove and waste existing loose asphaltic concrete surface material.
  - 2. Fill seams with an emulsion slurry or liquid asphalt mixed with sand.
  - 3. Wipe treated surface, with a rubber edged squeegee to eliminate build-up.
  - 4. Install tack coat.
  - 5. Install leveling and surface courses.
- D. Pavement butt type joints:
  - 1. Where proposed asphaltic concrete surfaces abut existing asphaltic concrete horizontal surfaces, mill and remove existing asphaltic concrete for a depth of 1" and a width of 12".
  - 2. Install tack coat as applicable.

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### ASPHALTIC CONCRETE PAVING

3. Install leveling and surface courses.

#### 3.04 INSTALLATION: BASE MATERIALS

- A. Install geogrid in compliance with manufacturer's recommendations after subgrade has been compacted in areas indicated and in compliance with KYDOH requirements.
- B. Install aggregate base materials up to 6" thickness in single course; install 6" and greater thickness in 2 equal courses, base course and top course, total compacted depth as scheduled.
- C. Compact aggregate base materials to 100% of ASTM D698 maximum dry density until a uniformly-smooth, hard surface, complying with the lines, grades, elevations, and cross-sections shown has been established. Moisture may be added at job site to aid compaction.
- D. Install asphaltic base course in maximum 3" lifts and roll to provide compacted depth as scheduled.

#### 3.05 INSTALLATION: SURFACE MATERIALS

- A. Remove loose and foreign material from compacted base immediately before application of surface materials. Do not start surface work until all other work which may damage the finish surface is completed.
- B. When asphalt surface material is not installed immediately following the bituminous aggregate base course installation, apply tack coat at base course, following acceptance by Landscape Architect, at the rate of 0.05 to 0.10 gallons per sq. yd. Allow to dry and cure as required.
- C. Install asphalt surface materials in single course, total compacted depth as scheduled.
- D. Place, spread, and strike off the asphalt concrete mixture on a properly prepared and conditioned surface. Inaccessible and small areas may be placed by hand. Place each course to the required grade, cross-section, and scheduled compacted thickness.
- E. Place materials in strips not less than 10'-0" wide. After the first strip has been placed and rolled, place all succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course materials.
- F. Carefully make joints between old and new pavements, and between successive day's work, to ensure a continuous bond between adjoining work. Construct joints to have the same texture, density, and smoothness as other sections of the asphalt concrete course.
- G. Apply tack coat to contact surfaces of existing pavement, curbs, and structures abutting pavement.
- H. Begin rolling operations when the asphalt concrete mixture will bear the weight of the roller without excessive displacement. Compact areas inaccessible to rollers with vibrating plate compactors.
- I. Perform breakdown, second and finish rolling until the asphalt concrete mixture has been compacted to the required surface density and smoothness. Continue rolling until all roller

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### ASPHALTIC CONCRETE PAVING

marks are eliminated. Provide a smooth compacted surface true to thickness and elevations required.

- J. After final rolling, do not permit vehicular traffic on the pavement until it has cooled and hardened, and in no case sooner than 8 hours.
- K. Protect newly placed material from traffic by barricades or other suitable methods acceptable to the Landscape Architect.
- L. Install parking blocks in quantities and locations indicated. Anchor securely in place with galvanized pins driven flush with top of parking block.
- M. Patch and repair existing paving damaged or removed to accommodate new curbs, walks, and entrance aprons. Materials and installation shall comply with requirements herein. Concrete bases, where required, will be provided under Concrete Curbs and Walks, Section 02515.

#### 3.06 PAVEMENT SURFACE STRIPING AND MARKING

- A. Thoroughly clean surface of dirt and loose material before application of sealing materials.
- B. Apply two coats of marking paint, at manufacturer's recommendation rates, with mechanical equipment. Provide uniform lines with straight edges, 4" minimum width.
- C. Provide lines, lettering, and markings shown to define parking spaces and traffic flow.
  - 1. Stencil all parking spaces noted as handicapped parking with the international symbol of access.

#### 3.07 PROTECTION

- A. Protect paving from damage due to construction and vehicular traffic until final acceptance.

#### 3.08 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from paving operations.
- B. Sweep pavement and wash free of stains, discolorations, dirt, and other foreign material immediately prior to final acceptance.

END

## SECTION 02515

### CONCRETE CURBS, WALKS, AND PAVING

#### 02515 - CONCRETE CURBS, WALKS, AND PAVING

##### 1.01 DESCRIPTION

- A. Provide concrete curbs, walks, and paving as shown and specified. The work includes:
  - 1. Final subgrade proof-rolling and paving base.
  - 2. Curbs, walks, and paving.
- B. Related work:
  - 1. Section 02200: Earthwork.
  - 2. Section 02400: Site Drainage

##### 1.02 QUALITY ASSURANCE

- A. Comply with Section 02000 requirements.
- B. Testing and inspection: Performed by a qualified independent testing laboratory.
- C. Provide and pay for testing and inspection during concrete operations. Laboratory shall be acceptable to the Landscape Architect.
- D. Materials and methods of construction shall comply with the following standards:
  - 1. Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, (KyDOT).
  - 2. American Society for Testing and Materials, (ASTM).
  - 3. American Concrete Institute, (ACI).
- E. Maintain field records of time, date of placing, curing, and removal of forms of concrete in each portion of work.
- F. Do not change source or brands of cement and aggregate materials during course of the work.
- G. Construct street and access driveway curb cuts, entrance apron paving, curbs, and sidewalks subject to KyDOT requirements, in accordance with such requirements.

##### 1.03 SUBMITTALS

- A. Submit concrete mix designs. Obtain approval before placing concrete.
- B. Product data:
  - 1. Submit complete materials list of items proposed for the work. Identify materials source.

## SECTION 02515

### CONCRETE CURBS, WALKS, AND PAVING

2. Submit admixture, curing compound, retarder, and accessory item product data.
    3. Submit material certificates for aggregates, reinforcing, and joint fillers.
  - C. Submit concrete delivery tickets. Show the following:
    1. Batch number.
    2. Mix by class or sack content with maximum size aggregate.
    3. Admixtures.
    4. Air content.
    5. Slump.
    6. Time of loading.
  - D. Submit concrete test reports.
- 1.04 DELIVERY, STORAGE, AND HANDLING
- A. Deliver curing materials, admixtures, and retarders in manufacturer's standard unopened containers with labels legible and intact. Store and protect from freezing and damage.
- 1.05 PROJECT CONDITIONS
- A. Work notification: Notify Architect at least 24 hours prior to installation of concrete.
  - B. Establish and maintain required lines and grade elevations.
  - C. Do not install concrete work over wet, saturated, muddy, or frozen subgrade.
  - D. Do not install concrete when air temperature is below 40 degrees F. Use of calcium chloride, salt, or any other admixture to prevent concrete from freezing is prohibited.
  - E. Protect adjacent work.
  - F. Provide temporary barricades and warning lights as required for protection of project work and public safety.
- 2.01 MATERIALS
- A. Portland cement: ASTM C150, Type I, natural color.
  - B. Aggregate: Provide AASHTO M43 Grading #57 clean, uncoated crushed stone or gravel coarse aggregate free of materials which cause staining or rust spots; fine aggregate shall be clean natural sand.
  - C. Water: Clean, fresh, and potable.
  - D. Air-entraining admixture: ASTM C260

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### CONCRETE CURBS, WALKS, AND PAVING

- E. Water-reducing admixture: ASTM C494

#### 2.02 MIXES

- A. Provide ASTM C94 ready-mixed concrete. Batch mixing at site not acceptable.
  - 1. Strength: 3,500 psi minimum at 28 days.
  - 2. Slump range: 2" to 4" maximum
- B. Provide an approved water-reducing admixture in all concrete.
- C. Provide an air-entraining admixture in all concrete. Air content 5% to 7%.
- D. Indicate water added to mix at job site on each delivery ticket. Show quantity of water added. Site water tempered mixes exceeding specified slump range will be rejected as not complying with specification requirements.

#### 2.03 ACCESSORIES

- A. Granular Base: AASHTO M43, #6 (3/8" to 3/4") uniformly graded, clean crushed stone or gravel.
- B. Forms: Wood or metal of sufficient strength to resist concrete placement pressure and to maintain horizontal and vertical alignment during concrete placement. Provide forms straight, free of defects, and distortion, and height equal to full depth of concrete work.
  - 1. Provide 2" nominal thickness, surfaced plank wood forms for straight sections. Use flexible metal 1" lumber or plywood forms to form radius bends.
- C. Joint filler: ASTM D1751, premolded non-extruding asphalt-impregnated fiberboard, thickness indicated.
- D. Curing compound: ASTM C309, non-yellowing, non-staining liquid membrane-forming type containing a fugitive dye. Chlorinated rubber compounds not acceptable for exterior use.
- E. Joint sealants: Two-component polysulfide or polyurethane elastomeric type complying with FS TT-S-00227, self-leveling, designed for foot traffic.
- F. Reinforcing steel: ASTM A615, A616, or A617, Grade 40, new domestic deformed steel bars.
- G. Weld wire fabrics: ASTM A185, welded plain cold-drawn steel wire fabric.
- H. Form release agent: Non-staining chemical form release agent free of oils, waxes, and other materials harmful to concrete.

#### 3.01 INSPECTION

- A. Examine subgrades and installation conditions. Do not start concrete work until unsatisfactory conditions are corrected.



## SECTION 02515

### CONCRETE CURBS, WALKS, AND PAVING

#### 3.02 PREPARATION

- A. Proof roll the subgrade and do all necessary rolling and compacting to obtain firm, even subgrade surface. Fill and consolidate depressed areas. Remove uncompactable materials, replace with clean fill and compact to 100% of the maximum dry density in accordance with ASTM D698 Standard Proctor Method.
- B. Provide compacted granular base material at walks and at paving. Compact granular base to 95% of the maximum dry density in accordance with ASTM D698 Standard Proctor Method.
- C. Remove loose material and debris from base surface before placing concrete.
- D. Install, align, and level forms. Stake and brace forms in place. Maintain following grade and alignment tolerances.
  - 1. Top of form: Maximum 1/8" in 10'-0".
  - 2. Vertical face: Maximum 1/4" in 10'-0".
- E. Coat form surfaces in contact with concrete with form release agent. Clean forms after each use and coat with form release agent as necessary to assure separation from concrete without damage.
- F. Locate, place, and support reinforcement as indicated.
  - 1. Provide a single layer of welded wire fabric in all concrete slabs-on-grade.
  - 2. Provide reinforcing bars at curbs, steps, and other locations indicated, adequately supported and secured to prevent displacement.
- G. Install, set, and build-in items furnished by other trades. Provide adequate notification for installation of necessary items.

#### 3.03 INSTALLATION

- A. Concrete Placement:
  - 1. Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as specified.
  - 2. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing and curing. In cold weather comply with ACI 306, "Recommended Practice for Cold Weather Concreting". In hot weather comply with ACI 305, "Recommended Practice for Hot Weather Concreting".
  - 3. Moisten base to provide a uniform dampened condition at the time concrete is placed. Verify manholes or other structures are at required finish elevation and alignment before placing concrete.
  - 4. Place and spread concrete to the full depth of the forms. Use only square-end shovels or concrete rakes for hand-spreading and consolidating concrete. Exercise

## SECTION 02515

### CONCRETE CURBS, WALKS, AND PAVING

care during spreading and consolidating operations to prevent segregation of aggregate and dislocation of reinforcement.

5. Place concrete in a continuous operation between expansion joints. Provide construction joints when sections cannot be placed continuously.
6. Place concrete in one course, monolithic construction, for the full width and depth of concrete work.
7. Strike-off and bull-float concrete after consolidating. Level ridges and fill voids. Check surface with a 10'-0" straightedge. Fill depressions and refloat repaired areas. Darby the concrete surface to provide a smooth level surface ready for finishing.
8. Provide curbs profiles indicated.
9. Provide handicapped ramps where indicated.
10. Provide steps where indicated.

#### B. Joints:

1. Construct control, expansion, and construction joints properly aligned with face perpendicular to concrete surface.
2. Provide tooled control joints, sectioning concrete into areas indicated. Tool joints to depth equal to not less than one-fifth (1/5) of the concrete thickness. Hand tool control joints in pattern and at spacing indicated. When not indicated, provide spacing equal to slab width and not greater than 10'-0" on center.
3. Provide standard keyed-section construction joints where indicated.
4. Provide expansion joints using premolded joint filler at concrete work abutting curbs, walls, structures, walks, and other fixed objects.
  - a. Locate expansion joints as indicated. When not indicated, provide joints at maximum 30'- 0" on center for curbs and walks. Align expansion joints in abutting curbs and walks.
  - b. Install joints fillers full-width and depth of joint. Recess top edge below finished where joint sealants are indicated.
  - c. Provide joint fillers in single lengths for the full slab width, whenever possible. Fasten joint filler sections together when multiple lengths are required.
  - d. Protect the top edge of the joint filler during concrete placement.

#### C. Concrete finishing:

1. Perform concrete finishing using mechanical or hand methods as required.

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### CONCRETE CURBS, WALKS, AND PAVING

2. Upon completion of floating, and after bleed water has disappeared and concrete can sustain foot pressure with nominal indentation, cut concrete away from forms. Work edges with an edging tool. Round edges to 1/2" radius.
3. Install control joints at indicated locations during edging operations.
4. Complete surface finish as follows:
  - a. Provide sidewalk and pavement surfaces with textured heavy broom finish. Edge outside edges and all joints with a radius-edging tool.
  - b. Provide ramps with non-slip textured finish.
  - c. Curbs: Provide a smooth float finish.
- D. Curing:
  1. Cure concrete with a non-staining liquid membrane-forming compound. Spray apply in accordance with manufacturer's recommend coverage rate. Apply curing compound immediately after completing surface finish.
- E. Joint sealants:
  1. Install joint sealants where indicated in accordance with manufacturer's installation instructions. Clean and prime joints. Remove dirt and loose coatings.
  2. Apply sealants in continuous beads, without open joints, voids, or air pockets. Hand tool and finish all joints.
  3. Confine materials to joint areas with masking tape or other precautions.
  4. Remove excess compound promptly as work progresses and clean adjoining surfaces.
  5. In rough surfaces or joints of uneven widths, install joint sealant well back into joints.

#### 3.04 FIELD QUALITY CONTROL

- A. Provide field quality control testing and inspection during concrete operations.
- B. Contractor shall provide adequate notice, cooperate with, provided access to the work, obtain samples, and assist test agency and their representatives in execution of their function.
- C. Testing:
  1. Provide slump test on first load of concrete delivered each day and whenever requested due to change in consistency or appearance of concrete.
  2. Provide air indicator tests and air meter tests for all air-entrained concrete.

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### CONCRETE CURBS, WALKS, AND PAVING

- a. Perform air indicator test with a "Chase" AE 35 or equal air indicator, and air meter test in accordance with ASTM C231 or C173. Test first load of concrete delivered each day.
- b. Furnish copies of field records and tests reports as listed for strength tests.
- 3. Strength testing:
  - a. Provide 1 set of 3 test specimens for each 50 cu.yd placed in any one day. Secure samples in accordance with ASTM C172 and mold specimens in accordance with ASTM C31.
  - b. Test 1 specimen at 7 days and 2 specimens at 28 days in accordance with ASTM C39.
  - c. Furnish copies of field records and test reports as follows:
    - 2 copies to Architect
    - 1 copy to Contractor
    - 1 copy to Ready Mix Supplier
- 4. Record the exact location of the concrete in the work represented by each set of cylinders and show on test reports.
- 5. Provide an insulated moist box for protection of the test cylinders until shipped to the laboratory.

#### 3.05 PROTECTION

- A. Protect concrete work from damage due to construction and vehicular traffic until final acceptance. Exclude construction and vehicular traffic from concrete pavements for at least 14 days.

#### 3.06 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from concrete operations.
- B. Sweep concrete sidewalks and pavement, wash free of stains, discoloration, dirt, and other foreign material immediately prior to final acceptance.

END



## SECTION 03030

### STRUCTURAL EXCAVATION AND BACKFILL

#### SECTION 03030 – STRUCTURAL EXCAVATION AND BACKFILL

##### 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. Structural Excavation and Backfill includes:
  - 1. Preparing subgrades for slabs on grade.
  - 2. Excavating and backfilling for building foundations from subgrade.
  - 3. Over-excavation and structural backfill to achieve adequate support for foundations.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 31 Section "Excavation Support and Protection."
  - 2. Division 31 Section "Earth Moving."
  - 3. Division 33 Section "Subdrainage."

##### 1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material (flowable fill) used to fill an excavation.
- B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- C. Drainage Course: Free-draining aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- D. Excavation: Removal of material encountered above bearing elevations and to lines and dimensions indicated.
  - 1. Over-excavation: Excavation below bearing elevations or beyond indicated lines and dimensions as directed by geotechnical engineering report.
  - 2. Bulk (Mass) Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
  - 3. Unauthorized Excavation: Excavation below bearing elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- E. Fill: Soil materials used to raise existing grades.
- F. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 3/4 cu. yd. for footing excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
- G. Structures: Buildings, footings, foundations, retaining walls, slabs, or other man-made stationary features constructed above or below the ground surface as shown on the structural drawings.

## SECTION 03030

### STRUCTURAL EXCAVATION AND BACKFILL

- H. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- I. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

#### 1.4 SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
  - 1. Classification according to ASTM D 2487.
  - 2. Laboratory compaction curve according to ASTM D 698.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, GC, SW, SP, SM, SC, CH, and CL according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. No concentration of large fragments is permitted unless approved by Geotechnical Engineer and Architect.
  - 1. Plasticity Index: Less than 30.
  - 2. Swell potential: Less than 50 psf.
  - 3. Maximum dry density of at least 100 pounds per cubic foot.
- C. Unsatisfactory Soils: Soil Classification Groups ML, OL, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
  - 2. Shot rock, asphalt, and coal fragments.
- D. Subbase Material (Dense Graded Aggregate): Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; meeting Kentucky Transportation Cabinet Standard Specification for dense graded aggregate; with at  $\frac{3}{4}$ " maximum nominal size aggregate and not more than 13 percent passing a No. 200 sieve.
- E. Drainage Course and Drainage Backfill (Crushed Stone): Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; meeting Kentucky Transportation Cabinet Standard Specification for #57 stone; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

## SECTION 03030

### STRUCTURAL EXCAVATION AND BACKFILL

#### PART 3 - EXECUTION

##### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

##### 3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

##### 3.3 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials, replace with satisfactory soil materials.

##### 3.4 STRUCTURAL EXCAVATION

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  - 1. Excavations for footings and foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  - 2. Recompact areas loosened by excavation operations prior to reinforcing steel placement.
  - 3. Remove loose soil, debris, and excess surface water from the bearing surface prior to concrete placement.
- B. Over-excavate all soft and deleterious material and existing fill below foundations as recommended by geotechnical report and backfill back to foundation bearing elevation with lean concrete or open graded crushed stone.
- C. For foundations classified as soil bearing on the structural drawings, undercut and maintain similar bearing material type and depths.



## SECTION 03030

### STRUCTURAL EXCAVATION AND BACKFILL

#### 3.5 SUBGRADE INSPECTION

- A. Proof-roll subgrade below the building slabs with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. A loader scraper is also permitted. Do not proof-roll wet or saturated subgrades.
  - 1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  - 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by inspector, and replace with compacted backfill or fill as directed in geotechnical report.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

#### 3.6 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2000 psi, may be used when approved by Architect.
  - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

#### 3.7 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

#### 3.8 BACKFILL, GENERAL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
  - 2. Surveying locations of underground utilities for Record Documents.
  - 3. Testing and inspecting underground utilities.
  - 4. Removing trash and debris.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

#### 3.9 CEMENTITIOUS FILL

- A. Place fill on subgrades free of mud, frost, snow, or ice.
- B. Place and consolidate in accordance to the recommendations of the Geotechnical Report.

#### 3.10 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

## **SECTION 03030**

### **STRUCTURAL EXCAVATION AND BACKFILL**

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

- B. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

#### **3.11 SUBBASE UNDER CONCRETE SLABS-ON-GRADE**

- A. Place subbase on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact subbase under cast-in-place concrete slabs-on-grade as follows:
1. Place subbase 6 inches or less in compacted thickness in a single layer.
  2. Place subbase that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
  3. Compact each layer of subbase to required cross sections and thicknesses to not less than 98 percent of maximum dry unit weight according to ASTM D 698.

#### **3.12 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 03030



## SECTION 03300

### CAST-IN-PLACE CONCRETE

#### SECTION 03300 – CAST-IN-PLACE CONCRETE

##### PART 1 – GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes. This section applies to concrete work shown on the structural drawings. See Division 32 for site concrete.
- B. Cast-in-place concrete includes the following:
  - 1. Lean concrete backfill and mudmats.
  - 2. Foundations and footings.
  - 3. Slabs-on-grade.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 3 Section "Structural Excavation and Backfill" for preparation and excavation of foundations and stone drainage fill.
- D. Coordination: Unless other satisfactory agreements are specifically entered into by contractors concerned, all miscellaneous iron and steel, sleeves, anchors, etc., required by work of other contractors, will be furnished and installed by such other contractors with the cooperation of this contractor.

##### 1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

##### 1.4 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Design Mixtures: For each concrete mixture with laboratory test reports for the following data. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Method used to determine the proposed mix design (per ACI 301, Section 4).
  - 2. Gradation and quantity of fine and coarse aggregates.
  - 3. Proportions of all ingredients including all admixtures added either at the time of batching or at the job site. Indicate amounts of mixing water to be withheld for later addition at Project site.
  - 4. Water/cement ratio and water/cementitious ratio.

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5. Slump – ASTM C143.
  6. Certification and test results of the total water soluble chloride ion content of the design mix – FHWA RD-77 or AASHTO T 260-84.
  7. Air content of freshly mixed concrete by the pressure method, ASTM C231, or the volumetric method, ASTM C173.
  8. Unit weight of concrete – ASTM C138.
  9. Strength at 7- and 28-days for structural concrete– ASTM C39. Document strength on basis of previous field experience or trial mixtures, per ACI 301 Section 4. Submit strength test records, mix design materials, conditions, and proportions for concrete used for record of tests, standard calculation, and determination of required average compressive strength.
  10. Complete and include Structural Engineer's standard mix design submittal form for each mix. A blank copy is included at the end of this section.
- C. Steel Reinforcement Shop Drawings: Fabrication and placing drawings for reinforcement detailing, fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Include special reinforcing required for openings through concrete structures.
1. Computer generated electronic structural construction document files (ACAD) will be made available to the Contractor. The Contractor will be required to sign the Engineer's standard release of liability form and pay a handling fee of \$50.00 per drawing prior to receiving the drawing files. Rules for use of said files shall be as defined in the CRSI "Code of Standard Practice" Sections 4.19 and 6.4.1.
  2. Shop drawing resubmittals are reviewed for conformance with review marks only. Any changes or questions originating on a resubmittal shall be clearly clouded.
- D. Product Data: For proprietary materials and items, including reinforcement and forming accessories, admixtures, vapor retarder, construction joint slip dowels, joint systems, curing compounds, and others if requested by Architect.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Laboratory test reports for concrete materials or material certificates in lieu of material laboratory test reports. Material certificates shall be signed by Manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

#### 1.6 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified. Each contractor having reference to ACI Documents shall maintain copies of same on project site.

#### AMERICAN CONCRETE INSTITUTE

1. ACI 117-10 – Specifications for Tolerances for Concrete Construction and Materials.
2. ACI 211.1-91 – Standard Practice for Selecting Proportions Normal, Heavyweight and Mass Concrete (Reapproved 2009).

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3. ACI 301-10 – Specification for Structural Concrete.
4. ACI 302.1R-04 – Guide for Concrete Floor and Slab Construction.
5. ACI 304.2R-96 – Placing Concrete by Pumping Methods (Reapproved 2008).
6. ACI 305R-10 – Guide to Hot Weather Concreting.
7. ACI 306R-10 – Guide to Cold Weather Concreting.
8. ACI 308R-01 – Guide to Curing Concrete (Reapproved 2008).
9. ACI 309R-05 – Guide for Consolidation of Concrete.
10. ACI 311.1R-07 – ACI Manual of Concrete Inspection.
11. ACI 318-11 – Building Code Requirements for Structural Concrete and Commentary.
12. SP-66 – ACI Detailing Manual.

#### CONCRETE REINFORCING STEEL INSTITUTE (CRSI):

1. CRSI – Manual of Standard Practice.
  2. CRSI 63 – Recommended Practice for Placing Reinforcing Bars.
  3. CRSI 65 – Recommended Practice for Placing Bar Nomenclature.
- B. Qualifications of Workers: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper execution of the work required by this Division.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver steel reinforcement and concrete to Project site in such quantities and at such times to ensure continuity of installation.
- B. Store materials to permit easy access for inspection and identification. Keep steel reinforcement off ground by using pallets, platforms, dunnage, or other supports and spacers.
- C. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

### PART 2 - PRODUCTS

#### 2.1 FORM MATERIALS

- A. Forms for Unexposed, Rough-Formed Finish Concrete: Plywood, lumber, metal or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- B. Form-Release Agent: Commercially formulated form-release agent with a maximum volatile organic compounds (VOCs) not to exceed those allowable by jurisdictional regulations, that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
  1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

#### 2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Welded Wire Fabric: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Fabric: ASTM A 1064 in flat sheets.

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- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
- E. Fabric Supports: Chairs for spacing, supporting welded wire fabric in place. Use continuous wire chairs complying with CRSI specifications.
  - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

#### 2.3 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
  - 1. Portland Cement: ASTM C 150, Type I. High early strength (when specified), ASTM C150, Type III. One brand of cement shall be used throughout Project duration unless otherwise acceptable to Engineer.
  - 2. Fly Ash: ASTM C 618, Class F or C, except maximum loss on ignition: 3%.
- C. Normal-Weight Aggregates: ASTM C 33 Class 3S coarse aggregate or better, graded, and as specified. Provide aggregates from a single source for exposed concrete.
  - 1. Fine Aggregate to be free of materials with deleterious reactivity to alkali in cement.
- D. Water: ASTM C 94 and potable.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494, Type A.
  - 2. Retarding Admixture: ASTM C 494, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
  - 4. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
  - 5. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
  - 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.
  - 7. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.
  - 8. Air-Entraining Admixture: ASTM C 260.

#### 2.4 RELATED MATERIALS

- A. Construction joint slip dowels: steel rod or plate in a plastic insert to allow contraction of the concrete while preventing vertical differential displacement.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
    - a. #4x1'-6" long, Speed Dowel by Sika Greenstreak.
    - b. 1/4" plate, Diamond Dowel by PNA, Inc.
    - c. 1/4" plate, Speed Plate by Sika Greenstreak.

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- B. Slab Pourstop with Keyway: galvanized steel, vinyl, or plastic forming pourstop with integral keyway for use with slabs on grade.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
    - a. Key-Loc Joint System, Cardinal Manufacturing Company, Inc.
- C. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or non-impregnated, flexible, synthetic foam with standard bonding agent to hold in place.
- D. Sheet Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:
  - 1. Polyolefin/Resin or multi-ply extrusion coated polyethylene sheet not less than 10 mils thick conforming to ASTM E 1745 Class A. Maximum water vapor permeance when tested in accordance with Test Method ASTM E154, Sections 7, 8, 11, 12, and 13 (based on ASTM E96) or ASTM F1249 of 0.038 perms. Minimum tensile strength when tested to ASTM D154 of 45 lbs-force/inch.
  - 2. Accessories: All must be from the same manufacturer of the vapor barrier material used, or must be approved by the vapor barrier manufacturer in writing and submitted to the Architect for record.
    - a. Seams: Manufacturer approved seam tape.
    - b. Sealing Permanent penetrations of vapor retarder: Manufacturer approved vaporproofing mastic or tape.
    - c. Perimeter edge/seal: Manufacturer approved tape with a textured surface that creates a mechanical seal to freshly-placed concrete, termination bar, or double-sided sealant tape.
    - d. Non-permanent penetration prevention: Manufacturer approved peel and stick stake base/foot and film safe screed system.
  - 3. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
    - a. Perminator Vapor-Mat with Perminator Tape Seal. W.R. Meadows, Inc.
    - b. Stego Wrap with Stego Tape Seal. Stego Industries, LLC.
    - c. Viper Vaporcheck II with manufacturer's recommended tape seal. Insulation Solutions, Inc.
    - d. Vaporblock VB10 with Vapor Bond Plus Tape Seal. Raven Industries, Engineered Films Division.
    - e. Xtreme with Xtreme Tape Seal. Tex-Trude, LP.
- E. Bonding Agent: ASTM C 1059, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- F. Epoxy Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit Project requirements.
  - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. Dayton Superior.
    - b. Euclid Chemical Company.



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- c. BASF Corporation.
  - d. W.R. Meadows, Inc.
  - e. Sika Corporation.
- G. Cartridge Injection Acrylic Adhesive (for reinforcing dowels): two-component material for use in concrete. Anchor to be approved for use with cracked concrete per AC308.
- 1. Acrylic resin adhesive, suitable for use on dry or damp surfaces. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
    - a. HIT HY 200 System, Hilti.
    - b. AC 100 System, Powers.
    - c. AT-XP System, Simpson/Strong-Tie.
- H. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107, of consistency suitable for application, and a 30-minute working time. Grout to have a minimum compressive strength at 28 days of 5,000 psi when applied in a fluid consistency.
- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
    - a. SureGrip High Performance Grout, Dayton Superior.
    - b. NS Grout, The Euclid Company.
    - c. Masterflow 713, BASF Construction Chemicals.
    - d. Sikagrout 212, Sika.

#### 2.5 LIQUID FLOOR TREATMENTS

- A. Penetrating Concrete Sealer: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.
- 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. BASF Corporation; Construction Systems.
    - b. ChemMasters, Inc.
    - c. Dayton Superior.
    - d. Euclid Chemical Company.
    - e. Kaufman Products, Inc.
    - f. L&M Construction Chemicals, Inc.
    - g. Metalcrete Industries.
    - h. PROSOCO, Inc.
    - i. SpecChem, LLC.
    - j. W. R. Meadows, Inc.

#### 2.6 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

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- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. General: All non-dissipating compounds shall be certified by curing compound manufacturer to not interfere with bonding of floor covering.
- E. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete for temporary protection from rapid moisture loss.
  - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. BASF Corporation.
    - b. ChemMasters, Inc.
    - c. Dayton Superior.
    - d. Euclid Chemical Company.
    - e. Kaufman Products, Inc.
    - f. L&M Construction Chemicals, Inc.
    - g. Lambert Corporation.
    - h. Metalcrete Industries.
    - i. Sika Corporation.
    - j. SpecChem, LLC.
    - k. W. R. Meadows, Inc.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
  - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. BASF Corporation.
    - b. ChemMasters, Inc.
    - c. Dayton Superior.
    - d. Euclid Chemical Company.
    - e. Kaufman Products, Inc.
    - f. L&M Construction Chemicals, Inc.
    - g. Lambert Corporation.
    - h. SpecChem, LLC.
    - i. W. R. Meadows, Inc.
- G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating.
  - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. BASF Corporation.
    - b. ChemMasters, Inc.
    - c. Dayton Superior.
    - d. Euclid Chemical Company.
    - e. Kaufman Products, Inc.

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- f. L&M Construction Chemicals, Inc.
  - g. Lambert Corporation.
  - h. Metalcrete Industries.
  - i. SpecChem, LLC.
  - j. W. R. Meadows, Inc.
- H. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating.
  - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. BASF Corporation.
    - b. ChemMasters, Inc.
    - c. Dayton Superior.
    - d. Euclid Chemical Company.
    - e. L&M Construction Chemicals, Inc.
    - f. Lambert Corporation.
    - g. Metalcrete Industries.
    - h. SpecChem, LLC.
    - i. W. R. Meadows, Inc.

#### 2.7 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field data methods, or both, according to ACI 301. Use an independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures. Trial batch and field experience tests shall have been performed within 12 months of submittal date. Use mix design submittal form included at the end of this section.
  - 1. Do not use the same testing agency for field quality control testing.
- B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Architect. The approved mix designs shall be used throughout this project unless changes are approved by the Architect/Engineer prior to use.
- C. Cementitious Materials: Supplier shall coordinate surface treatment compatibility with cementitious materials. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  - 1. Fly Ash: 20 percent for Type F or 25% for Type C.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete as required for placement and workability and in all pumped concrete.
  - 2. Use accelerating and retarding admixtures at Contractor's discretion to control set time when required by extreme temperatures or humidity, or other adverse placement conditions. Use accelerating admixture in concrete slabs placed at ambient temperatures below 35 deg F.

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- E. The minimum compressive strength measured 28 days after placement ( $f'_c$ ), minimum cementitious content, slump, maximum water/cementitious content ratio (W/C), and air content of the concrete for each portion of the structure shall be as follows:
1. Class 1. Lean Concrete Backfill and Mudmats. Normal-weight concrete.
    - a. Minimum Compressive Strength: 2,000 psi.
    - b. Minimum Cementitious Material: 200 lbs/cy.
    - c. Slump Limit: N/A.
    - d. Air Content: Natural.
  2. Class 2. Footings and Piers. Normal-weight concrete.
    - a. Minimum Compressive Strength: 3,000 psi.
    - b. Minimum Cementitious Material: 470 lbs/cy.
    - c. Maximum W/C Ratio: 0.50.
    - d. Slump Limit: Minimum of 4 inches and maximum of 6 inches, plus or minus 1 inch.
    - e. Air Content: Natural.
  3. Class 3. Piers and Walls. Normal-weight concrete.
    - a. Minimum Compressive Strength: 4,000 psi.
    - b. Minimum Cementitious Material: 550 lbs/cy. With an approved water-reducing agent, minimum cement content may be reduced by 47 pounds of cement per cubic yard.
    - c. Maximum W/C Ratio: 0.48.
    - d. Water Reducing Admixture: Optional.
    - e. Slump Limit: Maximum 4 inches or 8 inches after adding admixture to 2-to-3-inch slump concrete, plus or minus 1 inch.
    - f. Air Content: Natural.
  4. Class 4. Interior Slab on Grade, Normal-weight concrete.
    - a. Minimum Compressive Strength: 4,000 psi.
    - b. Minimum Cementitious Material: 505 lbs/cy.
    - c. Maximum W/C Ratio: 0.48.
    - d. Water Reducing Admixture: Mandatory.
    - e. Slump Limit: Maximum 8 inches after adding water reducing admixture to 2-to-3-inch slump concrete, plus or minus 1 inch.
    - f. Air Content: Maximum 3 percent.
  5. Class 5. Exterior horizontal concrete exposed to weather or deicer chemicals, and exterior equipment bases. Normal-weight concrete.
    - a. Minimum Compressive Strength: 4,500 psi.
    - b. Minimum Cementitious Material: 564 lbs/cy.
    - c. Maximum W/C Ratio: 0.45.
    - d. Water Reducing Admixture: Optional.
    - e. Slump Limit: 4 inches or not more than 8 inches after adding admixture to 2-to-3-inch slump concrete, plus or minus 1 inch.
    - f. Air Content: 5.5 percent for 1 ½-inch maximum aggregate.  
6.0 percent for 1-inch maximum aggregate.  
6.0 percent for ¾-inch maximum aggregate.  
7.0 percent for ½-inch maximum aggregate.

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- F. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work.

#### 2.8 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

#### 2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.
  - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.
  - 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  - 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
  - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder, and other related materials with placement of forms and reinforcing steel.

#### 3.2 FORMWORK INSTALLATION

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of correct size, shape, lines, alignment, elevation, position, level, plumb, and dimension and indicated. Maintain formwork construction tolerances and surface irregularities within limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
  - 1. Class A, 1/8 inch tolerances for smooth-formed concrete surfaces exposed to view.
  - 2. Class D tolerances for earth formed foundation elements. Tolerance applies as a variation inward towards reinforcing only. No tolerance limit away from reinforcing applies.
  - 3. Class C, 1/2 inch tolerances for other concrete surfaces.
- D. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

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- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- F. Earthen forms may be used for footings and foundation elements when ground is stable and capable of resisting erosion and fluid pressure of wet concrete without sloughing. All tolerances and clear covers shall be maintained. Excavation shall be clean of all loose soil and mud along bottom and sides.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- H. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
  - 1. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed.
  - 2. Do not spray reinforcing with form oil.
  - 3. Coat steel forms with a nonstaining, rust-preventative material. Do not use rust-stained steel form-facing material.

#### 3.3 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with Concrete Reinforcing Steel Institute's (CRSI) "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Deliver reinforcement to job site bundled, tagged and marked. Use waterproof tags indicating bar size, length, and mark corresponding to placing drawings.
- C. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- D. When permitted, field bend bars cold, except during cold weather when moderate heating is necessary to avoid brittle failures.
- E. Accurately position, support, and secure all bar reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum coverages as indicated for concrete protection.
  - 1. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations.
  - 2. All walls shall have chairs or bolsters placed between reinforcing mat(s) and both form faces spaced a maximum of 6 feet on center to maintain clear cover.
- F. Install welded- wire fabric reinforcement in longest practicable lengths on fabric supports spaced to minimize sagging. Lap edges and ends of adjoining pieces at least one full mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace outermost cross wires of lace splices with wire to prevent lifting of the ends during concrete placement.

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1. Chair welded wire fabric slab reinforcement with continuous chairs spaced a maximum of 32 inches on center. Provide additional chairs as required. Lift welded wire fabric back into position between chairs where depressed during concrete placement. Lifting welded wire fabric into position during concrete placement without the use of chairs is not permitted.
- G. Weld reinforcing bars and fabric, only where indicated, according to AWS D1.4. Do not tack weld crossing reinforcing bars.

#### 3.4 PLACING ADHESIVE SYSTEM

- A. General: Clean all holes per manufacturer instructions to remove loose material and drilling dust prior to installation of adhesive. Holes may be dry, damp or wet. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive. Follow manufacturer recommendations to ensure proper mixing of adhesive components. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface. Remove excess adhesive from the surface. Shim anchors with suitable device to center the anchor in the hole. Do not disturb or load anchors before manufacturer specified cure time has elapsed.
  1. Drill holes with rotary impact hammer drills using carbide-tipped bits and core drills using diamond core bits. Drill bits shall be of diameters as specified by the anchor manufacturer. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
  2. Cored Holes: Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer. Acrylic Adhesive Anchors shall not be installed in core drilled holes.
  3. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling.
  4. Observe manufacturer recommendations with respect to installation temperatures for cartridge injection adhesive anchors and capsule anchors.
  5. Perform anchor installation in accordance with manufacturer instructions.

#### 3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints in Reinforced Structure and Foundations: Locate and install construction joints so they do not impair strength or appearance of the structure, at locations indicated or otherwise as acceptable to Architect.
  1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  2. Form continuous keyways as indicated. Embed keys at least 1-1/2 inches into concrete. Provide keyways 1/3 the member thickness, or 3 1/2" minimum, in footings.
  3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  4. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Construction Joints in Slab on Grade: Provide slip dowels (as shown on drawings) for construction joints in field of slabs on grade less than 6" thickness.



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1. Prefabricated pourstop with keyway may be used for simultaneous placement of adjacent slab panel at Contractor's option, where approved by Architect. Use leave-in-place joint system which is compatible with floor finish or treatment system.
  2. Where construction joints at doorways that align with both faces of bearing wall are specified, utilize preformed pourstop with keyway in lieu of slip dowels.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
  2. Terminate full-width joint-filler strips flush with top of slab to prevent contact or bonding between the slab and the adjoining member. Use strips with perforated strips that remove the top portion to be not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants are indicated.
  3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
  4. At locations where drawings do not specifically call for premolded filler, provide bond breaker between slab and vertical surface. The vapor retarder may be turned up and used for this purpose.
  5. Provide 1/4" expansion joint between slab and all door jambs (at end of walls in opening).
- E. Contraction (Control) Joints in Slabs-on-Grade: Construct weakened-plane contraction joints, sectioning concrete into areas as indicated, and to a depth equal to at least one-fourth depth of concrete thickness as follows: .
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groove-tool marks on concrete surfaces.
  2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
  3. Contraction joints may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
  4. If joint pattern is not shown, provide joints not exceeding 15 feet in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
  5. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."

### 3.6 VAPOR RETARDER INSTALLATION

- A. Sheet vapor retarders and barriers: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions. Place sheeting in position with longest dimension parallel with direction of pour.
1. Extend film fully over slab area to the full perimeter of the slab. Turn film up 2" onto surrounding wall and seal to vertical element with continuous mastic or tack tape capable of adhering to concrete and masonry. Film and tape shall not extend above finished floor.
    - a. Where obstructed by impediments (such as dowels, waterstops, or any other site condition requiring early termination of the vapor retarder). At the point of termination, seal vapor barrier to the foundation wall or slab itself. Use manufacturer's recommended accessories for such non-standard terminations.



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2. Lap joints 6 inches and seal with manufacturer's recommended mastic or pressure-sensitive tape.
  3. Apply seam tape to a clean and dry film only.
- B. Seal around all penetrations (including all conduit and pipes) through film with manufacturer's recommended mastic or pressure-sensitive tape. Cut slit around penetrations to place initial layer of film.
1. For small penetrations, tape film directly to the penetrating element.
  2. For penetrations larger than 2", create collar for penetration of 12" wide by 1 ½ times the penetration's circumference with fingers cut half the width of the film. Wrap the collar around the penetration, tape the collar onto the strip of film, and tape the fingers at each edge/slit to the initial layer of film.
- C. Avoid the use of non-permanent stakes driven through film. If non-permanent stakes are driven through film, repair and seal as recommended by film manufacturer.
- D. Repair damaged areas of film material of similar (or better) permeance, puncture resistance, and tensile strength.

#### 3.7 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, 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. Concrete delivery tickets shall show:
1. Batch number.
  2. Mix by number with cement content in pounds and maximum size aggregate.
  3. Admixtures.
  4. Air content.
  5. Slump.
  6. Time dispatched and discharged.
  7. Date.
  8. Contractor.
  9. Ready Mix Supplier.
  10. Project Name and Address.
  11. Volume of Concrete.
- C. Do not add water to the concrete mix during delivery, at Project site, or during placement unless approved by the General Contractor's representative, noted on the delivery ticket with the amount of water, and signed by the General Contractor's representative. The maximum water/cement ratio of an approved mix design may not be exceeded.
1. When the ambient air temperature is between 80 and 90 degrees Fahrenheit, one (1) gallon of water per cubic yard of concrete may be added at the job site to compensate for water evaporation during transit.
  2. When the ambient air temperature exceeds 90 degrees Fahrenheit, two (2) gallons of water per cubic yard of concrete may be added at the job site to compensate for water evaporation during transit.
  3. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

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- D. Discharge concrete within 1 ½ hours after water has been added to the cement, unless a longer time has been authorized by the Architect/Engineer. During hot weather or other conditions contributing to a quick stiffening of the concrete, the Architect/Engineer may require discharge in less than 1 ½ hours.
- E. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation. Do not allow concrete to drop more than 5 feet or from a height which allows concrete to fall against reinforcing.
  - 1. Deposit concrete in forms in horizontal layers of depth not to exceed formwork design pressures 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. Do not subject concrete to any procedure that will cause segregation. Deposit concrete as near as possible to the final position to avoid segregation.
  - 2. 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 301.
  - 3. 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.
- F. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in proper position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- G. Cold-Weather Placement: When air temperature is expected to fall below 40 degrees Fahrenheit (4 deg C) within the first 72 hours after concrete placement, comply with provisions of ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When mean daily air temperature is expected to fall below 40 deg F (4 deg C) for more than three successive days after concrete placement, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature at point of placement as follows:
    - a. Not less than 55 deg F (13 deg C) or more than 75 deg F (24 deg C) for concrete sections less than 12 inches in the least dimension (width or thickness).
    - b. Not less than 50 deg F (10 deg C) or more than 70 deg F (21 deg C) for concrete sections 12 inches or greater in the least dimension (width or thickness).

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2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305.1 and as specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
  3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
  4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.
- I. Pumping Concrete: Grout used to prime a pump shall not be placed in the forms of any concrete exposed to view in the final structure.

#### 3.8 FINISHING SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds (thick-set) for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and where indicated.
1. Slope surfaces uniformly to drains where required. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
- C. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.
1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units.
  2. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied floor covering system.
  3. Finish surface to specified tolerances for floor flatness and floor levelness measured according to ASTM E 1155. Minimum local values shall be 2/3 of the specified composite F-number. Unless otherwise shown or noted on the drawings, comply with the following table:

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### CAST-IN-PLACE CONCRETE

Slabs on Grade and Formed Elevated Concrete Slabs (Shored Construction)		
Composite Flatness F(F)	Composite Levelness F(L)	Typical Use
35	25	Surfaces to receive carpet or thin-set flooring, light traffic (foot) areas in office and industrial buildings

- D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply a trowel finish as specified, then immediately follow by slightly scarifying the surface with a fine broom.
  - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- E. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
  - 1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

#### 3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

#### 3.10 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Compatibility: Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- C. For cold-weather protection during curing, comply with ACI 306.1 and the following:
  - 1. All freshly placed concrete shall be kept from freezing for the following periods:
    - a. 3 days for all concrete with an air entraining admixture.
    - b. 4 days for all concrete without an air entraining admixture.
  - 2. A cumulative curing time of seven days at a minimum surface temperature of 50 degrees F (10 degrees C) shall be provided or until concrete has attained 75% of its design strength. This shall be followed by cooling of concrete in a gradual transition to surrounding conditions. The temperature drop during this period shall not be at a rate exceeding 2 degrees F per hour until the outside or surrounding temperature is reached.
  - 3. When concrete is placed under conditions of cold weather concreting (defined as a period when the mean daily temperature drops below 40 degrees F for more than three

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successive days), take additional precautions as specified in "Cold Weather Concreting" by the American Concrete Institute (ACI Report 306) when placing, curing, monitoring and protecting the fresh concrete.

- D. For hot-weather protection during curing, comply with ACI 301 and the following:
1. When concrete is placed under conditions of hot weather concreting, provide extra protection of the concrete against excessive placement temperatures and excessive drying throughout the placing and curing operations. Hot weather is defined as air temperature which exceeds 80 degrees F or any combination of high temperature, low humidity and/or high wind velocity which causes a rate of evaporation in excess of 0.2 pounds per square foot per hour as determined by Figure 2.1.5 of ACI Report 305. Hot weather curing is required if these conditions occur within a 24 hour period after completion of concrete placement.
  2. Forms, reinforcing and the air shall be cooled by water fog spraying immediately before placing concrete.
  3. Immediately following screeding, protect concrete by applying the specified evaporation retarder in accordance with the recommendations of the manufacturer.
- E. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- F. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
1. Cure interior and exterior slab surfaces exposed to deicing salts and slabs where the finish flooring is not compatible with curing compounds by Moisture Curing.
- G. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
    - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

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3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
  - a. Curing Polished Concrete Surface: Apply UV dissipative curing compound as soon as possible after the concrete receives its final finishing.
  - b. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

#### 3.11 LIQUID FLOOR TREATMENT APPLICATION

- A. General: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
  1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
  2. Do not apply to concrete that is less than seven days' old.
  3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.
- C. Penetrating Concrete Sealer
  1. Apply penetrating concrete sealer to all concrete floor surfaces exposed to view in the finished structure.
  2. Coverage rate shall be 300 square feet (maximum) per gallon.

#### 3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
- B. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
- C. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

#### 3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water. Use only enough liquid as required for handling and placing.

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- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried.
  - 2. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
  - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  - 2. After concrete has cured at least 14 days, correct high areas by grinding.
  - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  - 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
  - 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  - 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  - 7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair methods not specified above may be used, subject to acceptance of Architect.
- G. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.



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### CAST-IN-PLACE CONCRETE

#### 3.14 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: The General Contractor shall employ a testing agency which meets the requirements of ASTM E329 to perform tests and to submit test reports. The agency will monitor concrete quality by means of site and laboratory tests. They will be authorized to reject plastic concrete not conforming to specifications. They will immediately inform the Contractor, the Architect and the Structural Engineer of inadequacies in concrete quality. Failure to detect any defective materials shall not prevent later rejection when such defect is discovered, or obligate the Architect or Owner for final acceptance.
- B. Sampling and testing for quality control during concrete placement shall include the following:
  - 1. Sampling Fresh Concrete: ASTM C 172.
    - a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
    - b. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
    - c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
    - d. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
    - e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. plus additional sets for each 50 cu. yd. more than the first 25 cu. yd. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
  - 2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
  - 3. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
  - 4. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.
- C. Test results will be reported in writing to Architect, Structural Engineer, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- E. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in



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the structure, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION 03300

## SECTION 04080

### MASONRY ANCHORAGE AND REINFORCEMENT

#### 04080 MASONRY ANCHORAGE AND REINFORCEMENT

##### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Continuous wire reinforcement.
- B. Masonry anchors and ties.
- C. Veneer anchors and ties.
- D. Miscellaneous Accessories.

##### 1.2 REFERENCES

- A. ACI 530.1/ASCE 6/TMS 602 - Specifications for Masonry Structures.
- B. American Society for Testing and Materials (ASTM) A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- C. American Society for Testing and Materials (ASTM) A153/A 153/M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. American Society for Testing and Materials (ASTM) A 167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- E. American Society for Testing and Materials (ASTM) A 276 - Standard Specification for Stainless Steel Bars and Shapes.
- F. American Society for Testing and Materials (ASTM) A 185 - Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
- G. American Society for Testing and Materials (ASTM) A370 - Standard Test Methods and Definitions for Mechanical Testing of Steel Products.
- H. American Society for Testing and Materials (ASTM) A525 - Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- I. American Society for Testing and Materials (ASTM) A570- Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled.
- J. American Society for Testing and Materials (ASTM) A580 - Standard Specification for Stainless Steel Wire.
- K. American Society for Testing and Materials (ASTM) A 666 - Specification for Stainless Steel Strip, Plate and Flat Bar for Structural Applications.
- L. American Society for Testing and Materials (ASTM) A 951 - Masonry Joint Reinforcement.
- M. Canadian Standards Association (CSA) A370 - Connectors for Masonry.
- N. Canadian Standards Association (CSA) G30.3 - Cold-Drawn Steel Wire for Concrete Reinforcement.
- O. Canadian Standards Association (CSA) A371 - Masonry for Buildings.

## SECTION 04080

### MASONRY ANCHORAGE AND REINFORCEMENT

#### 1.3 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. [ [Product Data](#) ]: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### 1.5 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Blok-Lok Ltd., which is located at: 30 Millwick Dr. ; Weston, ON, Canada M9L 1Y3; Toll Free Tel: 800-561-3026; Tel: 416-749-1010; Fax: 416-749-1017; Email: [request info](#); Web: [www.blok-lok.com](http://www.blok-lok.com) .
- B. Requests for substitutions will be considered in accordance with provisions of Division 1.

#### 2.2 PRODUCTS

- A. Wire Reinforcements: New construction and additions.
  - 1. Reinforcing shall be wire conforming to ASTM A82 and CSA G30.3 complying with applicable building code approval.
  - 2. Spacing of longitudinal rods shall be approximately 2 Inches (51 mm) less than the nominal wall thickness. Refer to drawings for wall thickness.
  - 3. Single Wythe Walls:
    - a. Heavy Duty: 3/16 inch (4.76 mm) longitudinal wire and 9 ga. (3.66 mm) cross wire.
    - b. Hot Dipped Galvanized After Fabrication: Wire; ASTM A82 CSA G30-3. Coating; ASTM A153 Class B2.
  - 4. Composite Walls:
    - a. Type BL-, size as required, as manufactured by BLOK-LOK Ltd.
    - b. Standard: 9 ga. (3.66 mm).
    - c. Hot Dipped Galvanized After Fabrication: Wire; ASTM A82 CSA G30-3. Coating; ASTM A153 Class B2.

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### MASONRY ANCHORAGE AND REINFORCEMENT

5. Cavity Walls:
  - a. BL-, as manufactured by BLOK-LOK Ltd.
    - 1) Tie Size: Refer to drawings for wall make-up.
  - b. Standard: 9 ga. (3.66 mm).
  - c. Hot Dipped Galvanized After Fabrication: Wire; ASTM A82 CSA G30-3. Coating; ASTM A153 Class B2.
- B. Continuous Reinforcement Accessories:
  1. Fabricated corner and partition accessories shall be used to form continuous reinforcement around corners and to anchor intersecting walls. Accessory shall be of corresponding type and design to that used in the adjoining walls.
    - a. Corner-Lok as manufactured by BLOK-LOK Ltd.
    - b. Partition-Lok as manufactured by BLOK-LOK Ltd.
- C. Anchors and Ties:
  1. Refer to drawings for wall construction and tie size required.
  2. Finish: Hot Dipped Galvanized: Wire; ASTM A570. Coating; ASTM A525 G165.
  3. Type A Adjustable Tie: BLT-, size as required, as manufactured by BLOK-LOK Ltd.
  4. Channel slot adjustable anchor: BLT3 16 ga. (1.5 mm) as manufactured by BLOK-LOK Ltd.
    - a. Hot-dip galvanized.
  5. Channel Slot Adjustable Anchor: BLT3 11 ga. (3.0 mm) as manufactured by BLOK-LOK Ltd.
    - a. Hot-dip galvanized.
    - b. 11.Corrugated channel slot tie: BLT4 16 ga. (1.5 mm) as manufactured by BLOK-LOK Ltd.
    - c. Hot-dip galvanized.
  6. Corrugated Channel Slot Tie: BLT4 12 ga. (2.7 mm) as manufactured by BLOK-LOK Ltd.
    - a. Hot-dip galvanized.
  7. Wire Channel Slot Tie: BLT5 as manufactured by BLOK-LOK Ltd.
    - a. Hot-dip galvanized.
  8. Dovetail Slot Anchor: Galvanized BLT8 as manufactured by BLOK-LOK Ltd.
  9. Dovetail Wire Tie: Galvanized D/T Flex-O-Lok as manufactured by BLOK-LOK Ltd.
  10. Dovetail Strap Tie: Galvanized D/T Masonry Anchor as manufactured by BLOK-LOK Ltd.
  11. Masonry Wall Tie: Z Bars BLT6 as manufactured by BLOK-LOK Ltd. 3/16 inch (4.76 mm).
    - a. Hot-dip galvanized.
  12. Masonry Rectangular Wall Tie: BLT7 as manufactured by BLOK-LOK Ltd. 3/16 inch (4.76 mm).

## SECTION 04080

### MASONRY ANCHORAGE AND REINFORCEMENT

- a. Hot-dip galvanized.
- 13. Column Wall Tie: Column-Lok BLT10 as manufactured by BLOK-LOK Ltd. 3/16 inch (4.76 mm).
- 14. Masonry Anchor: Hot dipped galvanized BLT11 as manufactured by BLOK-LOK Ltd. 3/16 inch (4.76 mm).
- D. Adjustable Veneer Anchors (wood, metal stud, existing masonry or concrete back-up):
  - 1. Refer to drawings for wall construction and tie size required.
  - 2. Screws and washers not provided.
  - 3. Adjustable Veneer Wire Tie Anchor/Fastener:
    - a. BL-407/for metal or wood stud as manufactured by BLOK-LOK Ltd.
      - 1) Hot-dip galvanized.
    - b. BL-5407/for existing concrete or masonry back-up, fastener included as manufactured by BLOK-LOK Ltd.
      - 1) Hot-dip galvanized.
    - c. BL-607 as manufactured by BLOK-LOK Ltd.
      - 1) Hot-dip galvanized.
  - 4. Wire Tie: Galvanized Flex-O-Lok BLT9 as manufactured by BLOK-LOK Ltd.
    - 1) Hot-dip galvanized.
  - 5. Wire Tie: Flex-O-Lok BLT9 Seismic as manufactured by BLOK-LOK Ltd.
    - 1) Hot-dip galvanized.
  - 6. Wire Tie: Flex-O-Lok Column Web Tie BLT9A as manufactured by BLOK-LOK Ltd.
    - 1) Hot-dip galvanized.
- E. Miscellaneous Accessories:
  - 1. Insulation Retainer: Wedge-Lok as manufactured by BLOK-LOK Ltd
  - 2. Insulation Retainer Plate.
    - a. Hot dip Galvanized.
  - 3. Cell Vent as supplied by BLOK-LOK Ltd.
  - 4. Rubber Extruded Control Joint: Titewall BL-A as manufactured by BLOK-LOK Ltd.
  - 5. PVC Extruded Control Joint Titewall BL-B as manufactured by BLOK-LOK Ltd.
  - 6. Stainless Steel Drip Edge:
    - a. 1-1/2" wide with 3/8" hemmed drip edge.
    - b. 3" wide with 3/8" hemmed drip edge.
    - c. Type 304 SS.
    - d. Finish 2B/2D.

## SECTION 04080

### MASONRY ANCHORAGE AND REINFORCEMENT

#### PART 3 EXECUTION

##### 3.1 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

##### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Continuous Reinforcement.
  - 1. Place reinforcing to assure 5/8 inch (16 mm) minimum mortar cover on the exterior face unless otherwise noted.
  - 2. Provide horizontal joint reinforcement at the top course immediately below roof and floor levels and the first two courses above and below wall openings. The reinforcement shall extend 24 inches (609 mm) beyond openings.
  - 3. Provide continuous reinforcement with 6 inches (150 mm) overlap at all splices. Reinforcement shall not pass through control joints unless otherwise specified. Reinforcement used for bonding wythes only, need not have an overlap at splices; refer to drawings.
  - 4. Set reinforcement on the wall in advance of the mortar and positioned to provide a minimum of 5/8 inches (16 mm) of mortar cover between the reinforcement and the exterior face of the masonry. After the mortar is applied, lift the reinforcement slightly to allow mortar to surround the wires.
  - 5. Space joint reinforcement in the wall in accordance with applicable code requirements, and not less than CAN 3-A370.
  - 6. Follow placement procedures for masonry reinforcement to comply with applicable code requirements, and not less than CAN 3-A370 and CSA 371.
- C. Reinforcement and Anchorage - Cavity Wall Masonry:
  - 1. Install wall ties per drawings and details.
  - 2. Place individual wire or sheet metal ties into mortar after the mortar is placed. Prevent hollow spots from forming under sheet material to prevent water penetrating the masonry.
  - 3. Embed anchors attached to structural members. Embed anchors in every second block.
  - 4. Reinforce joint corners and intersections with strap anchors 16 inches (406 mm) on center.

END OF SECTION



## SECTION 04220

### CONCRETE UNIT VENEER MASONRY

#### 04220 CONCRETE UNIT VENEER MASONRY

##### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Division 01 Sections, Drawings, General Conditions, Supplementary Conditions, and Special Conditions apply to this section.

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Concrete masonry units (CMUs).
  - 2. Mortar and grout.
  - 3. Masonry joint reinforcement.
  - 4. Ties and anchors.
  - 5. Embedded flashing.
  - 6. Control joint materials.
- B. Products installed, but not furnished, under this Section:
  - 1. Metal Fabrication for steel lintels and shelf angles for unit masonry.
  - 2. Sheet Metal Flashing and Trim.

##### 1.3 REFERENCES

- A. TMS 602/ACI 530.1/ASCE 6 2011 Specification for Masonry Structures.
- B. ASTM International (latest versions):
  - 1. ASTM A82/A82M Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - 2. ASTM A153/A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 3. ASTM A951/A951M Standard Specification for Masonry Joint Reinforcement.
  - 4. ASTM A1008/A1008M Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
  - 5. ASTM C90 Standard Specification for Loadbearing Concrete Masonry Units.
  - 6. ASTM C150/C150M Standard Specification for Portland Cement.
  - 7. ASTM C270 Standard Specification for Mortar for Unit Masonry.
  - 8. ASTM C920 Standard Specification for Elastomeric Joint Sealants.
  - 9. ASTM D226 Standard Specification for Asphalt-saturated Organic Felt Used in Roofing and Waterproofing.



## SECTION 04220

### CONCRETE UNIT VENEER MASONRY

#### 1.4 SUBMITTALS

- A. Obtain written acceptance of submittals prior to use of the following:
  - 1. Submit mix designs:
    - a. Pre-blended mortar: mix design indicating types and proportions of materials according to proportion specification of ASTM C270.
  - 2. Submit material certificates for each of the following certifying compliance:
    - a. Concrete masonry units.
    - b. Anchors, ties, fasteners, and metal accessories.
    - c. Elastomeric joint sealants.
- B. Samples for Verification: For each type and color of the following:
  - 1. Concrete masonry units.
- C. Mortar, for color selection or confirmation.

#### 1.5 QUALITY ASSURANCE

- A. Sample Panels: Construct an approximate 4' wide by 4' high panel for representation of completed masonry, joint tooling, design details, and workmanship. If it is desirable to demonstrate particular units or areas of critical detailing, specify them in the following, otherwise delete it.
  - 1. Install the following in the sample panel:
    - a. Split-Face veneer.
    - b. Cast Stone Cap block.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect all materials of this section to maintain quality and physical requirements.
- B. Store all masonry units on the jobsite so that they are protected from rain, stored off-ground and kept free of contamination.
- C. Store SPEC MIX pre-blended mortar mix in manufacturer's original, unopened, undamaged containers with identification labels intact, covered and protected from weather, or in a SPEC MIX dispensing silo.

#### 1.7 FIELD CONDITIONS

- A. Cover top of unfinished masonry work to protect it from the weather.
- B. Cold-weather procedures when ambient temperature falls below 40°F (4°C) or the temperature of masonry units is below 40°F (4°C):
  - 1. Do not install wet or frozen units.

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### **CONCRETE UNIT VENEER MASONRY**

2. Implement cold weather construction procedures in accordance with TMS 602/ACI 530.1/ASCE 6 Article 1.8 C.
- C. Hot-weather procedures when ambient temperature exceeds 100°F (38°C), or exceeds 90°F (32°C) with a wind velocity greater than 8 mph:
- D. Implement hot weather construction procedures in accordance with TMS 602/ACI 530.1/ASCE 6 Article 1.8 D.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURER**

- A. Concrete masonry units:
  1. Lee Brick & Block Co., Inc.
  2. York Building Products
  3. Oldcastle Masonry
- B. Preblended mortar:
  1. SPEC MIX Preblended Mortar Mix, by E-Z Mix, Inc.
- C. Grout additive:
  1. PRE-MIX Products Grout Additive, by E-Z Mix, Inc.

### **2.2 CONCRETE MASONRY UNITS**

- A. Concrete Masonry Units: ASTM C90.
  1. Weight Classification: Medium Weight unless otherwise indicated.
  2. Color(s) and texture(s):
    - a. To be selected from Manufacturer's Standard options.
  3. Size(s):
    - a. Primarily 4"x8"x16" – variations and specialty masonry units to be selected from Manufacturer's Standard options.

### **2.3 MORTAR MATERIALS**

- A. SPEC MIX Masonry Mortar Type S pre-blended factory mix: ASTM C270 and ASTM C1714/C1714M.
  1. Natural gray color.
- B. Water: Potable.
- C. Admixtures:
  1. Do not use admixtures except as specified herein, or as approved by the Design Professional and the Building Official.

## SECTION 04220

### CONCRETE UNIT VENEER MASONRY

#### 2.4 REINFORCEMENT AND METAL ACCESSORIES

- A. Provide metal reinforcement and accessories conforming to TMS 602/ACI 530.1/ASCE 6 Article 2.4.
- B. Masonry Joint Reinforcement: ASTM A951/A951M.
  - 1. Masonry joint reinforcement used in exterior walls shall be hot-dipped galvanized, conforming to ASTM A153, Class B, minimum coating of 1.5 oz./ft<sup>2</sup>.
  - 2. Provide continuous single wire joint reinforcement of wire size W1.7 (MW11).
- C. Sheet Metal Anchors and Ties: ASTM A1008/A1008M.
  - 1. Sheet metal anchors and ties used in exterior walls shall be hot-dipped galvanized, conforming to ASTM A153, Class B.
- D. Wire Ties and Anchors: ASTM A82.
  - 1. Wire ties and anchors used in exterior walls shall be hot-dipped galvanized, conforming to ASTM A153, Class B, minimum coating of 1.5 oz./ft<sup>2</sup>.
  - 2. Anchor shall provide a hook, clip, notch, or other means to mechanically engage the joint reinforcement.

#### 2.5 WATER-RESISTIVE BARRIER

- 1. Provide No. 15 asphalt felt, complying with ASTM D226 for Type 1.

#### 2.6 FLASHING MATERIALS

- A. Provide metal flashing in accordance with Section 07 62 00 Sheet Metal Flashing and Trim.

#### 2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Control joint materials:
  - 1. Elastomeric joint sealer per ASTM C920.
  - 2. Use size and shape of joint filler per joint sealer manufacturer recommendations.

#### 2.8 MASONRY CLEANER

- A. Use potable water and detergents to clean masonry unless otherwise approved.
- B. Do not use acid or caustic solutions unless otherwise approved.

#### 2.9 MIXING

- A. Mortar:
  - 1. Mix SPEC MIX Masonry Mortar pre-blended factory mix per manufacturer's recommendations.

## SECTION 04220

### CONCRETE UNIT VENEER MASONRY

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Prior to the start of masonry installation, verify all conditions pertinent to the performance of work in this Section are acceptable.
- B. Proceed with masonry work only after unsatisfactory conditions have been corrected.

##### 3.2 INSTALLATION

- A. Select and arrange units for exposed masonry to produce a uniform blend of colors and textures.
  - 1. Mix units from several pallets or cubes as they are placed.
- B. Construct masonry veneer in compliance with TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6.
- C. Cut units as required to fit; use motor-driven masonry saw. Install cut units with cut surfaces edges concealed as much as possible.
- D. Lay dry units only, unless otherwise approved.
- E. Select and arrange units for exposed masonry to produce a uniform blend of colors and textures.
  - 1. Mix units from several pallets or cubes as they are placed.
- F. All masonry shall be laid true, level, plumb, and in accordance with the drawings.
- G. Lay exposed masonry in running bond unless otherwise indicated in Project Drawings.

##### 3.3 MORTAR BEDDING AND JOINTING

- A. Place mortar in accordance with TMS 602/ACI 530.1/ASCE 6 Article 3.3 B.
- B. Initial bed joint shall not be less than 1/4 in. or more than 3/4 in.
- C. All head and bed joints, except initial bed joints, shall be a nominal 3/8 in. thick, unless otherwise required.
- D. Lay solid units with full head and bed joints. Do not fill head joints by slushing with mortar. Bed joints shall not be furrowed deep enough to produce voids.
- E. All mortar joints on exposed walls shall be concave, unless otherwise indicated, and struck to produce a dense, slightly concave surface well bonded to the surface of the masonry unit.

## SECTION 04220

### CONCRETE UNIT VENEER MASONRY

- F. Remove and re-lay in fresh mortar any unit that has been disturbed to the extent the initial bond is broken.

#### 3.4 MASONRY JOINT REINFORCEMENT, TIES, AND ANCHORS

- A. Embed joint reinforcement, ties, and anchors with minimum 5/8 in. cover to outside face.
- B. Place single wire joint reinforcement at maximum spacing of 18 in. on center vertically. Mechanically attach anchors to the joint reinforcement with clips or hooks.

#### 3.5 WATER-RESISTIVE BARRIER

- A. Attach No. 15 asphalt felt to the studs or sheathing, incorporating flashing as shown on the drawings.

#### 3.6 CONTROL AND EXPANSION JOINTS

- A. Construct control joints as detailed in the drawings as masonry progresses.

#### 1.FIELD QUALITY CONTROL

- a. Inspection tasks and frequency shall be performed in accordance with the Statement of Special Inspections.

#### 3.7 POINTING, AND CLEANING

- A. Point and tool holes in mortar joints to produce a uniform, tight joint.
- B. During construction, minimize any mortar or grout stains on the wall. Immediately remove any staining or soiling that occurs.
  - 1. For precision or textured units, except as noted below, clean masonry by dry brushing before tooling joints.
  - 2. For burnished, glazed, or pre-finished concrete masonry units, immediately remove any green mortar smears or soiling with a damp sponge.
- C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry surfaces of stains, efflorescence, mortar or grout droppings, and debris.
  - 1. Use appropriate masonry cleaner as tested on the sample panel and as approved by the Design Professional, strictly following manufacturer's recommendations.
  - 2. Do not use acids.
- D. At completion of masonry work, remove all scaffolding and equipment used during construction, and remove all debris, refuse, and surplus masonry material from the site.
  - 1. Comply with Construction Waste Management plan.

## **SECTION 04220**

### **CONCRETE UNIT VENEER MASONRY**

#### **3.8 WATER REPELLENT APPLICATION**

- A. Cleaning shall be complete and accepted by the Design Professional, and wall surfaces shall be thoroughly dry.
- B. Apply water repellent in strict accordance with the water repellent manufacturer's instructions

End of Section



## SECTION 04720

### CAST STONE

#### 04720 CAST STONE

##### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Cast stone veneer. (Heartland Series).

##### 1.2 REFERENCES

- A. American Concrete Institute (ACI): ACI 530 - Building Code Requirements for Masonry Structures.
- B. ASTM International (ASTM):
  - 1. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
  - 2. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
  - 3. ASTM C 33 - Standard Specification for Concrete Aggregates.
  - 4. ASTM C 140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
  - 5. ASTM C 150 - Standard Specification for Portland Cement.
  - 6. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
  - 7. ASTM C 270 - Standard Specification for Mortar for Unit Masonry.
  - 8. ASTM C 426 - Standard Specification for Linear Drying Shrinkage of Concrete Masonry Units.
  - 9. ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.
  - 10. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Concrete.
  - 11. ASTM C 666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
  - 12. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete.
  - 13. ASTM C 989 - Standard Specification for Slag Cement for Use in Concrete and Mortars.
  - 14. ASTM C 1194 - Standard Specification for Compressive Strength of Architectural Cast Stone.
  - 15. ASTM C 1195 - Standard Specification for Absorption of Architectural Cast Stone.
  - 16. ASTM C 1364 - Standard Specification for Architectural Cast Stone.
- C. Architectural Precast Association (APA): Factory certification.
- D. Cast Stone Institute: Technical Manual.
- E. National Concrete Masonry Association (NCMA):
  - 1. NCMA TEK Bulletin 5-2A - Clay and Concrete Masonry Banding Details" for guidelines.
  - 2. NCMA TEK Bulletin 10-1A - Design of Concrete Masonry for Crack Control.
  - 3. NCMA TEK Bulletin 10-2C - Control Joints for Concrete Masonry Walls - Empirical Method.
  - 4. NCMA TEK Bulletin 10-4 - Crack Control for Concrete Brick and Other Concrete Masonry Veneers.
  - 5. NCMA TEK Bulletin 3-6B - Concrete Masonry Veneers.

##### 1.3 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Manufacturer's data sheets for each assembly specified, including but not limited to:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.



## SECTION 04720

### CAST STONE

3. Installation Instructions.
  - C. Shop Drawings: Submit manufacturer's shop drawings showing details including but not limited to profiles, cross sections, modular unit lengths, reinforcement, exposed faces, joint widths, anchors, anchoring method recommendations, annotation of cast stone types, and locations of returns and finished ends.
  - D. Test Results: Submit manufacturer's test results from cast stone units previously made by manufacturer using materials from same sources proposed for use in project.
  - E. Verification Samples: For each product specified, two samples representing actual product colors and textures specified; samples demonstrating variation of texture and color.
- 1.4 QUALITY ASSURANCE
- A. Manufacturer Qualifications: As acceptable to Heritage Cast Stone, and a member in good standing of the Cast Stone Institute and as follows:
    1. Minimum of 10 years of experience in producing masonry units or cast stone.
    2. Manufacturer with sufficient plant facilities and capabilities to provide specified quality, shapes, quantity, and sizes of cast stone units without delaying progress of the Work.
    3. Production Quality Control: Manufacturer shall have an internal Quality Assurance Testing Program with certified laboratory technicians as follows
      - a. Mix Designs: Test new and existing mix designs for applicable compressive strength and absorption compliance before manufacturing cast stone units.
      - b. Plant Production Testing: Test compressive strength and absorption from specimens selected at random from plant production. Tests to be conducted by certified laboratory testing technicians; in accordance with ASTM C 1194 and ASTM C 1195.
  - B. Mock-Up: Provide full-size cast stone units for use in construction of mock-ups.
    1. Finish areas designated by Architect.
    2. Do not proceed with remaining work until texture, color, fit of adjacent units, quality of workmanship is approved by Architect.
    3. Rework mock-up area as required to produce acceptable work.
    4. Approved mock-ups shall be the standard for appearance, workmanship for project.
    5. Approved mock-ups may be incorporated as part of the completed work.
    6. Approved mock-ups may not be incorporated as part of the completed Work; demolish mock-ups and remove debris.
- 1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
  1. Deliver cast stone units secured to shipping pallets and protected from damage and discoloration.
  2. Provide itemized shipping list.
  3. Number each piece individually, as required, to match shop drawings and schedules.
  4. Inspection of Materials: Upon delivery, by Owner or Owner's representative.
    - a. Texture: Approximately equal to approved sample when viewed in direct daylight at 10 feet (3 m).
    - b. Surface Air Voids: Not obvious under direct daylight at 10 feet (3 m).
    - c. Color Variation: Compare in direct daylight at 10 feet, between units of similar age, subjected to similar weathering conditions.
    - d. Minor Chipping: Minor chips shall not be obvious under direct daylight at 20 feet, chipping resulting from shipping and delivery shall not be grounds for rejection of units.

## SECTION 04720

### CAST STONE

- e. **Crazing or Efflorescence:** The occurrence of crazing or efflorescence shall not constitute a cause for rejection.
  - B. **Storage:**
    - 1. Store cast stone units and installation materials in accordance with manufacturer's instructions.
    - 2. Store cast stone units on pallets with nonstaining, waterproof covers.
    - 3. Do not double stack pallets.
    - 4. Ventilate units under covers to prevent condensation.
    - 5. Prevent contact with dirt and splashing.
  - C. **Handling:**
    - 1. Protect cast stone units, including corners and edges, during storage, handling, and installation to prevent chipping, cracking, staining, or other damage.
    - 2. Handle long units at center and both ends simultaneously to prevent cracking.
    - 3. Do not use pry bars or other equipment in a manner that could damage units.
- 1.6 PROJECT CONDITIONS
- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
- 1.7 SEQUENCING AND SCHEDULING
- A. **Conference:** Convene a pre-installation conference to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
- 1.8 WARRANTY
- A. **Manufacturer's Warranty:** Standard 15 year limited warranty against defects in materials and workmanship.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. **Acceptable Manufacturer:** Heritage Cast Stone , which is located at: 2400 Allen Terrace; Kansas City, MO 64108; Tel: 855-709-7696; Fax: 816-474-5022; Email: [request info \(info@heritagecaststone.com\)](mailto:request_info@heritagecaststone.com); Web: [www.heritagecaststone.com](http://www.heritagecaststone.com)
- B. Requests for substitutions will be considered in accordance with provisions of Division 1.

### 2.2 CAST STONE MATERIALS

- A. **Portland Cement:** ASTM C 150, Type I or III. White or gray as required for specified color.
- B. **Coarse Aggregates:** ASTM C 33, except for gradation; granite, quartz, or limestone.
- C. **Fine Aggregates:** ASTM C 33, except for gradation; manufactured or natural sands.
- D. **Pigments:** ASTM C 979, except do not use carbon black pigments; inorganic iron oxide pigments.
- E. **Admixtures:**
  - 1. **Water Reducing, Retarding, and Accelerating Admixtures:** ASTM C 494.

## SECTION 04720

### CAST STONE

2. ASTM C 260 for air-entraining admixtures.
  3. Other admixtures: integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
  4. ASTM C 618 for mineral admixtures.
  5. ASTM C 989 for ground granulated blast-furnace slag.
- F. Water: Potable.
- G. Reinforcing Bars: ASTM A 615, deformed steel bars. Epoxy coated or galvanized when covered with less than 1-1/2 inches of material.
1. Galvanized Coating: ASTM A 767.
- H. Ancillary Installation Products: Materials not incorporated into composition of cast stone.
1. Anchors: As scheduled or indicated on Drawings.
  2. Anchors: Hot-dip galvanized steel, sized for conditions.
  3. Cleaners: Prosoco Sure Klean Custom Masonry Cleaner or Prosoco Sure Klean Light Duty Concrete Cleaner,
  4. Mortar Materials: ASTM C 270, Type N.
  5. Sealants: As specified in Section 07920.
  6. Sealer: Prosoco Sure Klean Weather Seal.

#### 2.3 CAST STONE - GENERAL

- A. Fabrication of Cast Stone Shapes: Unless otherwise indicated on Drawings, provide:
1. Suitable wash on exterior sills, copings, projecting courses, and units with exposed top surfaces.
  2. Drips on projecting units, wherever possible.
- B. Tolerances: Manufacture cast stone within tolerances in accordance with Cast Stone Institute Technical Manual, unless otherwise specified.
1. Cross Section Dimensions: Do not deviate by more than plus or minus 1/8 inch from approved dimensions.
  2. Length of Units: Do not deviate by more than length/360 or plus or minus 1/8 inch, whichever is greater, not to exceed plus or minus 1/4 inch.
  3. Warp, Bow, or Twist: Do not exceed length/360 or plus or minus 1/8 inch, whichever is greater.
- C. Curing:
1. Initial Curing: As determined by manufacturer to meet design requirements.
  2. Initial Curing: In an enclosed chamber at 95 percent relative humidity at 100 degrees F for 12 hours.
  3. Initial Curing: In an enclosed chamber at 95 percent relative humidity at minimum 70 degrees F for 16 hours.
  4. Additional Yard Curing: 350 degree-days, such as 7 days at 50 degrees F or 5 days at 70 degrees F.

#### 2.4 ARCHITECTURAL SERIES CAST STONE VENEER

- A. Architectural Series Cast Stone Veneer: Heritage Cast Stone Architectural Series as manufactured by Heritage Cast Stone.
1. Compliance: Cast stone meeting or exceeding requirements of ASTM C 1364.
    - a. Compressive Strength (ASTM C 1194): Minimum 6,500 psi at 28 days.
    - b. Absorption (ASTM C 1195): Maximum 6 percent, cold water method, at 28 days.

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### CAST STONE

- c. Linear Shrinkage (ASTM C 426): Less than .065 percent.
- d. Density (ASTM C 140): Greater than 120 pounds per cubic foot.
- e. Freeze-Thaw (ASTM C 666): Less than 5 percent cumulative mass loss after 300 cycles.
- f. Color Variation:
  - 1) Total Color Difference: ASTM C 1364, 6 units.
  - 2) Hue Difference: ASTM C 1364, 2 units.
- 2. Description: Architectural masonry units manufactured to copy fine grain texture and color of natural cut stone used in unit masonry applications.
- 3. Dry Cast Concrete Products: Manufactured from zero-slump concrete.
- 4. Wet Cast Concrete Products: Manufactured from measurable slump concrete.
- 5. Texture of Exposed Surfaces:
  - a. Surface Texture: As scheduled or indicated on Drawings.
  - b. Surface Texture: Smooth finish; fine-grained texture similar to natural stone.
  - c. Surface Texture: Rock finish.
- 6. Surface Air Voids:
  - a. Size: Maximum 1/32 inch (0.8 mm).
  - b. Density: Less than 3 occurrences per any 1 square inch (645 square mm).
- 7. Color: To be selected from manufacturer's standard color range.
- 8. Configurations and Locations: As indicated on Drawings.
- 9. Product Type: As scheduled or indicated on Drawings.
- 10. Product Type: Sills.
  - a. Item Number: As scheduled or indicated on Drawings
- 11. Product Type: Sills / bands.
  - a. Item Number: As scheduled or indicated on Drawings
- 12. Product Type: Water tables.
  - a. Item Number: As scheduled or indicated on Drawings
- 13. Product Type: Smooth surrounds.
  - a. Item Number: As scheduled or indicated on Drawings
- 14. Product Type: Lintels.
  - a. Item Number: As scheduled or indicated on Drawings

#### 2.5 CAST STONE VENEER (HEARTLAND SERIES)

- A. Cast Stone Veneer: Heritage Cast Stone Heartland Series as manufactured by Heritage Cast Stone.
  - 1. Compliance: Cast stone meeting or exceeding requirements of ASTM C 1364.
    - a. Compressive Strength (ASTM C 1194): Minimum 6,500 psi at 28 days.
    - b. Absorption (ASTM C 1195): Maximum 6 percent, cold water method, at 28 days.
    - c. Linear Shrinkage (ASTM C 426): Less than .065 percent.
    - d. Density (ASTM C 140): Greater than 120 pounds per cubic foot.
    - e. Freeze-Thaw (ASTM C 666): Less than 5 percent cumulative mass loss after 300 cycles.
    - f. Color Variation:
      - 1) Total Color Difference: ASTM C 1364, 6 units.
      - 2) Hue Difference: ASTM C 1364, 2 units.
  - 2. Surface Texture: As scheduled or indicated on Drawings.
  - 3. Surface Texture: Smooth finish.
  - 4. Surface Texture: Rock finish.
  - 5. Item Number: As scheduled or indicated on Drawings.

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### CAST STONE

6. Item Number: HCS-0824.
  - a. Nominal Dimensions:
    - 1) Depth: 4 inches.
    - 2) Height: 8 inches.
    - 3) Length: 24 inches.
  - b. Actual Dimensions:
    - 1) Depth: 3-5/8 inches (92 mm).
    - 2) Height: 7-5/8 inches (194 mm).
    - 3) Length: 23-5/8 inches (600 mm).
7. Finished Ends: 1 face, 1 end; for use with 23-5/8 (600 mm) units.
  - a. Nominal Dimensions:
    - 1) Depth: 4 inches.
    - 2) Height: 8 inches.
    - 3) Length: 16 inches.
  - b. Actual Dimensions:
    - 1) Depth: 3-5/8 inches (92 mm).
    - 2) Height: 7-5/8 inches (194 mm).
    - 3) Length: 15-5/8 inches (397 mm).
8. Color: To be selected from manufacturer's standard color range.

## PART 3 EXECUTION

### 3.1 EXAMINATION AND PREPARATION

- 3.2 Examine cast stone units before installation; do not install unacceptable units.
- 3.3 Products are shipped on a pallet and have one unfinished side. Textured units are to be set with the texture face forward and smooth units are stacked "face up" on the pallet.
- 3.4 Identify returns, finished ends and note corresponding locations on shop drawings.
  - A. Do not proceed with installation until substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
  - B. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

### 3.5 INSTALLATION

- A. Install products in accordance with manufacturer's instructions and approved submittals.
  1. Per ACI 530.1, it is not necessary, nor recommended, to wet units prior to installation.
  2. Set units in full bed of mortar, unless otherwise indicated on the drawings. It is not necessary to rake joints for later tuckpointing; standard full mortar application with tooling.
  3. Vertical Joints: Fill vertical joints with mortar.
  4. Head Joints: Leave head joints in copings and similar components open for sealant.
  5. Joints:
    - a. Width: 3/8 inch wide; unless otherwise indicated on the Drawings or elsewhere in the specifications.
    - b. Mortar joints should have a slight concave profile; unless otherwise indicated on the Drawings or elsewhere in the specifications.
    - c. Remove excess mortar immediately, remove mortar fins and smears before tooling joints.
  6. Cover wainscot for protection and bond separation with plastic, felt paper or other approved

## SECTION 04720

### CAST STONE

- products.
- 7. Cover freshly installed masonry products as required to assist with the curing process.
- 8. Inspect completed installation in accordance with recommendations of Cast Stone Institute Technical Manual.
- B. Control Joints: In accordance with recommendations of the following:
  - 1. NCMA TEK Bulletin 5-2A: Clay and Concrete Masonry Banding Details.
  - 2. NCMA TEK Bulletin 10-1A: Design of Concrete Masonry for Crack Control.
  - 3. NCMA TEK Bulletin 10-2C: Control Joints for Concrete Masonry Walls - Empirical Method.
  - 4. NCMA TEK Bulletin 10-4: Crack Control for Concrete Brick and Other Concrete Masonry Veneers.
- C. Veneer Anchoring: In accordance with recommendations of CMA TEK Bulletin 3-6B; Concrete Masonry Veneers.
- D. Sealant Joints:
  - 1. As specified in Section 07 91 26 - Joint Fillers.
  - 2. Prime ends of units, insert properly sized backing rod, and install sealant.
  - 3. Provide sealant joints at following locations:
    - a. Copings and cast stone units with exposed tops.
    - b. Joints at relieving angles.
    - c. Control and expansion joints.
    - d. As indicated on the drawings.
- E. Sealer: Apply water repellant for weatherproofing in accordance with water repellant manufacturer's instructions, after installation, cleaning, repair, inspection, and acceptance of units are completed

### 3.6 TOLERANCES

- A. Installation Tolerances:
  - 1. Variation from Plumb: Do not exceed 1/8 inch in 5 feet or 1/4 inch in 20 feet or more.
  - 2. Variation from Level: Do not exceed 1/8 inch in 5 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
  - 3. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch or 1/4 of nominal joint width, whichever is greater.
  - 4. Variation in Plane Between Adjacent Surfaces: Do not exceed 1/8 inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

### 3.7 CLEANING

- A. Clean exposed units after mortar is thoroughly set and cured.
- B. Perform test of cleaner on small area of 4 ft x 4 ft (1 m x 1 m) on each type and color and receive approval by Architect before full cleaning. Let test area dry 4 to 5 days before inspection. Keep test area for future comparison.
- C. Areas with heavy soiling use a wood block or non-metallic scraper.
- D. Apply cleaner to units in accordance with cleaner manufacturer's instructions.
- E. Do not use the following to clean units:
  - 1. Muriatic acid.
  - 2. Power washing.

## **SECTION 04720**

### **CAST STONE**

3. Sandblasting.
4. Harsh cleaning materials or methods that would damage or discolor surfaces.

#### **3.8 PROTECTION**

- A. Touch-up, repair or replace damaged products before Substantial Completion.
  1. Repair chips and other surface damage; repair with touchup materials provided by manufacturer in accordance with manufacturer's instructions.
  2. Repair methods and results to be approved by Architect.
- B. Protection: Protect installed products and finishes from splashing, stains, mortar, and other damage during construction.

**END OF SECTION**

## SECTION 05100

### STRUCTURAL ANCHORS

#### SECTION 05100 – STRUCTURAL ANCHORS

##### PART 1 – GENERAL

##### 1.1 SUMMARY

- A. This Section includes post-installed metal anchors in concrete and masonry as shown on drawings including schedules, notes, and details showing size and location of anchors, typical connections, and types of anchors required.
  - 1. Adhesive anchors.
  - 2. Concrete screw anchors.
  - 3. Powder actuated fasteners.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 3 Section “Cast-in-Place Concrete.”
  - 2. Division 6 Section “Rough Carpentry.”

##### 1.2 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Product Data for each type of product specified. Include manufacturer’s specifications, load charts, and other data to show compliance with the specifications (including specified standards).

##### 1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Anchors shall be installed by an installer with at least 1 year of experience performing installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Certifications: Unless otherwise authorized by the Engineer, anchors shall have an ICC ES Evaluation Report indicating conformance with current applicable ICC ES Acceptance Criteria.

##### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver anchors to Project site in such quantities and at such times to ensure continuity of installation.
- B. Store materials to permit easy access for inspection and identification. Protect anchors and packaged materials from erosion and deterioration.

##### 1.5 SEQUENCING

- A. Supply anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.



## SECTION 05100

### STRUCTURAL ANCHORS

#### PART 2 - PRODUCTS

##### 2.1 FASTENERS AND HARDWARE

- A. Anchor Rods, Bolts, Nuts, and Washers: As follows:
  - 1. Non-High Strength Rods (Hooked or Straight): ASTM F1554 Grade 36 and heavy hex carbon-steel nuts.
  - 2. Washers: ASTM A36.
- B. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A (ASTM F 568, Property Class 4.6), carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.
  - 1. Finish: Plain, noncoated.

##### 2.2 ADHESIVE ANCHORS

- A. Cartridge Injection Acrylic Adhesive Anchors: two-component material consisting of acrylic resin, hardener, cement and water, suitable for use on dry or damp surfaces. For use in solid grouted concrete masonry.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
    - a. HIT HY 70 System with HAS-E (ISO 898 Class 5.8 grade 58) threaded rods, Hilti.
    - b. Acrylic-Tie System with A307 threaded rods, Simpson/Strong-Tie.
    - c. Acrylic-A7 with A307 threaded rods, Red Head.
  - 2. ASTM A563 heavy hex carbon-steel nuts; ASTM F436 hardened carbon-steel washers; and ASTM A36 plate washers.

##### 2.3 MECHANICAL ANCHORS

- A. General: Anchor length shall be as necessary to provide the appropriate projection for the material that is being connected, the washer and full (100% of depth) engagement of the nut, and specified embedment. Embedment depth shall be respective to face of substrate (not attached material). See structural drawings for required minimum embedment of mechanical anchors; where no embedment is specified, provide anchors of sufficient length to result in manufacturer's maximum recommended effective embedment depth.
- B. Basis of design: Structural anchors have been designed using Hilti products as basis of design. Where alternative anchors are substituted which are manufacturer rated as a weaker product for the given application, even when listed as an approved available product, contractor shall decrease member spacing (thereby increasing quantity of anchors) by a proportional amount as part of the base bid.
- C. Concrete Screw Anchors: Carbon steel, screw type anchor with double lead thread and zinc-rich coating. Anchor shall bear the diameter and length on the bolthead that is visible after installation. Size as indicated on Drawings. Suitable for fastening into concrete with drilled damp or wet holes.

## SECTION 05100

### STRUCTURAL ANCHORS

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
  - a. Hilti HUS-EZ in accordance with ICC ESR 3027.

#### 2.4 POWDER ACTUATED FASTENERS

- A. Drive Pins: Modified AISI 1060, 1062, or 1070 steel, hardness 49-61 Rockwell C, minimum tensile strength of 282 ksi, and minimum shear strength of 162 ksi; with zinc plating equivalent to ASTM B633, Type III Fe/Zn 5 (5µm min.) unless noted otherwise.
  1. For fastening 2x dimension lumber to concrete or concrete masonry: Minimum 0.145" shank diameter, 2 3/4" long, with premounted plastic washer over 7/8"x16 ga steel washer. Mechanical plated equivalent to corrosion resistance of ASTM A153 HDG.
    - a. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
      - 1) X-CP 72 P8 S23 by Hilti.
      - 2) No. 5011 5MG by Powers Rawl.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General
  1. Drill holes with rotary impact hammer drills using carbide-tipped bits and core drills using diamond core bits. **Drill bits shall be of diameters as specified by the anchor manufacturer.** Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
  2. Cored Holes: Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer. Acrylic Adhesive Anchors shall not be installed in core drilled holes.
  3. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging prestressing tendons, electrical and telecommunications conduit, and gas lines.
  4. Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
  5. Observe manufacturer recommendations with respect to installation temperatures for cartridge injection adhesive anchors and capsule anchors.
  6. Perform anchor installation in accordance with manufacturer instructions.
- B. Cartridge Injection Adhesive Anchors: **Prepare all holes per manufacturer instructions** by cleaning to remove loose material and drilling dust prior to installation of adhesive. Systems specifically manufactured and tested to allow installation in unclean holes, such as the "Safe Set" system by Hilti, are permitted only after notification and approval by Engineer of Record. Holes shall be dry or damp. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive. Follow manufacturer recommendations to ensure proper mixing of adhesive components. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface. Remove excess adhesive from the surface. Shim anchors with suitable

## **SECTION 05100**

### **STRUCTURAL ANCHORS**

device to center the anchor in the hole. Do not disturb or load anchors before manufacturer specified cure time has elapsed.

- C. Powder Actuated Fasteners: Perform anchor installation in accordance with manufacturer instructions. Adjust fastener shank diameter and length to achieve manufacturer's minimum recommended penetration of base material.

#### **3.2 QUALITY CONTROL**

- A. Correct deficiencies in or remove and replace anchors that inspections and test reports indicate do not comply with specified requirements.

END OF SECTION 05100

## SECTION 06100

### ROUGH CARPENTRY

#### SECTION 06100 – ROUGH CARPENTRY

##### PART 1 – GENERAL

###### 1.1 RELATED DOCUMENTS

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

###### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Framing with dimension lumber.
  - 2. Wood grounds, nailers, and blocking.
  - 3. Wood furring.
  - 4. Sheathing.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 4 Section "Unit Masonry."
  - 2. Division 6 Section "Shop-Fabricated Wood Trusses."

###### 1.3 DEFINITIONS

- A. Rough carpentry includes carpentry work not specified as part of other Sections and generally not exposed, unless otherwise specified.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
  - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
  - 2. NLGA: National Lumber Grades Authority.
  - 3. RIS: Redwood Inspection Service.
  - 4. SPIB: The Southern Pine Inspection Bureau.
  - 5. WCLIB: West Coast Lumber Inspection Bureau.
  - 6. WWPA: Western Wood Products Association.

###### 1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Engineered Wood Products: Obtain each type of engineered wood product from a single manufacturer.

###### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
  - 1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

## SECTION 06100

### ROUGH CARPENTRY

#### PART 2 - PRODUCTS

##### 2.1 LUMBER, GENERAL

- A. Lumber Standards: Furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- B. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
  - 1. RIS – Redwood Inspection Service.
  - 2. NLGA – National Lumber Grades Authority (Canadian).
  - 3. SPIB – Southern Pine Inspection Bureau.
  - 4. WWPA – Western Wood Products Association.
- C. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
  - 1. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.
- D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
  - 1. Provide dressed lumber, S4S, unless otherwise indicated.
  - 2. Provide lumber with 15 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

##### 2.2 DIMENSION LUMBER

- A. Wood Stud Framing:
  - 1. For stud framing 2 inches thick, 2 to 4 inches wide, 10 feet and shorter, provide the following grade and species:
    - a. Spruce-Pine-Fir graded under NLGA rules.
    - b. "Stud" Grade.
  - 2. For stud framing 2 inches thick, 4 to 6 inches wide, 16 feet and shorter, provide the following grade and species:
    - a. Spruce-Pine-Fir graded under NLGA rules.
    - b. "No. 2" Grade.
- B. Structural Light Framing: For structural light framing 2 to 4 inches thick, 2 to 6 inches wide, provide the following grade and species:
  - 1. Spruce-Pine-Fir graded under NLGA rules.
  - 2. "No. 2" Grade.

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### ROUGH CARPENTRY

- C. Structural Framing: For structural framing, 2 to 4 inches thick, 7 inches and wider, provide the following grade and species:
  - 1. Southern Pine graded under SPIB rules.
  - 2. "No 2" Grade.

#### 2.3 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade: "Standard" grade light framing size lumber of any species or board-size lumber as required. "Standard" grade boards per WWPA rules or "No. 2 Boards" per SPIB rules.

#### 2.4 CONCEALED PERFORMANCE-RATED CONSTRUCTION PANELS

- A. General: Where construction panels are indicated for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness.
- B. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.
- C. Trademark: Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.
- D. Wall Sheathing: APA RATED SHEATHING.
  - 1. Exposure Durability Classification: EXPOSURE 1.
  - 2. Span Rating: As required to suit stud spacing indicated.

#### 2.5 CONSTRUCTION PANELS FOR BACKING

- A. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant treated plywood panels with grade designation, APA C-D PLUGGED EXPOSURE 1, in thickness indicated, or, if not otherwise indicated, not less than 15/32 inch.

#### 2.6 AIR INFILTRATION BARRIER

- A. Woven polyolefin sheet, 5-mil thick (0.005-inch), with moisture vapor transmission rate of 70 g/m<sup>2</sup>/24 hours per ASTM E 96, Procedure A and flame spread not exceeding 25 per ASTM E 84.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. "Barricade Building Wrap," Simplex Products Division, Anthony Industries, Inc.

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### ROUGH CARPENTRY

- b. "Tyvek Housewrap," Fibers Department, Du Pont Company.

#### 2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacturer.
- Where rough carpentry is exposed to weather, in ground contact, in contact with preservative treated lumber, or in area of high relative humidity, provide fasteners with hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.
- B. Nails, Wire, Brads, and Staples: ASTM F 1667.
- All nail sizes for attachment of structural members and connectors shall be common nail diameter and length.
- C. Power Driven Fasteners: National Evaluation Report NER-272.
- D. Wood Screws: ANSI B18.6.1.
- E. Lag Bolts: ANSI B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

#### 2.8 METAL FRAMING ANCHORS

- A. General: Provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:
- Current Evaluation/Research Reports: Provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the building code in effect for this Project.
  - Allowable Design Loads: Provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by qualified independent testing laboratory.
- B. Galvanized Steel Sheet: Steel sheet zinc-coated by hot-dip process on continuous lines prior to fabrication to comply with ASTM A 525 for Coating Designation G185 and with ASTM A 446, Grade A (structural quality); ASTM A 526 (commercial quality); or ASTM A 527 (lock-forming quality); as standard with manufacturer for type of anchor indicated.
- Use galvanized steel framing anchors for rough carpentry exposed to weather, in ground contact, in contact with preservative treated lumber, or in area of high relative humidity, and where indicated.

#### 2.9 MISCELLANEOUS MATERIALS

- A. Cement Grout: Portland cement, ASTM C 150, Type I; and clean natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

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### ROUGH CARPENTRY

- B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.
- C. Sill Sealer Gaskets: Glass fiber resilient insulation fabricated in strip form for use as sill sealer; 1-inch (25.4 mm) nominal thickness compressible to 1/32-inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated; in rolls of length as practicable to handle.
- D. Water Repellent Preservative: NWWDA tested and accepted formulation containing 3-iodo-2-propynyl butyl carbonate (IPBC) as its active ingredient.

#### 2.10 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPAC U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
  - 3. Wood floor plates that are installed over concrete slabs-on-grade.

## PART 3 – EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry construction and that are too small to use in fabricating rough carpentry with minimum joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb and true to line and cut and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated.
- E. Countersink nail heads on exposed carpentry work and fill holes.



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### ROUGH CARPENTRY

- F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

#### 3.2 WOOD FURRING

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.
- B. Furring to Receive Plywood Paneling: Install 1-inch by 3-inch furring at 2 feet o.c. horizontally and vertically. Select furring for freedom from knots capable of producing bent-over nails and resulting damage to paneling.
- C. Furring to Receive Gypsum Board: Install 1-inch by 2-inch furring at 16 inches o.c. vertically.

#### 3.3 WOOD FRAMING, GENERAL

- A. Framing Standard: comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install framing composed of engineered wood products to comply with manufacturer's directions.
- C. Install framing members of size and spacing indicated.
- D. Anchor and nail as shown, and to comply with the following:
  - 1. "Table 2304.9.1" of the Kentucky Building Code.
- E. Do not splice structural members between supports.

#### 3.4 STUD FRAMING

- A. General: Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel. Install single bottom plate and double top plates using 2-inch thick members whose widths equal that of studs; except single top plate may be used for non load-bearing partitions. Nail or anchor plates to supporting construction.
  - 1. For exterior walls install 2-inch by 6-inch wood studs spaced 16 inches o.c.
  - 2. For interior partitions and walls install 2-inch by 4-inch wood studs spaced 16 inches o.c.
- B. Construct corners and intersections with not less than 3 studs. Install miscellaneous blocking and framing as shown and as required for support of facing materials, fixtures, specialty items, and trim.
  - 1. Install continuous horizontal blocking row at all horizontal joint locations in exterior sheathing within extents of shear wall. Exterior sheathing shall be fully fastened along such joint.
- C. Frame openings with multiple studs and headers. Install nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.

## SECTION 06100

### ROUGH CARPENTRY

1. For non load-bearing partitions, install double-jamb studs and headers not less than 4 inches deep for openings 3 feet and less in width, and not less than 6 inches deep for wider openings.
  2. For load-bearing partitions, install double-jamb studs for openings 6 feet and less in width, and triple-jamb studs for wider openings. Install headers of depth shown, or if not shown, as recommended by AF&PA's WCD 1, "Details for Conventional Wood Frame Construction."
- D. Level top of foundation wall and slab with cement grout to provide a surface level to 1/8" in 10 feet below bearing wall studs.

#### 3.5 RAFTER AND CEILING JOIST FRAMING

- A. Ceiling joists: Install ceiling joists with crown up and to comply with requirements specified above for floor joists. Face nail to ends of parallel rafters.
- B. Rafters: Notch to fit exterior wall plates and toe nail or use special metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing (if any), and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
- C. Install special framing as shown for eaves, overhangs, dormers and similar conditions, if any.

#### 3.6 INSTALLATION OF CONSTRUCTION PANELS

- A. General: Comply with applicable recommendations contained in Form No. E30, "APA Design/Construction Guide-Residential & Commercial," for types of construction panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
1. Sheathing: Nail to framing.
  2. Plywood Backing Panels: Nail to supports.

#### 3.7 AIR INFILTRATION BARRIER

- A. Cover sheathing with air infiltration barrier as follows:
1. Apply plastic sheet to comply with manufacturer's printed directions.
  2. Apply air infiltration barrier to cover upstanding flashing with 4-inch overlap.

#### 3.8 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

## **SECTION 06100**

### **ROUGH CARPENTRY**

#### **3.9 QUALITY CONTROL**

- A. Correct deficiencies in or remove and replace wood framing that inspections and test reports indicate do not comply with specified requirements.

END OF SECTION 06100

## SECTION 06175

### SHOP-FABRICATED WOOD TRUSSES

#### SECTION 06175 – SHOP-FABRICATED WOOD TRUSSES

##### 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 fabrication and erection of wood trusses, truss girders, and jacks and other falsework, as shown on drawings including schedules, notes, and details showing size and location of members, typical connections, and types of trusses required.
  - 1. Prefabricated wood trusses include planar structural units consisting of metal plate connected members which are fabricated from dimension lumber and which have been cut and assembled prior to delivery to the Project site.
  - 2. Truss configurations:
    - a. Triangular pitched roof trusses.
    - b. Monopitch roof trusses.
    - c. Hip roof trusses.
    - d. Dual pitch roof trusses.
- B. This Section includes open web wood trusses, end anchorages, bracing and connections.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 6 Section “Rough Carpentry.”

##### 1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Engineer wood trusses, anchorages, and connections to support all superimposed dead, live, snow, and wind loads as indicated on the drawings. Design shall comply with applicable requirements of the currently-adopted version of the “National Design Specification for Wood Construction,” its “Supplement,” and the “Special Design Provisions for Wind and Seismic,” published by the American Wood Council, and “Specifications for Metal Plate Connected Wood Trusses” published by the Truss Plate Institute. See drawings for loading criteria.
- B. Engineering Responsibility: Engage a manufacturer who utilizes a qualified professional engineer to prepare calculations and truss layout diagrams for wood trusses.
- C. Specify the location of all required permanent bracing for individual compression web members and truss chords (when in compression). The number of braces, location, and required minimum brace capacity of shall be specified on the truss design drawings.
  - 1. The Contractor shall coordinate quantity of bracing with the truss manufacturer prior to bid. The exact quantity of bracing runs can only be determined by the truss manufacturer once the trusses are designed, detailed, and approved.
- D. Design trusses to withstand design loads without deflections greater than the following:

## SECTION 06175

### SHOP-FABRICATED WOOD TRUSSES

1. Roof trusses: Vertical deflection of  $1/360$  of span due to 100% live load and  $1/240$  of span due to 100% total load.
- E. Trusses shall not be designed to transfer flexural moment across connection plates. Locate splices in chords subjected to flexural moment at joints.

#### 1.4 ACTION SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
  1. Shop drawings which show the Architect's or Engineer's title block, logo and/or seal will be rejected and returned unchecked.
  2. Computer generated electronic structural construction document files (ACAD) will be made available to the Contractor. The Contractor will be required to sign the Engineer's standard release of liability form and pay a handling fee of \$50.00 per drawing prior to receiving the drawing files.
  3. Shop drawing resubmittals are reviewed for conformance with review marks only. Any changes or questions originating on a resubmittal shall be clearly clouded.
  4. Architects and Engineers review of the calculations is for general conformance with the contract documents. Actual calculations are the responsibility of the wood truss design engineer and shall not be reviewed for content or accuracy by the Architect or Engineer.
- B. Building Permit Issuance: Contractor shall submit wood truss design drawings and calculations which meet the requirements of IBC section 2303.4 to the Building Official. Submittal must be signed and sealed by a professional engineer registered in the state where the project is situated. Submittal typically must be received prior to processing of the building permit by the plans reviewer.
- C. Field Delivery: Manufacturer shall provide an additional copy of the truss design drawings with the shipment of trusses delivered to the jobsite.
- D. Truss Placement Diagram: Furnish for review as part of the truss submittal package prior to fabrication.
  1. Plan that identifies the proposed location of each individually designated truss and references the corresponding truss design drawing.
  2. Truss placement diagrams that serve only as a guide for installation and do not deviate from the construction drawings do not require the seal or signature of the truss designer.
- E. Erection Drawings: Furnish for review as part of the truss submittal package prior to fabrication.
  1. Erection drawings to show splice details; truss field assembly requirements; and bearing, anchorage, and truss/rafter to truss girder connection details.
  2. Erection drawings shall be signed and sealed by a qualified professional engineer licensed to practice in the State of Kentucky.
- F. Truss Design Drawings. Furnish for review as part of the truss submittal package prior to fabrication. Design Drawings to be the written, graphic, and pictorial depiction of each individual truss including the following information, at a minimum:
  1. Slope or depth, span, camber, and spacing.
  2. Location of all member joints, panel points, and support locations.

## SECTION 06175

### SHOP-FABRICATED WOOD TRUSSES

3. Number of plies if greater than one.
4. Design loads including top chord live load, top chord dead load, bottom chord live load, bottom chord dead load, additional loads and their locations, and environmental design criteria and loads (wind, rain, snow, seismic, etc.).
5. Other lateral loads, including drag strut and in-plane shear loads from diaphragms.
6. Adjustments to wood member and metal connector plate design value for conditions of use.
7. Maximum reaction force and direction, including maximum uplift reaction forces where applicable.
8. Metal-connector plate type, size and thickness or gage, and the dimensioned location of each metal connector plate except where symmetrically located relative to the joint interface.
9. Size, species, and grade for each wood member.
10. Calculated span-to-deflection ratio and maximum vertical and horizontal deflection for live and total load.
11. Maximum axial tension and compression forces in the truss members.
12. Required permanent individual truss member restraint location for both webs and chords.
13. Each individual Truss Design Drawing shall be signed and sealed by a qualified professional engineer licensed to practice in the State of Kentucky.
14. TPI "Quality Control Inspection Program" certificate. Certificate must be submitted with design drawings or submittal will be rejected.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. General: Furnish submittals in quantity, format, and other Conditions of the Contract and as specified in Division 1 of the Project Manual.
- B. Product Data showing configuration and capacity of all premanufactured connection material. Include manufacturer's specifications, installation instructions, laboratory test reports, and other data to show compliance with the specifications (including specified standards).
- C. Fabricators who participate in the certified Quality Certification Program shall submit, at the completion of fabrication, a certificate of compliance stating that the work was performed in accordance with the approved construction documents.

#### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed wood truss work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Fabricator Qualifications: Engage a firm experienced in fabricating wood trusses similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate wood trusses without delaying the Work.
  1. Fabricator must participate in the TPI "Quality Control Inspection Program" as a licensee authorized to apply TPI marks to trusses and which involves inspection by an independent inspection and testing agency acceptable to the Architect and authorities having jurisdiction.
- C. Connector Plate Manufacturer's Qualifications

## SECTION 06175

### SHOP-FABRICATED WOOD TRUSSES

1. Connector plate manufacturer shall be a member of the Truss Plate Institute and shall comply with TPI quality control procedures for manufacture of connector plates published in TPI "Quality Standard for Metal Plate Connected Wood Trusses."
  - D. Professional (Truss) Engineer Qualifications: A professional engineer who is legally authorized to practice in the State of Kentucky and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for projects with wood truss framing that are similar to that indicated for this Project in material, design, and extent.
  - E. Comply with applicable provisions of the following specifications and documents:
    1. Truss Plate Institute (TPI) publications
      - a. Design Specification for Metal Plate Connected Wood Trusses.
      - b. Commentary and Recommendations for Handling and Erection Wood Trusses.
      - c. Commentary and Recommendations for Bracing Wood Trusses.
      - d. Quality Standard for Metal Plate Connected Wood Trusses.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver wood trusses to Project site in such quantities and at such times to ensure continuity of installation.
  - B. Handle and store trusses with care, and in accordance with manufacturer's instructions and TPI recommendations to avoid damage from bending, overturning, or other cause for which truss is not designed to resist or endure.
  - C. Trusses shall be unloaded on level ground to avoid lateral strain. Trusses shall be protected from damage that might result from on-site activities and environmental conditions. Prevent toppling when banding is removed.
  - D. Report truss damage to Architect prior to installation.
  - E. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying work of other trades.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Metal Connector Plates.
  1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. Alpine Engineered Products, Inc.
    - b. Georgia-Pacific Corp.
    - c. Inter-Lock Steel Company, Inc.
    - d. MiTek Industries, Inc.
    - e. Robbins Engineering, Inc.
    - f. Tee-Lok Corporation.
    - g. Truss Connectors of America.
    - h. Trusswall Systems Corporation.

## SECTION 06175

### SHOP-FABRICATED WOOD TRUSSES

- B. Metal Framing Connectors.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
    - a. Silver Metal Products, Inc.
    - b. Simpson Strong-Tie Company, Inc.
    - c. Southeastern Metal Manufacturing Co., Inc.
    - d. United Steel Products Co.

## 2.2 DIMENSION LUMBER

- A. Lumber Standards
  - 1. Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- B. Inspection Agencies.
  - 1. Inspection agencies and the abbreviations used to reference them to lumber grades and species include the following:
    - a. NLGA - National Lumber Grades Authority (Canadian).
    - b. SPIB - Southern Pine Inspection Bureau.
    - c. WCLIB - West Coast Lumber Inspection Bureau.
    - d. WWPA - Western Wood Products Association.
- C. Grade Stamps.
  - 1. Factory mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
- D. Nominal sizes shall be indicated, except as shown on detail dimensions.
- E. Provide lumber manufactured to actual sizes required by PS 20 to comply with requirements indicated below:
  - 1. Dressed, S4S, unless otherwise indicated.
  - 2. Moisture Content: Seasoned, with 7 percent minimum and 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.
- F. Species and Grade.
  - 1. Provide dimension lumber of any species, graded visually or mechanically stress-rated, and capable of supporting required loads without exceeding allowable design values defined in Table 8.1.a of the "National Design Specification" and its "Supplement" for single members.
  - 2.



## SECTION 06175

### SHOP-FABRICATED WOOD TRUSSES

#### 2.3 METAL CONNECTOR PLATES

- A. Fabricate connector plates from metal complying with the following requirements:
  - a. Hot-Dip Galvanized Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A 446, Grade A; zinc coated by hot-dip process to comply with ASTM A 653, G60 coating designation; Grade 33 of minimum coated metal thickness indicated, but not less than 0.036 inch.
  - b. Electrolytic Zinc-Coated Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A 591, Coating Class C, and for structural properties, with ASTM A 446, Grade A; zinc-coated by electro-deposition; 33,000 psi minimum yield strength with minimum coated metal thickness indicated, but not less than 0.047 inch.

#### 2.4 METAL FRAMING ANCHORS

- A. Provide metal framing anchors fabricated from hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation, and of structural capacity, and type indicated that comply with requirements specified, including the following:
  - 1. Current Evaluation/Research Reports: Provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the building code in effect for this Project.
  - 2. Allowable Design Loads: Provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by a qualified independent testing laboratory.

#### 2.5 FASTENERS

- A. Provide all fasteners required to properly and completely erect, anchor, and connect the truss work for this Project, including, but not limited to, nails, spikes, screws, lag screws, bolts, nuts, washers, and similar items, whether specifically mentioned herein or not.
- B. Rough hardware and accessories used in pressure treated wood or exposed to weather, in ground contact, or in areas of high relative humidity, shall be hot-dipped galvanized per ASTM A 153.
- C. Fasteners shall be proper type, size, material, and finish for each application and conform with the following:
  - 1. Nails, Wires, Brads, and Staples: FS FF-N-105.
  - 2. Power Driven Fasteners: CABO NER-272.
  - 3. Wood Screws: FS FF-S-111.
  - 4. Lag Bolts and Lag Screws: FS FF-B-561.
  - 5. Bolts: Steel bolts complying with ASTM A 307, Grade A, with ASTM A 653 hex nuts and flat washers, one (1) at each end.

#### 2.6 FABRICATION

- A. Cut truss members to accurate lengths, angles, and sizes to produce close fitting joints with wood-to-wood bearing in assembled units.

## SECTION 06175

### SHOP-FABRICATED WOOD TRUSSES

- B. Fabricate metal connector plates to size, configuration, thickness, and anchorage details required for types of joint designs indicated.
- C. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with close fitting joints. Position members to produce design camber indicated.
- D. Connect truss members by means of metal connector plates accurately located and securely fastened to each side of wood members by air or hydraulic press.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Before erection proceeds, and with the wood truss erector present, verify elevations of concrete and masonry bearing surfaces and locations of anchorages for compliance with requirements.
- B. Do not proceed with erection until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep wood trusses secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports as required when permanent wood trusses, connections, and bracing are in place.

### 3.3 ERECTION

- A. Splice trusses delivered to site in more than one (1) piece before installing.
- B. Erect and brace trusses to comply with recommendations of manufacturer and the Truss Plate Institute.
- C. Erect trusses with plane of truss webs vertical (plumb) and parallel to each other, located accurately at design spacing indicated.
- D. Hoist units in place by means of lifting equipment suited to sizes and types of trusses required, applied at designated lift points as recommended by fabricator, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- E. Do not place concentrated loads (including roof sheathing bundles) atop trusses until all specified bracing has been installed and roof sheathing is permanently nailed in place.
- F. Anchor trusses securely at all bearing points to comply with methods and details indicated.
- G. Install permanent bracing and related components to enable trusses to maintain design spacing, withstand live and dead loads including lateral loads, and to comply with other indicated requirements.
- H. Do not cut or remove truss members.

## **SECTION 06175**

### **SHOP-FABRICATED WOOD TRUSSES**

#### **3.4 ALTERATIONS**

- A. Truss members and components shall not be cut, notched, drilled, spliced, or otherwise altered in any way without written direction with seal and signature by the Truss Engineer and written approval and concurrence by the Architect. All alterations resulting in the addition of loads to any member (e.g., HVAC equipment, piping, additional roofing or insulation, etc.) is not permitted without verification and written approval with seal and signature by the Truss Engineer.

#### **3.5 QUALITY CONTROL**

- A. Correct deficiencies in or remove and replace wood trusses that inspections and test reports indicate do not comply with specified requirements.

END OF SECTION 06175

## SECTION 06200

### WOODS, PLASTICS & COMPOSITES

#### 06200 ARCHITECTURAL WOOD, MILLWORK, FINISH CARPENTRY

##### 1.01 WORK INCLUDED:

- A. All labor, materials, tools and equipment to furnish and install all architectural woodwork including interior trim, shelving, cabinetry, laminated resinous covered items, and necessary fittings, accessories and hardware.
- B. Install all Doors, furnished from Division 8.
- C. Install Finish Hardware, furnished from Division 8.
- D. Install Specialties furnished from Division 10.

##### 1.02 QUALITY STANDARDS:

Quality Standards (Section 100 through 1500 inclusive) of the Architectural Woodwork Institute, 1808 West End Building, Nashville, Tennessee, shall apply to all material and workmanship furnished under this section and are hereby made a part of this specification as if copied verbatim herein. Moldings are to be true to details, cleanly cut and sharp. Exposed surfaces are to be sanded to a smooth, even surface ready for finish. Provide sufficient clearance for doors and drawers of casework to prevent sticking after painting but avoid excessive tolerances.

##### 1.03 SHOP DRAWINGS:

Furnish four (4) sets of shop drawings of all materials except where shown in full size on Architect's drawings. If full size details on Architect's drawings, do not show joinery or if supplier desires to vary joinery (not profiles) to accommodate mill practices, shop drawings must be furnished.

##### 1.04 FIELD DIMENSIONS:

The Contractor is responsible for the proper fitting of all work to job conditions and shall take all measurements to assure this fit.

##### 1.05 DELIVERY AND STORAGE:

Do not deliver until the material can be properly stored under cover and sufficiently dry so as to avoid excessive changes in moisture content, curling, or warpage.

##### 2.01 MATERIALS:

- A. Interior Wood Trim for doors, windows, base, crown and miscellaneous: AWI Custom Grade Poplar or clear White Pine for all woods receiving clear, natural finishes; Custom grade white pine or poplar may be used for trim to have opaque paint finish.
- B. Cabinetry: Plastic laminate cabinetry, see Section 06400.

##### 3.01 INSTALLATION, GENERAL:

- A. Furnish all rough hardware required to securely fasten all wood members in place to plumb and

## **SECTION 06200**

### **WOODS, PLASTICS & COMPOSITES**

level lines. Countersink all exposed fasteners for exposed wood members.

- B. Work shall be assembled at the mill insofar as it is practical and delivered to job ready for installation. When it is necessary to cut and fit on the job, materials shall be made with ample allowance for cutting.
- C. Back-prime all wood to be paint finished with one coat white primer. All wood to have transparent finish shall receive one coat shellac before installation except no shellac is to be applied to finish faces of oil finished wood.
- D. Metal and wood doors shall be set to frames so as to fit properly with normal tolerances. Doors shall swing free and not be hinge bound.
- E. Receive materials from Division 10 Contractor and install where shown on the drawings and in accordance with manufacturer's instructions. All installed materials and equipment shall operate to intended function.

#### **3.02 INSTALLATION OF FINISH HARDWARE:**

- A. Install all items of Finish Hardware furnished in Section 08700 as required to make a complete, finished installation.
- B. Approval of schedules and samples will not relieve this Contractor from furnishing all hardware required whether specifically mentioned or not on drawings and herein.
- C. Installation: All hardware is to be done by skilled craftsmen in a first class manner so that all items operate in the manner for which they were designed. All strikes and butts are to be installed flush unless otherwise shown or specified. Improper installation of hardware which causes exposed imperfections in door surfaces will be cause for rejection and replacement of the door. Surface mounted items such as door closers, holders, pulls, etc. are to be installed with thru sex bolts with non-removable heads. Butt pins in out-swinging doors are to be non-removable. Specified hardware has been checked for compatibility and if other manufacturer's hardware is supplied for those items, they must be compatible also.

#### **3.03 CLEANING:**

- A. All installed materials are to be in working order and lubricated.
- B. All materials are to be clean and free of marks, dust and dirt. Clean all cabinets.
- C. Clean hardware of dirt and excess oil. Protect during work by others.

END

## SECTION 06400

### ARCHITECTURAL CASEWORK

#### 06400 ARCHITECTURAL CASEWORK

##### 1.01 WORK INCLUDED:

- A. All labor, materials, tools and equipment to furnish and install all architectural plastic laminate casework and tops including vanity tops and standard casework as shown on the drawings.
- B. Install casework Finish Hardware and Specialty Items supplied with casework.

##### 1.02 SHOP DRAWINGS: (4 Copies)

Shop Drawings shall be furnished for all materials except where shown in full size on Architect's drawings. If full size details on Architect's drawings do not show joinery or if supplier desires to vary joinery (not profiles) to accommodate mill practices, shop drawings must be furnished.

##### 1.03 FIELD DIMENSIONS:

Contractor is responsible for the proper fitting of all work to job conditions and shall take all measurements to assure this fit.

##### 1.04 DELIVERY AND STORAGE:

Do not deliver until the material can be properly stored under cover and sufficiently dry so as to avoid excessive changes in moisture content, curling, or warpage.

##### 2.01 MATERIALS:

- A. Cabinets are to be constructed of full thickness high performance 45 lb. density (Min.) particle, high pressure plastic, board or plywood. Laminate for exterior surfaces is to be 1/16" thick resinous material equal to Formica, Wilson Art or Nevamar, meeting NEMA standards. Colors and patterns are to be selected by the Architect. Interior finish is to be heavy gauge (9-11 mils) plastic laminate backing sheet.
- B. Wall Cabinets: 3/4" thick tops and bottoms, 3/8" back panel, 3/4" sides and doors.
- C. Base Cabinets: 3/4" Sub-top, 3/4" Bottom, Sides and Doors, 3/8" back and 3/4" waterproof plywood cabinet sub-base and shelving.
- D. Hardware: Epoxy coated drawer-slides with stops, Hylon or metal adjustable shelf clips, concealed hinges, pulls to be brushed chrome or stainless steel wire.
- E. Edge Treatment: All exposed edges to receive PVC edging, machine applied.
- F. Countertops For Cabinetry Shall Be: (See Par. 6.C.1.a. above)
  - 1. General purpose grade 1/16" thick high-pressure decorative laminate on horizontal surface and edges, conforming to NEMA Standards.
  - 2. Balanced with backing sheet.
  - 3. Laminates bonded to 1-1/8" thick solid core particleboard.
  - 4. All joints shall be secured with adhesives and Tight-Joint fasteners.
  - 5. Provide 4" high back-splashes and side-splashes as required.
  - 6. Countertops shall conform to ANSI A161.2-latest edition "PERFORMANCE STANDARDS FOR FABRICATED HIGH-PRESSURE DECORATIVE LAMINATE COUNTERTOPS".
- G. Cabinetry To Be Equal To:  
LSI Corporation of America, Inc., Modular Casework by Nolan Products, Inc., Case Systems by Normal Wood Products, Inc., Stidham Cabinets, Leininger Cabinets & Woodworking, Inc.

## **SECTION 06400**

### **ARCHITECTURAL CASEWORK**

#### **2.02 CONSTRUCTION:**

Wood dowels and glue are to be used at sides, rails, bottoms and tops. Back is to be inlaid into sides, bottom and top and glued. Cabinets are to be plumb and square and all parts machined and bored for premium quality grade joinery construction meeting AWI 1600 standards.

#### **3.01 INSTALLATION, GENERAL:**

- A. Furnish all rough hardware required to securely fasten all wood members in place to plumb and level lines. Countersink all exposed fasteners for exposed wood members.
- B. Work shall be assembled at the mill insofar as practical and delivered to the job ready for installation. When necessary to cut and fit on the job, materials shall be made with ample allowance for cutting.

#### **3.02 INSTALLATION OF FINISH HARDWARE:**

Approval of schedules and samples will not relieve this Contractor from furnishing all hardware required whether specifically mentioned or not on the drawings and herein.

#### **3.03 CLEANING:**

- A. All installed materials are to be in working order and lubricated.
- B. All materials are to be clean and free of marks, dust and dirt. Clean cabinets.
- C. Clean hardware of dirt and excess oil. Protect during work by others.

END

## SECTION 07210

### FIBER GLASS BUILDING INSULATION

#### 07210 FIBER GLASS BUILDING INSULATION

##### PART 1

##### 1.1 SECTION INCLUDES

- A. Batt and Roll Insulation.
- B. Blowing Insulation.
- C. Vapor Retarder,

##### 1.2 RELATED SECTIONS

- A. Section 04800 - Masonry Assemblies: Cavity wall and masonry cell insulation.
- B. Section 07100 - Waterproofing: Insulation installed with waterproofing systems.
- C. Section 07260 - Vapor Retarders: Vapor retarder materials to adjacent insulation.
- D. Section 07270 - Air Barriers: Air seal materials to adjacent insulation.
- E. Section 09200 - Gypsum Board: Insulation installed in conjunction with interior wall and ceiling finish systems.

##### 1.3 REFERENCES

- A. ASTM C 423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- B. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM C 553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- D. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- E. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- F. ASTM C 764 - Standard. Specification for Mineral Fiber. Loose-Fill Thermal Insulation.
- G. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- H. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- I. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- J. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
- K. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.



## **SECTION 07210**

### **FIBER GLASS BUILDING INSULATION**

- L. Federal Specification HH-I-521F: Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures).
- M. Federal Specification HH-I-558B: Insulation, Blocks, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe fitting Covering, Thermal (Mineral Fiber, Industrial Type)
- N. National Fire Protection Association (NFPA) Life Safety Code
- O. Underwriters Laboratories (UL) - UL 2079 Standard test method for fire resistance of Building Joint Systems.

#### **1.4 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### **1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Manufacturer with a minimum of ten years experience manufacturing products in this section shall provide all products listed.
- B. Installer Qualifications: Products listed in this section shall be installed by a single organization with at least five years experience successfully installing insulation on projects of similar type and scope as specified in this section.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish areas designated by Architect.
  - 2. Do not proceed with remaining work until workmanship is approved by Architect.
  - 3. Refinish mock-up area as required to produce acceptable work.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Storage: Store materials in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling.
- C. Handling: Handle materials to avoid damage.

#### **1.7 SEQUENCING**

- A. Coordinate with the installation of vapor retarders and air seal materials specified in Section 07260 and Section 07270.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

## SECTION 07210

### FIBER GLASS BUILDING INSULATION

#### 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: CertainTeed Corp., Insulation Group, which is located at: 750 E. Swedesford Rd. P. O. Box 860 ; Valley Forge, PA 19482-0860; Toll Free Tel: 800-233-8990; Fax: 610-341-7940; Email: [request info](mailto:requestinfo@certainteed.com); Web: [certainteed.com/CertainTeed/Pro/Design+Professional/Insulation](http://certainteed.com/CertainTeed/Pro/Design+Professional/Insulation)
- B. Substitutions: Equal Products as approved by the Architect.
- C. Requests for substitutions will be considered in accordance with provisions of Division 1.

##### 2.2 APPLICATIONS

- A. Attic/Ceiling Rafters: Blown type
  - 1. Thickness: 14.5".
  - 2. R-Value: 38.
  - 3. Vapor Retarder: Separate.
- B. Walls: Batt type
  - 1. Thickness: 5.5".
  - 2. R-Value: 19.
  - 3. Vapor Retarder: Separate
- C. Interior Partitions Indicated with STC Rating: Batt type.
  - 1. Thickness: As indicated on the Drawings.

##### 2.3 BATT AND ROLL INSULATION

- A. Acoustical/Thermal Insulation, Unfaced: Certainteed Sound Attenuation NoiseReducer Batts. Fiber glass building insulation for friction fit between steel studs. Complies with ASTM C 665; preformed glass fiber batt insulation. Fire Hazard Classification ASTM E84, Maximum Flame Spread Index of 25, Maximum Smoke Developed Index of 50, Noncombustable ASTM E 136, passes:
  - 1. Facing: ASTM C 665, Type 1, Unfaced.
    - a. Thermal Resistance: R of 19.
      - 1) Thickness: 5-1/2 inches.
      - 2) Width: 16 inches.
    - b. Thermal Resistance: R of 11.
      - 1) Thickness: 3-1/2 inches.
      - 2) Width: 24 inches.

##### 2.4 BLOWING INSULATION

- A. Thermal Blowing Insulation: Certainteed Insulsafe SP Fiber Glass Blowing Insulation. Fiber glass blowing insulation for open attics, enclosed walls, and floor/ceilings assemblies. Complies with ASTM C 764; mineral fiber loose fill insulation Type 1, Pneumatic application:

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### FIBER GLASS BUILDING INSULATION

1. Fire Hazard Classification: ASTM E 84:
  - a. Maximum Flame Spread Index; 5.
  - b. Maximum Smoke Developed Index; 5.
2. Noncombustibility: ASTM E 136, passes.
3. Open Attic Application:
  - a. Thermal Resistance: R of 38. Minimum Installed Thickness: 14.50 inches.

#### 2.5 VAPOR RETARDER

- A. Sheet Retarder: Certaineed MemBrain, The SMART Vapor Retarder. Polyimide film vapor retarder for use with unfaced, vapor permeable glass fiber and mineral wool insulation in wall and ceiling cavities. Material has a permeance of 1 perm or less when tested to ASTM E 86, dry cup method and increases to greater than 10 perms using the wet cup method.
  1. Water Vapor Permeance:
    - a. ASTM E 86, dry cup method: 1.0 perms (57ng/Pa\*s\*m2).
    - b. ASTM E 86, wet cup method: 10.0 perms (1144ng/Pa\*s\*m2).
  2. Fire Hazard Classification: ASTM E 84:
    - a. Maximum Flame Spread Index; 20.
    - b. Maximum Smoke Developed Index; 55.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify that all exterior and interior wall, partition, and floor/ceiling assembly construction has been completed to the point where the insulation may correctly be installed.
- C. Verify that mechanical and electrical services in ceilings, walls and floors have been installed and tested and, if appropriate, verify that adjacent materials are dry and ready to receive insulation.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

#### 3.3 INSTALLATION

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

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### **FIBER GLASS BUILDING INSULATION**

- E. Install insulation with vapor barrier installed facing the warm side. Seal or tape joints as required.

#### **3.4 PROTECTION**

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

END



## SECTION 07211

### FOAM BOARD INSULATION

#### 07211 FOAM BOARD INSULATION

##### PART 1: GENERAL

##### 1.01 SUMMARY

Section Includes: Provide extruded polystyrene rigid board insulation.

##### 1.02 REFERENCES

- A. Materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:
  - 1. American Society for Testing of Materials (ASTM):
    - a. ASTM C 578: Standard Specification for Rigid Cellular Polystyrene Thermal Insulation.
    - b. ASTM C 518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
    - c. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 2. International Code Council Evaluation Service (ICC-ES), Evaluation Report.

##### 1.03 SUBMITTALS

- A. Product Data: Submit data on product characteristics, performance criteria, and limitations, including installation instructions.
- B. Sustainable Design: Submit manufacturer's sustainable design certifications as indicated.
- C. Warranty: Submit documentation for limited product warranty.

##### 1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain exterior building insulation through one source from a single manufacturer.
- B. Each insulation board must be labeled with manufacturer's name, product brand name, ASTM material specification reference, and identification of the third party inspection agency used for building code qualification.

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

- A. Deliver materials in manufacturer's original packaging.
- B. Store and protect products in accordance with manufacturer's instructions. Store in a dry area and protect from water, direct sunlight, flame, and ignition sources. Do not install insulation that has been damaged or wet.  
In the event the board insulation becomes wet, wipe dry prior to installation.

## SECTION 07211

### FOAM BOARD INSULATION

#### PART 2: PRODUCTS

##### 2.01 MANUFACTURER

Owens Corning Insulating Systems, LLC, Toledo, OH 43659; [www.owenscorning.com](http://www.owenscorning.com).

##### 2.02 FOAM PLASTIC BOARD INSULATION

- A. Extruded Polystyrene Board Insulation: Comply with ASTM C 578, Type [VII, 60 psi minimum compressive strength, 2.20 lb/cu. ft. (35 kg/cu. m)]
  - 1. Thermal Resistance: (180 day real-time aging as mandated by ASTM C578, measured per ASTM C 518 at mean temperature of 75F): [ R-5.6 ] per inch of thickness, with 90% lifetime limited warranty on thermal resistance.
  - 2. Blowing Agent Formulation: Zero ozone depleting.
  - 3. Edge Condition: [Square, Tongue & Groove, Ship-Lap].
  - 4. Surface Burning Characteristics (ASTM E 84): Flame spread less than 25, smoke developed less than 450, certified by independent third party such as Underwriters Laboratories (UL).
  - 5. Indoor Air Quality: Compliance certified by independent third party such as GREENGUARD Indoor Air Quality Certified® and/or GREENGUARD Children and Schools Certified<sup>SM</sup>.
  - 6. Recycled Content: Minimum 20%, certified by independent third party such as Scientific Certification Systems.
  - 7. Warranty: Limited lifetime warranty covering all ASTM C578 physical properties.
  - 8. Panel Size: Provide [1.5"] thick by size required by 8' long.

END OF SECTION

## SECTION 07240

### EXTERIOR INSULATION AND FINISH SYSTEM

#### 07240 EXTERIOR INSULATION AND FINISH SYSTEM

##### PART I - GENERAL

##### 1.01 SUMMARY

- A. This document contains all the Manufacturer's requirements for the proper design, use, and installation of the Dryvit Outsulation Exterior Insulation and Finish System (EIFS) Class PB in typical applications. It is intended to be used in conjunction with Dryvit's published Outsulation System typical details, DS107, and application instructions, DS204. Individually, project design parameters may require special details or specifications which the project design professional should prepare.

##### SECTION INCLUDES

Exterior Insulation and Finish System Class PB

##### RELATED SECTIONS

Masonry - Section 04200

Concrete - Section 03300

Light Gauge Cold Formed Steel Framing - Section 05400

Wood Framing - Section 06100

Joint Sealants - Section 07920.

##### 1.02 REFERENCES

ASTM B 117 (Federal Test Standard 141A Method 6061) Test Method of Practice for Salt Spray (Fog) Testing.  
ASTM C 79 Specification for Gypsum Sheathing Board.  
ASTM C 150 Specification for Portland Cement.  
ASTM C 297 Test Method for Tensile Strength of Flat Sandwich Constructions in Flatwise Plane.  
ASTM D 968 (Federal Test Standard 141A Method 6191) Test Method for Abrasion Resistance of Organic Coatings by Falling Abrasive.  
ASTM D 2247 (Federal Test Standard 141A Method 6201) Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.  
ASTM E 84 Test Method for Surface Burning Characteristics of Building Materials.  
ASTM E 96 Test Methods for Water Vapor Transmission of Materials.  
ASTM E 108 (Modified) Method for Fire Tests of Roof Coverings.  
ASTM E 119 Method for Fire Tests of Building Construction and Materials.  
ASTM E 330 Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.  
ASTM E 331 Test Method For Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.  
ASTM G 23 (Federal Test Standard 141A Method 6151) Recommended Practice for Operating-Exposure Apparatus (Carbon-Arc Type) With and Without Water, for Exposure of Nonmetallic Materials.  
DS107 Dryvit Outsulation System Installation Details.  
DS131 Dryvit Expanded Polystyrene Insulation Board Specification.  
DS135 Specification for Outsulation System With Mechanical Fasteners.  
DS152 Dryvit Cleaning and Recoating.  
DS153 Dryvit Expansion Joints and Sealants.  
DS159 Dryvit Water Vapor Transmission.  
DS204 Dryvit Outsulation System Application Instructions.  
DS456 Rapidry DM™ 35 - 50 and DS457 Rapidry DM™ 50 - 75 Data Sheets  
EIMA Method 101.86 Standard Test Method for Resistance of Exterior Insulation Finish Systems (EIFS), Class



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### EXTERIOR INSULATION AND FINISH SYSTEM

PB to the Effects of Rapid Deformation (Impact).  
MIL Std E5272 Environmental Testing.  
MIL Std 810B Environmental Test Methods.  
UBC Std. 26-4 (Formerly UBC 17-6) Multi-Story Fire Evaluation of Exterior Non Load-bearing Foam Plastic Insulated Wall Systems.  
ULC S101 Standard Methods of Fire Endurance Tests of Building Construction Materials.

#### 1.03 DEFINITIONS

- A. Base Coat: The layer consisting of material used to encapsulate one or more layers of Reinforcing Mesh fully embedded in the base coat material that is applied to the outside surface of the EPS.
- B. Building Expansion Joint: A joint through the entire building structure designed to accommodate structural movement.
- C. Contractor: The contractor that installs the Outsulation System to the substrate.
- D. Dryvit: Dryvit Systems, Inc., the manufacturer of the Outsulation System, a Rhode Island corporation.
- E. Expansion Joint: A discontinuity in the Outsulation System.
- F. Finish: An acrylic based coating, available in a variety of textures and colors, which is applied to the outside surface of the base coat.
- G. Insulation Board: Expanded polystyrene (EPS) insulation board, which is affixed to the substrate.
- H. Panel Erector: The contractor who installs the panelized Outsulation System.
- I. Panel Fabricator: The contractor who fabricates the panelized Outsulation System.
- J. Reinforcing Mesh: Glass fiber mesh(es) used to reinforce the base coat and to provide impact resistance.
- K. Sheathing: A substrate in sheet form.
- L. Substrate: The material to which the Outsulation System is affixed.
- M. Substrate System: The total wall assembly including the attached substrate to which the Outsulation System is affixed.

#### 1.04 SYSTEM DESCRIPTION

- A. General: The Dryvit Outsulation System is an Exterior Insulation and Finish System, Class PB, consisting of an adhesive, insulation board, base coat with reinforcing mesh(es), and finish. Mechanically attached systems shall conform to Dryvit specification DS135.
- B. Methods of Installation
  - Field Applied: The Outsulation System is applied to the substrate system in place.
  - Panelized: The Outsulation System is shop-applied to the prefabricated wall panels.
- C. Design Requirements
  - 1. Acceptable substrates for the Outsulation System shall be:
    - a. Unglazed brick, cement plaster, concrete, or masonry.
    - b. Exterior grade gypsum sheathing meeting ASTM C 79 requirements for water-resistant core or Type X core at the time of application of the Outsulation System.
    - c. Water resistance core with fiberglass mat facers meeting ASTM C 1177.
    - d. Exterior fiber reinforced cement and calcium silicate boards.
    - e. APA Exterior or Exposure 1 rated Plywood, Grade C-D or better, nominal 13 mm (1/2 in), minimum 4 ply.
    - f. APA Exposure 1 rated Oriented Strand Board (OSB), nominal 13 mm (1/2 in).
    - g. Galvanized expanded metal lath 1.4 or 1.8 kg/m<sup>2</sup> (2.5 or 3.4 lbs/yd<sup>2</sup>) installed over a solid substrate.
  - 2. Deflection of substrate systems shall not exceed L/240.
  - 3. The slope of inclined surfaces shall not be less than 6:12.
  - 4. The length of inclined surfaces shall not exceed 305 mm (12 in).
  - 5. All areas requiring an impact resistance classification higher than "standard", as defined by EIMA Std. 101.86, shall be as detailed in the drawings and described in the contract documents. Refer to section 1.04.D.2.c of this specification.

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### EXTERIOR INSULATION AND FINISH SYSTEM

#### D. Expansion Joints

1. Design and location of expansion joints in the Outsulation System is the responsibility of the project designer and shall be noted on the project drawings. As a minimum, expansion joints shall be placed at the following locations:
  - a. Where expansion joints occur in the substrate system.
  - b. Where building expansion joints occur.
  - c. Where prefabricated panels abut one another.
  - d. At floor lines in wood frame construction.
  - e. Where the Outsulation System abuts dissimilar materials.
  - f. Where the substrate changes.
  - g. In continuous elevations at intervals not exceeding 23 m (75 ft).
  - h. Where significant structural movement occurs such as changes in roof line, building shape or structural system.
2. Terminations  
The Outsulation System shall be held back from adjoining materials a minimum of 19 mm (3/4 in) for sealant application.  
The EPS insulation board shall be terminated a minimum of 200 mm (8 in) above finished grade.

#### E. Sealants

1. Shall be manufactured and supplied by others.
2. Shall be compatible with Outsulation System materials. Refer to current Dryvit Publication DS153 for listing of sealants tested by sealant manufacturer for compatibility.
3. The sealant backer rod shall be of closed cell type.

#### F. Vapor Retarders

1. Use and location of vapor retarders within a wall assembly is the responsibility of the project designer and shall be noted on the project drawings and specifications. Refer to Dryvit Publication DS159 for additional information.
2. The use of dark colors must be considered in relation to wall surface temperature as a function of local climatic conditions. Use of dark colors in high temperature climates can affect the performance of the system.

#### G. Performance Requirements

1. The Outsulation System shall have been tested for durability as follows:
  - a. Abrasion Resistance: ASTM D 968 (Federal Test Standard 141A Method 6191); no deleterious effects after 500 liters (132 gal).
  - b. Absorption-Freeze-Thaw: 60 cycles, soak at 20 °C (68 °F) for four days, then -10 °C (14 °F) for two hours, then 20 °C (68 °F) for two hours; no checking, cracking, or splitting.
  - c. Accelerated Weathering: ASTM G 23 (Federal Test Standard 141A Method 6151); 2,000 hours. No deterioration.
  - d. Mildew Resistance: ASTM D 3273; passes.
  - e. Moisture Resistance: ASTM D 2247 (Federal Test Standard 141A Method 6201); no deleterious effects after 14 days.
  - f. Salt Spray Resistance: ASTM B 117 (Federal Test Standard 141A Method 6061); 5% concentration for 300 hours. No deleterious effects.
  - g. Water Penetration: ASTM E 331; no water penetration to the innermost surface of the test specimen.
  - h. Water Vapor Transmission: ASTM E 96 Water Method, Procedure B; Standard lamina 10 g/hr·m<sup>2</sup> (14 gr/hr·ft<sup>2</sup>).
2. The Outsulation System shall have been tested for structural performance as follows:
  - a. Bond Strength: ASTM C 297; minimum 132 kPa (19.1 psi); failure in the substrate or insulation board.
  - b. Full Scale Structural Tests: ASTM E 330; minimum failure load under positive or suction force of 4.3 kPa (90 psf) unless otherwise specified; substrate failure.

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### EXTERIOR INSULATION AND FINISH SYSTEM

c. Impact Resistance: In accordance with EIMA Standard 101.86: Refer to table below.

Reinforcing Mesh/Weight g/m <sup>2</sup> (oz/yd <sup>2</sup> )	Minimum Tensile Strengths	EIMA Impact Classification	EIMA Impact Range Joules (in-lbs)		Impact Test Results Joules (in-lbs)	
Standard - 146 (4.3)	27 g/cm (150 lbs/in)	Level 1	3-6	(25-49)	4	(36)
Standard Plus™ - 203 (6)	36 g/cm (200 lbs/in)	Level 2	6-10	(50-89)	6	(56)
Intermediate® - 407 (12)	54 g/cm (300 lbs/in)	Level 3	10-17	(90-150)	12	(108)
Panzer® 15 * - 509 (15)	71 g/cm (400 lbs/in)	Level 4	>17	(>150)	18	(162)
Panzer 20 * - 695 (20.5)	98 g/cm (550 lbs/in)	Level 4	>17	(>150)	40	(352)
Detail® Short Rolls - 146 (4.3)	27 g/cm (150 lbs/in)	n/a	n/a	n/a	n/a	n/a
Corner Mesh™ - 244 (7.2)	49 g/cm (274 lbs/in)	n/a	n/a	n/a	n/a	n/a
*Shall be used in conjunction with Standard Mesh						

3. The Outsulation System shall have been tested for fire performance as follows:
  - a. Flame Spread - ASTM E 84. When tested individually;
4. The EPS insulation board shall have a flame spread index not exceeding 25 and a smoke developed index not exceeding 450.
5. The adhesives and coatings shall have a flame spread index not exceeding 20 and a smoke developed index not exceeding 10.
  - ASTM E 108 (Modified).
  - ASTM E 119 One-Hour Assembly.
  - ASTM E 119 Two-Hour Assembly.
  - UBC 26-4 (Formerly UBC 17-6).
  - ULC S101.
  - NFPA 268.

#### 1.05 SUBMITTALS

- A. Product Data -The contractor shall submit to the owner/architect manufacturer's product data sheets describing products which will be used on this project.
- B. Shop Drawings for Panelized Constructions -The panel fabricator shall prepare and submit to the owner/architect complete drawings, showing; wall layout, connections, details, expansion joints, and installation sequence.
- C. Samples - The contractor shall submit to the owner/architect two samples of the Outsulation System for each finish, texture, and color to be used on the project. The same tools and techniques proposed for the actual installation shall be used. Samples shall be of sufficient size to accurately represent each color and texture to be utilized on the project.

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### EXTERIOR INSULATION AND FINISH SYSTEM

- D. Test Reports -When requested, the contractor shall submit to the owner/architect copies of selected test reports verifying the performance of the Outsulation System.

#### 1.06 QUALITY ASSURANCE

##### A. Qualifications

1. System Manufacturer: Shall be Dryvit Systems, Inc. All materials shall be manufactured or sold by Dryvit and shall be purchased from Dryvit or its authorized distributor.  
Materials shall be manufactured at a facility covered by a current ISO 9001:2000 Certification. Certification of the facility shall be done by a registrar accredited by the American National Standards Institute, Registrar Accreditation Board (ANSI-RAB).
2. Contractor: Shall be knowledgeable in the proper installation of the Dryvit Outsulation System and shall be experienced and competent in the installation of Exterior Insulation and Finish Systems. Additionally the contractor shall possess a current trained contractor certificate from Dryvit.
3. Insulation Board Manufacturer: Shall be listed by Dryvit Systems, Inc., shall be capable of producing the expanded polystyrene (EPS) in accordance with current Dryvit Specification for Insulation Board (DS131), and shall subscribe to the Dryvit Third Party Certification and Quality Assurance Program.
4. Panel Fabricator: Shall be a Contractor experienced and competent in the fabrication of architectural wall panels.
5. Panel Erector: Shall be experienced and competent in the installation of architectural wall panel systems and shall be:
  - a. The panel fabricator, or
  - b. An erector approved by the panel fabricator or
  - c. An erector under the direct supervision of the panel fabricator

##### B. Regulatory Requirements

1. The EPS shall be separated from the interior of the building by a minimum 15-minute thermal barrier.
2. The use and maximum thickness of EPS shall be in accordance with the applicable building codes.

##### C. Certifications

1. The surface burning characteristics of the EPS shall be classified by Underwriters Laboratories and be listed in the U.L. Building Materials Directory as having a flame spread and smoke development rating of not greater than 25 and 450 respectively.
2. The Outsulation System shall be recognized for the intended use by the applicable building code(s).
3. The Outsulation System shall meet the criteria set forth in the Health and Human Services Technical Bulletin No. 30.
4. The Outsulation System shall be approved for use in this project by the applicable state and/or building code authorities.

##### D. Mock-Up

1. The contractor shall, before the project commences, provide the owner/architect with a mock-up for approval.
2. The mock-up shall be of suitable size as required to accurately represent the products being installed, as well as each color and texture to be utilized on the project.
3. The mock-up shall be prepared with the same products, tools, equipment, and techniques required for the actual application. The finish used shall be from the same batch as is being used on the project.
4. The approved mock-up shall be available and maintained at the job site.
5. For panelized construction, the mock-up shall be available and maintained at the panel fabrication location.

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### EXTERIOR INSULATION AND FINISH SYSTEM

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. All Dryvit materials shall be delivered to the job site in the original, unopened packages with labels intact.
- B. Upon arrival, materials shall be inspected for physical damage, freezing, or overheating. Questionable materials shall not be used.
- C. Materials shall be stored at the jobsite in a cool, dry location, out of direct sunlight, protected from weather and other damage. Minimum storage temperature shall be 7 °C (45 °F) for Demandit®, Revyvit®, and Color Prime™; 10 °C (50 °F) for Ameristone and 4 °C (40 °F) for other wet products. For Custom Brick™ finish, refer to Custom Brick Polymer Specification, DS151. Minimize exposure of materials to temperatures over 32°C (90 °F). Finishes exposed to temperatures over 43°C (110 °F) for even short periods may exhibit skinning, increased viscosity, and should be inspected prior to use.

#### 1.08 PROJECT CONDITIONS

- A. Environmental Requirements
  - 1. Application of wet materials shall not take place during inclement weather unless appropriate protection is provided. Protect materials from inclement weather until they are dry.
  - 2. Application of wet materials shall be at a minimum ambient temperature of 4 °C (40 °F), 7 °C (45 °F) or 10 °C (50 °F) depending on product, and rising. These temperatures shall be maintained for a minimum of 24 hours (48 hours for Ameristone) thereafter, or until completely dry.
- B. Existing Conditions
  - 1. The contractor shall have access to electric power, clean water, and a clean work area at the location where the Dryvit materials are to be applied.

#### 1.09 SEQUENCING AND SCHEDULING

- A. Installation of the Outsulation System shall be coordinated with other construction trades.
- B. Sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffold lines, texture variations, etc.

#### 1.10 LIMITED MATERIALS WARRANTY

- A. Dryvit Systems, Inc. shall provide a limited warranty against defective material upon written request. Dryvit shall make no other warranties, expressed or implied. Dryvit does not warrant workmanship. Full details are available from Dryvit Systems, Inc.

#### 1.11 DESIGN RESPONSIBILITY

- A. It is the responsibility of both the specifier and the purchaser to determine if a product is suitable for their intended use. The designer selected by the purchaser shall be responsible for all decisions pertaining to design, detail, structural capability, attachment details, shop drawings, and the like. Dryvit has prepared guidelines in the form of specifications, application details, and product sheets to facilitate the design process only. Dryvit is not liable for any errors or omissions in design, detail, structural capability, attachment details, shop drawings, or the like, whether based upon the information prepared by Dryvit or otherwise, or for any changes which purchasers, specifiers, designers, or their appointed representatives may make to Dryvit's published comments.

#### 1.12 MAINTENANCE

- A. Maintenance and repair shall follow the procedures noted in Dryvit Application Instructions DS204.
- B. All Dryvit products are designed to minimize maintenance. However, as with all building products, depending on location, some cleaning may be required. See Dryvit publication DS152 on Cleaning & Recoating.
- C. Sealants and flashings should be inspected on a regular basis, and repairs made as necessary.

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### EXTERIOR INSULATION AND FINISH SYSTEM

#### PART II - PRODUCTS

##### 2.01 MANUFACTURING

- A. All components of the Outsulation System shall be obtained from Dryvit or its authorized distributors.

##### 2.02 MATERIALS

- A. Portland Cement: Shall be Type I, I-II or II, meeting ASTM C 150, white or gray in color, fresh and free of lumps.
- B. Water: Shall be clean and free of foreign matter
- C. Mechanical Fasteners: Shall be Wind-lock's Wind Devil™ plates, or equivalent, used in conjunction with corrosion resistant fasteners appropriate for the substrate system.

##### 2.03 COMPONENTS

- A. Adhesives: Used to adhere the EPS to the substrate, shall be compatible with the substrate and the EPS.
  - 1. Cementitious: A liquid polymer based material, which is field mixed with Portland cement for use over non wood-based substrates.
    - a. Shall be Genesis® or Primus®.
  - 2. Noncementitious: A factory-mixed, fully formulated water based adhesive for use over wood-based substrates.
    - a. Shall be ADEPS®.
  - 3. Ready mixed: A dry blend cementitious, co-polymer based product, field mixed with water for use over non wood-based substrates.
    - a. Shall be Primus DM™, Genesis DM™, Rapidry DM™ 35-50 or 50-75.
- B. Insulation Board: Expanded polystyrene meeting Dryvit Specification for Insulation Board DS131 and supplied by an EPS board supplier licensed by Dryvit.
- C. Base Coat: Shall be compatible with the EPS insulation board and reinforcing mesh(es).
  - 1. Cementitious: A liquid polymer based material, which is field mixed with Portland cement. Shall be Genesis or Primus.
  - 2. Noncementitious: A factory-mixed, fully formulated, water based product. Shall be NCB™.
  - 3. Ready mixed: A dry blend cementitious, copolymer-based product, field mixed with water. Shall be Primus DM or Genesis DM, Rapidry DM™ 35-50 or 50-75.
- D. Reinforced Meshes: Shall be a balanced open weave, glass fiber fabric treated for compatibility with other System materials.
- E. Finishes: Shall be the type, color, and texture as selected by the architect/owner and shall be one or more of the following:
  - 1. Standard DPR (Dirt Pickup Resistance): Water-based, acrylic coatings with integral color and texture, and formulated with DPR chemistry:
    - a. Quarzputz® DPR: Open-texture pattern.
    - b. Sandblast® DPR: Medium texture.
    - c. Freestyle® DPR: Fine texture.
    - d. Sandpebble® DPR: Pebble texture.
    - e. Sandpebble® Fine DPR : Fine pebble texture.
  - 2. Finishes: Water-based, lightweight acrylic coating with integral color and texture and formulated with DPR chemistry:
    - a. Quarzputz® E
    - b. Sandpebble® E
    - c. Sandpebble® Fine E
  - 3. Factory Mutual Finishes: Water-based, acrylic coatings with integral color and texture, formulated with PMR chemistry:
    - a. Quarzputz® FM

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### EXTERIOR INSULATION AND FINISH SYSTEM

- b. Sandblast® FM
- c. Sandpebble® FM
- d. Sandpebble® Fine FM
- 4. Specialty Finishes: Factory mixed, water-based acrylic:
  - a. Ameristone: Multi-colored quartz aggregate with a flamed granite appearance.
  - b. Stone Mist®: Ceramically colored quartz aggregate.
  - c. Custom Brick Polymer Finish: Acrylic polymer-based finish used in conjunction with a proprietary template system to create the look of stone, brick, slate or tile.
  - e. TerraNeo®: 100% acrylic-based finish with large mica chips and multi-colored quartz aggregates.
  - f. Limestone™: A premixed, 100% acrylic-based finish designed to replicate the appearance of limestone blocks.
- 5. Elastomeric DPR (Dirt Pickup Resistance): Water-based elastomeric acrylic coating with integral color and texture, and formulated with DPR chemistry:
  - a. Weatherlastic® Quarzputz
  - b. Weatherlastic® Sandpebble
  - c. Weatherlastic® Sandpebble Fine
  - d. Weatherlastic® Adobe
- 6. Medallion Series PMR™ (Proven Mildew Resistance): Water-based acrylic coating with integral color and texture and formulated with PMR chemistry:
  - a. Quarzputz® PMR
  - b. Sandblast® PMR
  - c. Freestyle® PMR
  - e. Sandpebble® PMR
  - f. Sandpebble® Fine PMR
- 7. Coatings, Primers and Sealers:
  - a. Demandit
  - b. Weatherlastic® Smooth
  - c. Tuscan Glaze™
  - e. Revyvit
  - f. Color Prime
  - g. Prymit®
  - h. SealClear™

## PART III - EXECUTION

### 3.01 EXAMINATION

- A. Prior to installation of the Outsulation System, the contractor shall ensure that the substrate:
  - 1. Is of a type listed in Section 1.04.C.1
  - 2. Is flat within 6.4 mm (1/4 in) in a 1.2 m (4 ft) radius.
  - 3. Is sound, dry, connections are tight, has no surface voids, projections or other conditions that may interfere with the Outsulation System installation.
- B. The contractor shall notify the general contractor and/or architect and/or owner of all discrepancies.
- C. Prior to the installation of the Outsulation System, the architect or general contractor shall insure that all needed flashings and other waterproofing details have been completed, if such completion is required prior to the Outsulation application.

### 3.02 SURFACE PREPARATION

- A. The substrate shall be prepared as to be free of foreign materials such as oil, dust, dirt, form release agents, paint, wax, water repellants, moisture, frost and any other materials that inhibit adhesion.



## **SECTION 07240**

### **EXTERIOR INSULATION AND FINISH SYSTEM**

#### **3.03 INSTALLATION**

- A. The Dryvit Outsulation System shall be installed in accordance with the current application instructions DS204.
- B. The overall minimum base coat thickness shall be sufficient to fully embed the mesh (thickness not to exceed 3/32"). The recommended method is to apply the base coat in two (2) passes.
- C. Outsulation base coat surfaces in contact with sealant shall be coated with Demandit or Color Prime. Sealant shall not be applied directly to textured finishes or base coat surfaces.
- D. When installing the Outsulation System, the notched trowel method of adhesive application shall be used over gypsum sheathing substrates.

#### **3.04 FIELD QUALITY CONTROL**

- A. The contractor shall be responsible for the proper application of the Dryvit materials.
- B. Dryvit assumes no responsibility for on-site inspections or application of its products.
- C. If required, the contractor shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures, workmanship, and as to the specific products used.
- D. If required, the EPS supplier shall certify in writing that the EPS meets Dryvit's specifications.
- E. If required, the sealant contractor shall certify in writing that the sealant application is in accordance with the sealant manufacturer's and Dryvit's recommendations.

#### **3.05 CLEANING**

- A. All excess Outsulation System materials shall be removed from the job site by the contractor in accordance with contract provisions and as required by applicable law.
- B. All surrounding areas, where the Outsulation System has been installed, shall be left free of debris and foreign substances resulting from the contractor's work.

#### **3.06 PROTECTION**

- A. The Outsulation System and the project shall be protected from weather and other damage until permanent protection in the form of flashings, sealants, etc. are installed.





## SECTION 07250

### WEATHER BARRIERS

#### 07250 WEATHER BARRIERS

##### PART 1 - GENERAL

###### 1.1 SECTION INCLUDES

- A. Weather barrier membrane
- B. Seam Tape
- C. Flashing
- D. Fasteners

###### 1.2 REFERENCES

- A. ASTM International
  - 1. ASTM C920; Standard Specification for Elastomeric Joint Sealants
  - 2. ASTM C1193; Standard Guide for Use of Joint Sealants
  - 3. ASTM D882; Test Method for Tensile Properties of Thin Plastic Sheeting
  - 4. ASTM D1117; Standard Guide for Evaluating Non-woven Fabrics
  - 5. ASTM E84; Test Method for Surface Burning Characteristics of Building Materials
  - 6. ASTM E96; Test Method for Water Vapor Transmission of Materials
  - 7. ASTM E1677; Specification for Air Retarder Material or System for Framed Building Walls
  - 8. ASTM E2178; Test Method for Air Permeance of Building Materials
- B. AATCC – American Association of Textile Chemists and Colorists
  - 1. Test Method 127 Water Resistance: Hydrostatic Pressure Test
- C. TAPPI
  - 1. Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area)
  - 2. Test Method T-460; Air Resistance (Gurley Hill Method)

###### 1.3 SUBMITTALS

- A. Refer to Division 1.
- B. Product Data: Submit manufacturer current technical literature for each component.
- C. Samples: Weather Barrier Membrane, minimum 8-1/2 inches by 11 inch.
- D. Quality Assurance Submittals
  - 1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
  - 2. Manufacturer Instructions: Provide manufacturer's written installation instructions.
  - 3. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier assembly installation.
- E. Closeout Submittals
  - 1. Refer to Division 1.
  - 2. Weather Barrier Warranty: Manufacturer's executed warranty form with authorized signatures and endorsements indicating date of Substantial Completion.

## **SECTION 07250**

### **WEATHER BARRIERS**

#### **1.4 QUALITY ASSURANCE**

##### **A. Qualifications**

1. Installer shall have experience with installation of weather barrier assemblies under similar conditions.
2. Installation shall be in accordance with weather barrier manufacturer's installation guidelines and recommendations.
3. Source Limitations: Provide weather barrier and accessory materials produced by single manufacturer.

##### **B. Mock-up**

1. Install mock-up using approved weather barrier assembly including fasteners, flashing, tape and related accessories per manufacturer's current printed instructions and recommendations.
  - a. Mock-up size: [10 feet by 10 feet] [insert size].
  - b. Mock-up Substrate: Match wall assembly construction, including window opening.
  - c. Mock-up may remain as part of the work.
2. Contact manufacturer's designated representative prior to weather barrier assembly installation, to perform required mock-up visual inspection and analysis as required for warranty.

##### **C. Pre-installation Meeting**

1. Hold a pre-installation conference, two weeks prior to start of weather barrier installation. Attendees shall include Contractor, Architect, Engineer, Consultant, Installer, Owner's Representative, and Weather Barrier Manufacturer's Designated Representative.
2. Review all related project requirements and submittals, status of substrate work and preparation, areas of potential conflict and interface, availability of weather barrier assembly materials and components, installer's training requirements, equipment, facilities and scaffolding, and coordinate methods, procedures and sequencing requirements for full and proper installation, integration and protection.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- A. Refer to Division 1.
- B. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store weather barrier materials as recommended by weather barrier manufacturer.

#### **1.6 SCHEDULING**

- A. Review requirements for sequencing of installation of weather barrier assembly with installation of windows, doors, louvers and flashings to provide a weather-tight barrier assembly.
- B. Schedule installation of weather barrier materials and exterior cladding within nine months of weather barrier assembly installation.

#### **1.7 WARRANTY**

- A. Refer to Division 1.
- B. Special Warranty
  1. Special weather-barrier manufacturer's warranty for weather barrier assembly for a period of ten (10) years from date of final weather barrier installation.
  2. Approval by weather barrier manufacturer for warranty is required prior to assembly installation.

## SECTION 07250

### WEATHER BARRIERS

#### PART 2 - PRODUCTS

##### 2.1 WEATHER BARRIER

- A. A non-perforated, nonwoven, non-absorbing, breathable membrane that resists air flow, bulk water and wind driven rain and channels water and moisture to the outside of the building envelope. It has microscopic pores that allow moisture vapor to escape from inside walls.
- B. Physical Properties
  - 1. Spunbonded polyolefin membrane.
- C. Performance Characteristics:
  - 1. Air Penetration: 0.001 cfm/ft<sup>2</sup> at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677.
  - 2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.
  - 3. Water Penetration Resistance: Minimum 280 cm when tested in accordance with AATCC Test Method 127.
  - 4. Basis Weight: Minimum 2.7 oz/yd<sup>2</sup>, when tested in accordance with TAPPI Test Method T-410.
  - 5. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
  - 6. Tensile Strength: Minimum 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.
  - 7. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117.
  - 8. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 10, Smoke Developed: 10.

##### 2.2 ACCESSORIES

- A. Seam Tape: As recommended by the weather barrier manufacturer.
- B. Fasteners:
  - 1. 1-5/8 inch rust resistant screw with 2-inch diameter plastic cap or manufacturer approved 1-1/4" or 2" metal gasketed washer
  - 2. Masonry tap-con fasteners with Caps: 2-inch diameter plastic cap fasteners.
- C. Sealants
  - 1. Provide sealants that comply with ASTM C920, elastomeric polymer sealant to maintain watertight conditions.
  - 2. Products: Sealants recommended by the weather barrier manufacturer.
- D. Adhesives:
  - 1. Provide adhesive recommended by weather barrier manufacturer.
  - 2. Products: Adhesives recommend by the weather barrier manufacturer.
- E. Primers:
  - 1. Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.
  - 2. Products: Primers recommended by the flashing manufacturer.
- F. Flashing
  - 1. Flexible membrane flashing materials for window openings and penetrations recommended by manufacturer.

## **SECTION 07250**

### **WEATHER BARRIERS**

2. Straight flashing membrane materials for flashing windows and doors and sealing penetrations such as masonry ties, etc. recommended by manufacturer.

#### **PART 3 – EXECUTION**

##### **3.1 EXAMINATION**

- A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.

##### **3.2 INSTALLATION – WEATHER BARRIER**

- A. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.
- B. Install weather barrier prior to installation of windows and doors.
- C. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.
- D. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather barrier plumb and level.
- E. Sill Plate Interface: Extend lower edge of weather barrier over sill plate interface 3-6 inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer.
- F. Window and Door Openings: Extend weather barrier completely over openings.
- G. Overlap weather barrier
  1. Exterior corners: minimum 12 inches.
  2. Seams: minimum 6 inches.
- H. Weather Barrier Attachment:
  1. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommend fasteners, space 12-18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.

##### **AND/OR**

2. Attach weather barrier to masonry. Secure using weather barrier manufacturer recommend fasteners, space 12-18 inches vertically on center and 24 inches maximum horizontally. Weather barrier may be temporarily attached to masonry using recommended adhesive, placed in vertical strips spaced 24 inches on center, when coordinated on the project site.
- I. Apply flashing to weather barrier membrane prior to installing cladding anchors.

##### **3.3 SEAMING**

- A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.
- B. Seal any tears or cuts as recommended by weather barrier manufacturer.

##### **3.4 OPENING PREPARATION (for use with non-flanged windows - all cladding types)**

- A. Flush cut weather barrier at edge of sheathing around full perimeter of opening.
- B. Cut a head flap at 45-degree angle in the weather barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

##### **3.5 FLASHING (for use with non-flanged windows - all cladding types)**

- A. Cut flexible flashing a minimum of 12 inches longer than width of sill rough opening.

## SECTION 07250

### WEATHER BARRIERS

- B. Cover horizontal sill by aligning flexible flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
- C. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.
- D. Apply 9-inch wide strips of flashing at jambs. Align flashing with interior edge of jamb framing. Start flashing at head of opening and lap sill flashing down to the sill.
- E. Spray-apply primer to top 6 inches of jambs and exposed sheathing.
- F. Install flexible flashing at opening head using same installation procedures used at sill. Overlap jamb flashing a minimum of 2 inches.
- G. Coordinate flashing with window installation.
- H. On exterior, install backer-rod in joint between window frame and flashed rough framing. Apply sealant at jambs and head, leaving sill unsealed. Apply sealants in accordance with sealant manufacturer's instructions and ASTM C1193.
- I. Position weather barrier head flap across head flashing. Adhere using flashing over the 45-degree seams.
- J. Tape top of window in accordance with manufacturer recommendations.
- K. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply sealant around entire window to create air seal. Apply sealant in accordance with sealant manufacturer's instructions and ASTM C1193.

#### 3.6 OPENING PREPARATION (for use with flanged windows)

- A. Cut weather barrier in a modified "I-cut" pattern.
  - 1. Cut weather barrier horizontally along the bottom of the header.
  - 2. Cut weather barrier vertically 2/3 of the way down from top center of window opening.
  - 3. Cut weather barrier diagonally from bottom of center vertical cut to the left and right corners of the opening.
  - 4. Fold side and bottom weather barrier flaps into window opening and fasten.
- B. Cut a head flap at 45-degree angle in the weather barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

#### 3.7 FLASHING (for use with flanged windows)

- A. Cut flexible flashing a minimum of 12 inches longer than width of sill rough opening.
- B. Cover horizontal sill by aligning flexible flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
- C. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.
- D. On exterior, apply continuous bead of sealant to wall or backside of window mounting flange across jambs and head. Do not apply sealant across sill.
- E. Install window according to manufacturer's instructions.
- F. Apply strips of flashing at jambs overlapping entire mounting flange. Extend jamb flashing 1-inch above top of rough opening and below bottom edge of sill flashing.
- G. Apply strip of flashing as head flashing overlapping the mounting flange. Head flashing should extend beyond outside edges of both jamb flashings.
- H. Position weather barrier head flap across head flashing. Adhere flashing over the 45-degree seams.
- I. Tape head flap in accordance with manufacturer recommendations.

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### **WEATHER BARRIERS**

- J. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply sealant around entire window to create air seal. Apply sealant in accordance with sealant manufacturer's instructions and ASTM C 1193.

#### **3.8 FIELD QUALITY CONTROL**

- A. Notify manufacturer's designated representative to obtain [required] periodic observations of weather barrier assembly installation.

#### **3.9 PROTECTION**

- A. Protect installed weather barrier from damage.

**END OF SECTION**

## SECTION 07260

### VAPOR RETARDERS

#### 07260 VAPOR RETARDERS

##### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Reinforced vapor retarders.
- B. Tape to seal joints and repair vapor retarder.
- C. Pipe boots for sealing penetrations.

##### 1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Slabs on grade.
- B. Section 05400 - Cold Formed Metal Framing: Wall and ceiling framing.

##### 1.3 REFERENCES

- A. ASTM D 882 - Tensile Properties of Thin Plastic Sheeting; 2001.
- B. ASTM D 1709 - Impact Resistance of Plastic Film by the Free-Falling Dart Method; 2001.
- C. ASTM D 2582 - Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting; 2000.
- D. ASTM D 3776 - Mass Per Unit Area (Weight) of Woven Fabric; 1996.
- E. ASTM D 4833 - Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products; 2000.
- F. ASTM E 84 - Surface Burning Characteristics of Building Materials; 2001.
- G. ASTM E 96 - Water Vapor Transmission of Materials; 2000.
- H. ASTM E 1643 - Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 1998.
- I. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 1997.
- J. NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films; 1999.

##### 1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. [ [Product Data](#) ]: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Samples: Submit manufacturer's samples of reinforced vapor retarders.



## SECTION 07260

### VAPOR RETARDERS

- D. Verification Samples: For each product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

#### 1.5 QUALITY ASSURANCE

- A. Pre-installation Meeting: Convene a pre-installation meeting two weeks before start of installation of reinforced vapor retarders. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and installer. Review installation, protection, and coordination with other work.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:
  - 1. Store products in manufacturer's unopened packaging until ready for installation.
  - 2. Store materials in a clean, dry area in accordance with manufacturer's instructions.
- C. Handling: Protect materials during handling and installation to prevent damage.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

- A. Acceptable Manufacturer: Specification is based on products as manufactured by Griffolyn, Division of Reef Industries, Inc., which is located at: 9209 Alameda Genoa Rd. ; Houston, TX 77075; Toll Free Tel: 800-231-6074; Tel: 713-507-4251; Fax: 713-507-4295; Email: [request info](#); Web: [www.reefindustries.com](http://www.reefindustries.com)
- B. Requests for substitutions will be considered in accordance with provisions of Division 1.

### 2.2 REINFORCED VAPOR RETARDERS

- A. Fire Retardant Reinforced Vapor Retarder: Griffolyn Type-90 FR.
  - 1. Material: Fire retardant 5-ply laminate, combining three layers of linear low-density polyethylene and two high-strength non-woven cord grids.
  - 2. Weight: 70 lb/1,000 sq ft (34.2 kg/100 sq m), when tested in accordance with ASTM D 3776.
  - 3. Puncture Propagation Tear: 36 lb (1608 N), when tested in accordance with ASTM D 2582.
  - 4. Permeance (Perm): 0.028 grains/hr-sq ft-in Hg (1.61 ng/(Pa-s-sq m)), when tested in accordance with ASTM E 96.
  - 5. Drop Dart: 1,200 g, when tested in accordance with ASTM D 1709.
  - 6. Tensile Strength: 185 lb/4,250 psi (823 N/29,200 kPa), when tested in accordance with ASTM D 882, 3 inch (76 mm) wide specimen.
  - 7. Puncture Strength: 47 lb (209 N), when tested in accordance with ASTM D 4833.
  - 8. Surface Burning Characteristics:
    - a. Large Scale: Pass, when tested in accordance with NFPA 701.
    - b. Class I, Class B flame spread rating. Flame spread 5, smoke developed 135, when tested in accordance with ASTM E 84.
  - 9. Usable Temperature Range: Minus 40 to 170 degrees F (minus 40 to 77 degrees

## SECTION 07260

### VAPOR RETARDERS

- C).
- 10. Application(s):
  - a. Use on exterior walls on inside face of framing.
  - b. Use on interior walls and ceilings enclosing the Swimming Pool room.
- B. Reinforced Vapor Retarder and Barrier: for use under concrete slabs; is specified under Section 03300 - Cast-In-Place Concrete: Slabs on grade.

#### 2.3 ACCESSORIES

- A. General: Ensure accessories are from same manufacturer as reinforced vapor retarders.
- B. Mastic Tape: Griffolyn Fab Tape.
  - 1. Description: Black, double-sided, asphaltic, pressure-sensitive, mastic tape.
  - 2. Weight: 3.75 pounds per 100 feet (1.7 kg per 30 m).
  - 3. Thickness: 35 mils (0.9 mm).
  - 4. 3 Inch Seam Shear: 35 pounds (156N).
- C. Self-Adhesive Repair Tape: Griffolyn Griff-Tape.
- D. Pipe Boots: Griffolyn pipe boots, factory-fabricated.

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Examine surfaces and areas to receive reinforced vapor retarders. Notify Architect in writing defects of work and other unsatisfactory site conditions that would cause defective installation of vapor retarders. Do not begin installation until unacceptable conditions have been corrected.
- B. Verify site dimensions.
- C. Commencement of work will imply acceptance of substrate.

##### 3.2 INSTALLATION

- A. Install reinforced vapor retarders in accordance with manufacturer's instructions.
- B. Install vapor retarders continuously at locations as indicated on the drawings. Ensure there are no discontinuities in vapor retarder at seams and penetrations.
- C. Install vapor retarders in largest practical widths.
- D. Ensure surface beneath vapor retarder is smooth with no sharp projections.
- E. Join sections of vapor retarder and seal penetrations in vapor retarder with mastic tape. Ensure vapor retarder surfaces to receive mastic tape are clean and dry.
- F. Immediately repair holes in vapor retarder with self-adhesive repair tape.
- G. Seal around pipes and other penetrations in vapor retarder with pipe boots in accordance with manufacturer's instructions.

## **SECTION 07260**

### **VAPOR RETARDERS**

#### **3.3 PROTECTION**

- A. Protect reinforced vapor retarders from damage until covered by wall finish.
- B. Protect reinforced vapor retarders from damage during installation of reinforcing steel and utilities and during placement of granular materials or concrete slab.
- C. Immediately repair damaged vapor retarder in accordance with manufacturer's instructions.

END OF SECTION

## **SECTION 07270**

### **FIRE STOPPING**

#### **07270 FIRE STOPPING**

##### **1.01 DESCRIPTION:**

- A. Furnish and install all labor, material and equipment necessary to properly install fire-stopping for conditions specified, whether or not fire-stopping is indicated, whether such material is designed as insulation, safing, or otherwise.
- B. All fire-stop products and systems shall be designed and installed so that the basic sealing system will allow the full restoration of the thermal barrier being penetrated with minimal repair if penetrants are subsequently removed.

##### **1.02 WORK INCLUDED:**

- A. Through Penetrations: Provide fire-stopping in all open penetrations and in the annular space in all penetrations in any bearing or non-bearing fire-rated barrier.
- B. Construction Joints/Gaps: Provide fire-stopping at construction joints and gaps such as; between the edges of floor slabs and exterior walls, between the tops of walls and the underside of floors, in the control joints in walls and floors and, in expansion joints.
- C. Membrane Penetrations: Where required by code, all membrane penetrations in rated walls shall be protected with fire-stopping products that meet the requirements of third party time/temperature testing.
- D. Smoke-Stopping: As required by other sections, smoke-stops shall be provided for Through Penetrations, Membrane Penetrations, and Construction Gaps with a material approved and tested for such applications.

##### **2.01 MATERIALS:**

- A. Acceptable manufacturers are Specified Technologies Inc./G.E. Pensil (STI), or 3M Protection Products/Dow Corning, including the following: Intumescent Firestop Sealants and Caulk, Latex Firestop Sealants, Silicone Firestop Sealants and Caulk, Firestop Putty, Firestop Collars, Wrap Strips, 2-Part Silicone Firestop Foam, Firestop Mortar, Composite Board, etc.

##### **3.01 INSTALLATION:**

- a. Installation of fire-stops shall be performed by an applicator / installer qualified and trained by the manufacturer. Installation shall be performed in strict accordance with manufacturer's detailed installation procedures. Contractor whose material, equipment or otherwise, that makes the penetration shall be responsible for fire-stopping that particular penetration.
- b. Fire-stopping shall precede gypsum board finishing.
- c. Leave finished work in neat, clean condition with no evidence of spill-overs or damage to adjacent surfaces. Remove spilled and excess materials adjacent to fire-stopping without damaging adjacent surfaces.

**END**



## SECTION 07410

### PREFORMED METAL STANDING SEAM ROOFING

#### 07410 PREFORMED METAL STANDING SEAM ROOFING

##### PART 1 - GENERAL

##### 1.1 DESCRIPTION OF WORK

- A. This section covers the pre-finished, pre-fabricated Architectural standing seam roof system. All metal trim, accessories, fasteners, insulation and sealants indicated on the drawings as part of this section.
- B. Drawings and general provisions of the Contract, including general and Supplementary Conditions and Division 01 Specifications, apply to this section.
- C. Related Work Specified Elsewhere
  - 1. Roof Deck structural steel, flat roof systems, perimeter edge systems. Roof hatches, firestopping not included in this section.

##### 1.2 SUMMARY

- A. Section Includes
  - 1. Factory formed Standing Seam metal roof panels
- B. Related work specified elsewhere. (Note: select from the below or add appropriate sections)
  - 1. Section 05100 - Structural Steel
  - 2. Section 05200 or 05400 - Steel Joists
  - 3. Section 07600 - Flashing and Sheet Metal

##### 1.3 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal, and accessories necessary for a complete weathertight roofing system.
- B. References:
  - 1. American Society for Testing and Materials (ASTM)
    - a. ASTM A 653: Steel Sheet, Zinc Coated by the Hot Dip Process
    - b. ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process
    - c. ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate
    - d. ASTM B370 Standard Specification for Copper Sheet and Strip for Building Construction
  - 2. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
    - a. SMACNA Architectural Sheet Metal Manual, 1993 edition

## **SECTION 07410**

### **PREFORMED METAL STANDING SEAM ROOFING**

3. American Iron and Steel Institute (AISI)
  - a. AISI Cold Formed Steel Design Manual
4. Aluminum Association
  - a. Aluminum Design Manual
5. Metal Construction Association
  - a. Preformed metal Wall Guidelines
6. Code References
  - a. ASCE, Minimum Loads for Buildings and Other Structures
  - b. BOCA National Building Codes
  - c. UBC Uniform Building Code
  - d. SBC Standard Building Code

#### **1.4 QUALITY ASSURANCE**

- A. Petersen Aluminum Corp, Elk Grove Village, IL, 800-323-1960 products establish a minimum of quality required.
- B. Manufacturer and erector shall demonstrate experience of a minimum of five (5) years in this type of project.
- C. Panels shall be factory-produced only. No portable, installer-owned or installer-rented machines will be permitted.

#### **1.5 SUBSTITUTIONS**

- A. The material, products and equipment specified in this section establish a standard for required function, dimension, appearance and quality to be met by any proposed substitution.

#### **1.6 SYSTEM DESCRIPTION**

- A. Material to comply with:
  1. ASTM A792/A792M Standard Specification for Sheet Steel, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip process

#### **1.7 ROOF SYSTEM PERFORMANCE TESTING**

- A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation or other defects in construction.
- B. Roof System shall be designed to meet Standard Building Code Wind Load requirements.
- C. Panels to meet:

## SECTION 07410

### PREFORMED METAL STANDING SEAM ROOFING

1. Water Penetration: When tested per ASTM E-283/1680 and ASTM E-331/1646 there shall be no uncontrolled water penetration or air infiltration through the panel joints.
2. UL 2218 - Impact Resistance rated.
3. Roof System shall be designed to meet a UL Class 90 wind uplift in accordance with UL standard 580.

#### 1.8 WARRANTIES

- A. Finish warranty: Manufacturer's standard form in which manufacturer agrees to repair finish or replace standing seam metal roof panels that show evidence of deterioration of factory-applied finish within specified warranty period.
  1. Exposed Panels Finish - deterioration includes the following:
    - a. Color fading more than 5 hunter units when tested according to ASTM D 2244
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214
    - c. Cracking, checking, peeling or failure of a paint to adhere to a bare metal.
  2. Warranty Period: 20 Years from the date of substantial completion
- B. Applicator shall furnish written warranty for a two (2) year period from date of substantial completion of building covering repairs required to maintain roof and flashings in watertight condition.

#### 1.9 SUBMITTALS

- A. Furnish detailed drawings showing profile and gauge of exterior sheets, location and type of fasteners, location, gauges, shape and method of attachment of all trim locations and types of sealants, and any other details as may be required for a weather-tight installation.
- B. Provide finish samples of all colors specified.
- C. Shop drawings: Show fabrication and installation layouts of metal roof panels, metal wall panels or metal soffit panels, details of edge conditions, side-seam joints, panel profiles, corners, anchorages, trim, flashings, closures and accessories, and special details. Distinguish between factory and field-assembled work
- D. Coordination Drawings: Roof plans, drawn to scale, on which the following are shown and coordinated with each other, base don input from installer of the items involved:
  1. Roof panels and attachments
  2. Metal trusses, bracings and supports
  3. Roof-mounted items including snow guards and items mounted on roof curbs.

#### 1.10 DELIVERY, STORAGE AND HANDLING

- A. Ordering: Comply with manufacture's ordering instruction and lead time requirements to avoid construction delays.



## SECTION 07410

### PREFORMED METAL STANDING SEAM ROOFING

- B. Deliver components, sheets, metal roof panels and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- C. Unload, store and erect metal roof panels in a manner to prevent bending, warping, twisting and surface damage.
- D. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting or other surface damage.
- E. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

#### 1.11 PROJECT CONDITIONS

- A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

#### 1.12 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim and construction of decks, parapet walls and other adjoining work to provide a leakproof, secure and noncorrosive installation.

### PART 2 - PRODUCTS

#### 2.1 PANEL DESIGN

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates and accessories required for a weathertight installation.
- B. Roof panels shall be Redi Roof Standing Seam in 12" widths with 1 9/16" high seams (with offsets) or 1 3/8" high seams (without offsets).
- C. Panels to be produced Smooth - Factory Standard.
- D. Panels to be designed for attachment with concealed fastener clips, spaced as required by the manufacturer to provide for both positive and negative design loads, while allowing for the expansion and contraction of the entire roof system resulting from variations in temperature.
- E. Forming: Use continuous end rolling method. No end laps on panels. No portable rollforming machines will be permitted on this project, no installer-owned or installer-rented machines will be permitted. It is the intent of the Architect to provide Factory-Manufactured panel systems only for this project.

## SECTION 07410

### PREFORMED METAL STANDING SEAM ROOFING

#### 2.2 ACCEPTABLE MANUFACTURERS

- A. This project is detailed around the roofing product of Petersen Aluminum Corporation  
Petersen Aluminum Corp, Elk Grove Village, IL, 800-323-1960, Redi Roof Standing Seam.

#### 2.3 MATERIALS AND FINISHES

- A. Preformed roofing panels shall be fabricated of 22 GA Steel
- B. Color shall be \*Standard Pac-Clad Finish
- C. Finish shall be Kynar 500 or Hylar 5000 Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over a 0.25 to 0.3 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil, to meet AAMA 621. Bottom side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesions, flexibility, longevity as specified by Kynar 500 or Hylar 5000 finish supplier.
- D. If Strippable coating to be applied on the pre-finished panels to the top side to protect the finish during fabrication, shipping and handling, film shall be removed before installation.
- E. Trim: Trim shall be fabricated of the same material and finish to match the profile, and will be press broken in lengths of 10 to 12 feet. Trim shall be formed only by the manufacturer of their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting.
- F. Closures: use composition or metal profiled closures at the top of each elevation to close ends of the panels. Metal closures to be made in the same material and finish as face sheet.
- G. Fasteners: Fasteners shall be of type, material, size, corrosion resistance, holding power and other properties required to fasten miscellaneous framing members to substrates.
- H. Substrate shall be Plywood
- I. Roofing Underlayment
  - 1. On all surfaces to be covered with roofing material, furnish and install a 40 mil "Peel & Stick membrane", required as outlined by metal panel manufacturer. Membrane to be a minimum of 40 mil thickness, smooth, non-granular, by one of the following manufacturers:
    - a. W.R Grace "Ice & water Shield"
    - b. Cetco Strongseal
    - c. Carlisle CCW WIP 300HT
    - d. Interwrap Titanium PSU
    - e. MFM Corp "Wind & Water Shield"
    - f. Polyguard Deck Guard HT or Polyglas HT
    - g. Tamko TW Tile and Metal Underlayment

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### **PREFORMED METAL STANDING SEAM ROOFING**

2. Underlayment shall be laid in horizontal layers with joints lapped toward the eaves a minimum of 6", and well secured along laps and at ends as necessary to properly hold the felt in place. All underlayment shall be preserved unbroken and whole.
3. Ice and Water Shield shall lap all hips and ridges at least 12" to form double thickness and shall be lapped 6" over the metal of any valley or built-in gutters and shall be installed as required by the Standing Seam Panel Manufacturer to attain the desired 20 Year Weathertightness Warranty.

#### **J. Sealants**

1. Provide two-part polysulfide class B non-sag type for vertical and horizontal joints or
2. one part polysulfide not containing pitch or phenolic extenders or
3. Exterior grade silicone sealant recommended by roofing manufacturer or
4. One part non-sag, gun grade exterior type polyurethane recommended by the roofing manufacturer.

#### **2.4 FABRICATION**

- A. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system in factory, ready for field assembly.
- C. Fabricate components and assemble units to comply with fire performance requirements specified.
- D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.

### **PART 3 - EXECUTION**

#### **3.1 INSPECTION**

- A. Examine alignment of structural steel and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation.
- B. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 FASTENERS**

- A. Secure units to supports
- B. Place fasteners as indicated in manufacturer's standards.

#### **3.3 INSTALLATION**

- A. Panels shall be installed plumb and true in a proper alignment and in relation to the structural framing. The erector must have at least five years successful experience with similar applications.

## **SECTION 07410**

### **PREFORMED METAL STANDING SEAM ROOFING**

- B. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation.
- C. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.

#### **3.4 DAMAGED MATERIAL**

- A. Upon determination of responsibility, repair or replace damaged metal panels and trim to the satisfaction of the Architect and Owner.

**END OF SECTION**



## SECTION 07920

### SEALANTS

#### 07920 SEALANTS

##### PART 1 GENERAL

###### 1.1 SECTION INCLUDES

- A. Exterior weatherproofing sealants.
- B. Interior sealants.
- C. Structural glazing sealants.
- D. Glazing sealants.

###### 1.2 REFERENCES

- A. AAMA 802.3 - Specification for Ductile Back Bedding Glazing Compound.
- B. AAMA 803.3 - Specification for Narrow Joint Seam Sealers.
- C. AAMA 805.2 - Specification for Back Bedding Glazing Compound.
- D. AAMA 808.3 - Specification for Exterior Perimeter Sealing Compound.
- E. ASTM C 639 - Test Method for Rheological (Flow) Properties of Elastomeric Sealants.
- F. ASTM C 717 - Terminology of Building Seals and Sealants.
- G. ASTM C 719 - Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement (Hockman Cycle).
- H. ASTM C 794 - Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
- I. ASTM C 920 - Specification for Elastomeric Joint Sealants.
- J. ASTM C 1184 - Specification for Structural Silicone Sealants.
- K. ASTM C 1248 - Test Method for Staining of Porous Substrate by Joint Sealants.
- L. ASTM C 1382 - Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish Systems (EIFS) Joints.
- M. ASTM D 412 - Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.
- N. ASTM D 2240 - Test Method for Rubber Property - Durometer Hardness.
- O. EIMA 300.01 - Determining Peel Adhesion and Tensile Adhesion Properties of Sealants Applied to EIFS Class PB.
- P. Federal Specification TT-S-00227E - Sealing Compound, Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
- Q. Federal Specification TT-S-00230C - Sealing Component, Elastomeric Type, Single Component (for Caulking, Sealing, & Glazing in Buildings and Other Structures).
- R. Federal Specification TT-S-001543A - Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures).

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### SEALANTS

- S. Federal Specification TT-S-001543B - Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures).
- T. GANA - Sealant Manual and Related GANA Publications.
- U. SWRI Sealant Manual and Related SWRI Publications.

#### 1.3 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods including joint design, surface preparation, and application instructions.
  - 4. Submit manufacturer's test reports indicating test results of adhesion and/or compatibility testing of samples of substrates which either come in contact with or are in close proximity to sealants.
  - 5. Submit manufacturer's shop drawings, indicating joint design, dimensions of lites, sealant contact width and depth dimensions, design wind loads and applicable information on gaskets, spacers, setting blocks and any other accessories.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. Manufacturer's Certification: Submit manufacturer's certification that materials are suitable for intended application.
- B. Installer Qualifications:
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Prepare mock-ups for sealants and for each type of surface using same materials, tools, equipment, and procedures intended for actual surface preparation and application under actual use and environmental conditions.
  - 2. Verify adhesion of sealants and compatibility of material(s) in contact with or in close proximity to sealants.
  - 3. Observe for sealant and surface staining or discoloration.
  - 4. Obtain Architect's approval of mock-ups.
  - 5. Retain mock-ups to establish intended standards by which sealants will be judged.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
  - 1. Product name.
  - 2. Manufacturer.
  - 3. Sealant color.
  - 4. Sealant batch or lot number.
  - 5. Sealant use-before date.

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### SEALANTS

- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
  - 1. Store materials in a clean, dry area indoors in accordance with manufacturer's instructions.
  - 2. Store sealants within temperature range in accordance with manufacturer's instructions.
  - 3. Keep containers sealed until ready for use.
  - 4. Do not use materials after manufacturer's use-before date.

#### 1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
  - 1. Do not apply sealants to surfaces that are wet, damp, or contain frost.
  - 2. Do not apply sealants when air or surface temperature is below 40 degrees F (7 degrees C).
  - 3. Use caution when applying sealants when air or surface temperature is above 120 degrees F (49 degrees C).

#### 1.7 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Ten years from date of Substantial Completion.
- C. Special warranties specified exclude deterioration or failure of elastomeric joint sealants from the following:
  - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
  - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
  - 3. Mechanical damage caused by individuals, tools, or other outside agents.
  - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Specification is based on products as manufactured by Momentive Performance Materials - GE Exclusive Licensee, which is located at: 9930 Kincey Ave. ; Huntersville, NC 28078; Toll Free Tel: 877-943-7325; Email: [carl.ward@momentive.com](mailto:carl.ward@momentive.com); Web: [www.ge.com/silicones](http://www.ge.com/silicones).
- B. Requests for substitutions will be considered in accordance with provisions of Division 1.



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### SEALANTS

#### 2.2 WEATHERPROOFING SILICONE SEALANTS AND ADHESIVES

- A. One-component, medium-modulus, neutral-cure, non-stain, non-bleed, 100 percent silicone polymer sealant.
  - 1. Acceptable Product: SilPruf NB SCS9000 Silicone Sealant as manufactured by Momentive Performance Materials - GE Exclusive Licensee.
  - 2. Compliance:
    - a. ASTM C 920, Type S, Grade NS, Class 50.
    - b. Federal Specification TT-S-001 543B.
    - c. Federal Specification TT-S-00230C.
  - 3. Properties: After 21 days at 70 degrees F and 50 percent relative humidity.
    - a. Dynamic Movement Capability, ASTM C 719: +/- 50 percent.
  - 4. Application: Field apply.
  - 5. Color: Contact manufacturer for color selection.
- B. One-component, low-modulus, neutral-cure, 100 percent silicone polymer sealant.
  - 1. Acceptable Product: SilPruf LM SCS2700 Silicone Sealant as manufactured by Momentive Performance Materials - GE Exclusive Licensee.
  - 2. Compliance:
    - a. ASTM C 920, Type S, Grade NS, Class 100/50.
    - b. Federal Specification TT-S-001 543B.
    - c. Federal Specification TT-S-00230C.
  - 3. Properties: After 21 days at 75 degrees F and 50 percent relative humidity.
    - a. Dynamic Movement Capability, ASTM C 719: +100/-50 percent.
  - 4. Application: Field apply.
  - 5. Color: Contact manufacturer for color selection.
- C. One-component, medium-modulus, high strength, neutral-cure, 100 percent silicone polymer sealant.
  - 1. Acceptable Product: SilPruf SCS2000 Silicone Sealant as manufactured by Momentive Performance Materials - GE Exclusive Licensee.
  - 2. Compliance:
    - a. ASTM C 920, Type S, Grade NS, Class 50.
    - b. Federal Specification TT-S-001 543B.
    - c. Federal Specification TT-S-00230C.
    - d. ASTM C 1184.
  - 3. Properties: After 21 days at 75 degrees F and 50 percent relative humidity.
    - a. Dynamic Movement Capability, ASTM C 719: +/-50 percent.
  - 4. Application: Field apply.
  - 5. Color: Contact manufacturer for color selection.
- D. Pre-cured Silicone Weatherstrip.
  - 1. Acceptable Product: UltraSpan US1100 Pre-cured Silicone Weatherstrip as manufactured by Momentive Performance Materials - GE Exclusive Licensee.
  - 2. Properties: Cured rubber extrusion properties.
    - a. Hardness, Shore A (ASTM D2240): 30.
    - b. Tensile Strength, psi (ASTM D412): 700.
    - c. Elongation, % (ASTM D412): 400.
    - d. Tear Strength, die B (ASTM D624): 70.
  - 3. Application: Field apply.
  - 4. Color: Contact manufacturer for color selection.

#### 2.3 INTERIOR SEALANTS

- A. One part, paintable acrylic polymer sealant.

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### SEALANTS

1. Acceptable Product: RCS20 Siliconized Acrylic Sealant as manufactured by Momentive Performance Materials - GE Exclusive Licensee.
2. Compliance:
  - a. ASTM C 834, Type C and OP.
  - b. ASTM E90 and C919, 43 STC and 32 OITC.
3. Application: Field apply.
4. Color: Contact manufacturer for color selection.

#### 2.4 STRUCTURAL GLAZING ADHESIVES/SEALANTS

- A. One-component, high-modulus, high-strength, neutral-cure, 100 percent silicone polymer sealant. Accelerated cure structural glazing adhesive/sealant.
  1. Acceptable product: UltraGlaze SSG4000AC (accelerated cure) Silicone Structural Glazing Adhesive/Sealant as manufactured by Momentive Performance Materials - GE Exclusive Licensee.
  2. Compliance:
    - a. ASTM C 1184, Type S, Use G and O.
    - b. ASTM C 920, Type S, Grade NS, Class 25, Use NT, A, G, O.
    - c. Federal Specification TT-S-001543A.
    - d. Federal Specification TT-S-00230C.
  3. Dynamic Movement Capability, SATM C 719: +/- 25 percent.
  4. Application: Factory and/or Field apply as indicated on the drawings.
  5. Color: Contact manufacturer for color selection.

#### 2.5 GENERAL GLAZING SEALANTS

- A. One-component, neutral-cure, medium-modulus, fast cure, fast green strength, 100 percent silicone polymer sealant.
  1. Application: Factory and/or Field apply as indicated on the drawings.
  2. Color: Blue White.

#### 2.6 ACCESSORIES

- A. Primer: Momentive Performance Materials - GE Exclusive Licensee SS4179, SS4044P, SS4004P (tinted) or SCP3195P primer(s) as recommended by manufacturer and required by application.
- B. Backer Rod for Weather Sealing Applications:
  1. Material: Non-gassing polyethylene or flexible polyurethane foam rod.
  2. EIFS and Porous Surface Applications: Non-gassing polyethylene, non-gassing polyolefin or flexible polyurethane foam rod.
  3. Width: 25 to 50 percent greater than width of joint to extend continuous pressure against joint walls.
  4. Material shall expand and contract with bead movement without pushing sealant out of joint during compression cycle.
  5. Do not use solid rubber backup materials, unless tested for compatibility with sealants and approved by Architect.
- C. Bond Breaker Tape: Polyethylene tape, approved by manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine joints to receive sealants. Notify Architect if conditions are not acceptable.

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### SEALANTS

- B. Do not begin surface preparation or application until unacceptable conditions have been corrected.

#### 3.2 SURFACE PREPARATION

- A. Prepare joints in accordance with manufacturer's instructions.
- B. Ensure joint thickness is as indicated on the drawings.
- C. Remove dirt, dust, oil, grease, rust, loose materials, contaminants, and existing sealants from surfaces that contact sealants.
- D. Clean surfaces within 1 to 2 hours before applying sealants.

#### 3.3 APPLICATION - STRUCTURAL GLAZING ADHESIVES/SEALANTS

- A. Apply sealants in accordance with manufacturer's instructions at locations indicated on the drawings.
- B. All materials to receive structural adhesive/sealant shall be tested and approved by Momentive Performance Materials - GE Exclusive Licensee Sealants & Adhesives on a project-by-project basis.
- C. Ensure surfaces to receive sealants are clean, sound, dry, and free of frost.
- D. Use manufacturer's approved back-up materials, spacers, and setting blocks to ensure sealant compatibility and function.
- E. Priming:
  - 1. Apply primer, if required, in accordance with manufacturer's instructions.
  - 2. Perform trial applications to check adhesion of sealants to specific materials to be used.
  - 3. Do not apply primer to glass surfaces.
  - 4. Allow primer to dry before applying sealant.
- F. Masking:
  - 1. Mask exterior face of joint where necessary with pressure-sensitive tape before applying sealant. Start from top down and overlap runs.
  - 2. Do not allow tape to touch clean surfaces to which sealants are to adhere.
  - 3. Remove tape immediately after tooling and before sealants begin to cure.
- G. Protection: Cover all surfaces likely to receive excess sealant removed during tooling operations.
- H. Ensure contact width of sealant between glass and metal frame is as indicated on the drawings.
- I. Install backup material or joint filler, setting blocks, spacer shims, and tapes as required.
- J. Apply sealants in a uniform continuous operation, horizontally in 1 direction and vertically from bottom to top of joint opening. Apply positive pressure adequate to properly fill and seal joint. Air pockets or voids are not acceptable.
- K. Immediately tool joint neatly, forcing sealant into contact with sides of joint to eliminate internal voids and to assure good substrate contact. Do not tool with soap or

## SECTION 07920

### SEALANTS

detergent solutions.

- L. Tool sealants at sill in glazing so precipitation and cleaning solutions will not pool.

#### 3.4 WEATHER SEALING APPLICATION

- A. Apply sealants in accordance with manufacturer's instructions at locations indicated on the drawings.
- B. Ensure surfaces to receive sealants are clean, sound, dry, and free of frost.
- C. Use manufacturers approved primer, backer rod, and bond breaker tape.
- D. Priming:
  - 1. Apply primer, if required, in accordance with manufacturer's instructions.
  - 2. Perform trial applications to check adhesion of sealants to specific materials to be used.
  - 3. Do not apply primer to glass surfaces.
  - 4. Allow primer to dry before applying sealant.
- E. Masking:
  - 1. Apply masking tape to surfaces as required to ensure a neat application of sealants and to protect adjoining surfaces.
  - 2. Do not allow masking tape to touch clean surfaces to which sealants are to adhere.
  - 3. Remove masking tape immediately after tooling and before sealants begin to cure.
- F. Install backer rod in joint to allow for appropriate depth of sealants and to prevent 3-sided adhesion.
- G. Install backer rod in joint to allow for appropriate depth of sealants and to prevent 3-sided adhesion.
- H. Install bond breaker tape when joint depth is too shallow to allow backer rod.
- I. Apply sealant depth of 1/8 inch minimum to 3/8 inch maximum over crown of backer rod.
- J. Apply sealants in a continuous operation, horizontally in 1 direction and vertically from bottom to top of joint opening. Apply positive pressure adequate to properly fill and seal joint width.
- K. Tool or strike sealants with appropriate tool applying light pressure to spread sealants against back-up material and joint surfaces to ensure void-free application. Do not use soap or detergent solutions for tooling.
- L. Tool sealants at sill in glazing so precipitation and cleaning solutions will not pool.

#### 3.5 CLEANING

- A. Remove excess sealants from glass, metal, and plastic surfaces while still uncured.
- B. Remove excess sealants from porous surfaces after initial cure or set-up.

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### **SEALANTS**

#### **3.6 PROTECTION**

- A. Protect sealants in joints from damage until fully cured.

**END OF SECTION**

**SECTION 08110**  
**STEEL DOORS AND FRAMES**

08110 STEEL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Steel doors.
- B. Steel frames.
- C. Steel sidelights and borrowed lights.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete; Placement of anchors in concrete construction.
- B. Section 04810 - Unit Masonry Assemblies; Placement of anchors in masonry construction.
- C. Section 08210 - Wood Doors.
- D. Section 08710 - Door Hardware.
- E. Section 08800 - Glazing
- F. Section 09900 - Paints and Coatings.

1.3 REFERENCES

- A. ASTM A568 - Standard Specification for Steel Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
- B. ASTM A591 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- C. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- E. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- F. ASTM A1011 - Standard Specification for Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- G. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
- H. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
- I. ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.

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- J. ANSI/SDI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 1998.
- K. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- L. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames (Formerly SDI-105).
- M. DHI A115.1G - Installation Guide for Doors and Hardware.
- N. SDI 111 - Recommended Standard Details for Steel Doors & Frames.
- O. ANSI/NFPA 252 - Fire Tests of Door Assemblies.
- P. ANSI/UL 10B - Fire Tests of Door Assemblies.
- Q. ANSI/UL 10C - Positive Pressure Fire Tests of Door Assemblies.
- R. ANSI/UL 1784 - Air Leakage Tests of Door Assemblies
- S. UL - Building Materials Directory; Underwriters Laboratories Inc.
- T. WH - Certification Listings; Warnock Hersey International Inc.
- U. NFPA 80 - Fire Doors and Fire Windows.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. [ **Product Data** ]: Submit manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Certificates:
  - 1. Provide manufacturer's certification that products comply with referenced standards as applicable.
  - 2. Provide evidence of manufacturer's membership in the Steel Door Institute.
- D. Shop Drawings:
  - 1. Show all openings in the door schedule and/or the Drawings.
  - 2. Provide details of door design, door construction details and methods of assembling sections, hardware locations, anchorage and fastening methods, door frame types and details, anchor types and spacing, and finish requirements.
  - 3. Provide door, frame, and hardware schedule in accordance with SDI 111.
- E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and finishes.
- F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and finishes.

## SECTION 08110

### STEEL DOORS AND FRAMES

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide all products from a single manufacturer who is a member of the Steel Door Institute.
- B. Doors and frames shall conform to the requirements of ANSI A250.8-1998 (SDI-100) and other specifications herein named.
- C. Fire Rated Doors and Frames: Ratings as indicated on Door Schedule, when tested in accordance with NFPA 252, UL 10B or UL 10C.
  - 1. Labeled by UL, WH, or other agency acceptable to the authorities having jurisdiction.
  - 2. Stairwell Doors: 250 degrees F (121 degrees C) or 450 degrees F (232 degrees C) temperature rise rating as well as the required fire rating.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Products shall be marked with Architect's opening number on all doors, frames, misc. parts and cartons.
- B. Upon delivery, inspect all materials for damage; notify shipper and supplier if damage is found.
- C. Protect products from moisture, construction traffic, and damage.
  - 1. Store vertically under cover.
  - 2. Place units on 4 inch (102 mm) high wood sills or in a manner that will prevent rust or damage.
  - 3. Do not use non-vented plastic or canvas shelters.
  - 4. Should wrappers become wet, remove immediately.
  - 5. Provide 1/4 inch (6 mm) space between doors to promote air circulation.

#### 1.7 COORDINATION

- A. Coordinate with door opening construction and door frame and door hardware installation.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Products shall be manufactured by a member of the Steel Door Institute, 30200 Detroit Road, Cleveland, Ohio 44145. ASD. Tel: (440) 899-0010, Fax: (440) 892-1404. Steel Door Institute Members are as follows:
  - 1. Amweld Building Products, LLC.
  - 2. Ceco Door Products.
  - 3. Curries Company.
  - 4. Deansteel Manufacturing Co.
  - 5. Mesker Door, Inc.
  - 6. Pioneer Industries, Inc.
  - 7. Republic.
  - 8. Security Metal Products Corp.
  - 9. Steelcraft.
- B. Substitutions: Not permitted.



## SECTION 08110

### STEEL DOORS AND FRAMES

#### 2.2 MATERIALS

- A. Doors, frames, frame anchors, and hardware reinforcing for each of the levels and models specified shall be provided to meet the requirements of the performance levels specified. The material used in manufacturing these products and components shall comply with ANSI/SDI A250.8. Hardware reinforcing on doors and frames shall comply with ANSI/SDI A250.6. The physical performance levels shall be in accordance with ANSI/SDI A250.4.
- B. All steels used to manufacture doors, frames, anchors, and accessories shall meet at least one or more of the following requirements:
  - 1. Cold rolled steel shall conform to ASTM A1008 and A568.
  - 2. Hot rolled, pickled and oiled steel shall comply with ASTM A1011 and A568.
  - 3. Hot dipped zinc coated steel shall be of the alloyed type and comply with ASTM A924 and A653.
  - 4. Steel Sheet, Electrolytic Zinc-Coated shall conform to ASTM A591.

#### 2.3 FRAMES

- A. Provide Levels and Models in accordance with ANSI/SDI A250.8 as indicated in the door schedule.
- B. Interior frames: Frame configuration and depth as indicated. Minimum thickness as follows:
  - 1. Level 1 Standard duty: For use with:
    - a. Door Model 1 (full flush design): 0.042 inch (1.0 mm) minimum steel frame thickness.
  - 2. Level 2 Heavy duty: For use with:
    - a. Door Model 1 (full flush design): 0.053 inch (1.3 mm) minimum steel frame thickness.
  - 3. Level 3 Extra heavy-duty: For use with:
    - a. Door Model 1 (full flush design): 0.053 inch (1.3 mm) minimum steel frame thickness.
- C. Exterior frames: Provide in accordance with ANSI/SDI A250.8 in the frame configuration and depth as indicated on the Drawings. Minimum thickness as follows:
  - 1. Level 1 Standard duty: For use with:
    - a. Door Model 1 (full flush design): 0.042 inch (1.0 mm) minimum steel frame thickness.
  - 2. Level 2 Heavy duty: For use with:
    - a. Door Model 1 (full flush design): 0.053 inch (1.3 mm) minimum steel frame thickness.
  - 3. Level 3 Extra heavy-duty: For use with:
    - a. Door Model 1 (full flush design): 0.053 inch (1.3 mm) minimum steel frame thickness.
  - 4. Level 4 Maximum-duty: For use with:
    - a. Door Model 1 (full flush design): 0.067 inch (1.7 mm) minimum steel frame thickness.
    - b.
- D. Provide units of galvanized steel in the following locations:
  - 1. Exterior openings.
  - 2. Kitchens.
  - 3. Toilets.
  - 4. Washrooms.
  - 5. Locker rooms.
  - 6. Showers.
  - 7. Laboratories.
- E. Provide knockdown field assembled type frames unless otherwise indicated.
- F. Provide face welded type frames unless otherwise indicated.

## SECTION 08110

### STEEL DOORS AND FRAMES

- G. Provide frames, other than slip-on drywall type with a minimum of three anchors per jamb suitable for the adjoining wall construction. Provide anchors of not less than 0.042 inch (1.0 mm) in thickness or 0.167 inch (4.2 mm) diameter wire. Frames over 7 feet 6 inches (2286 mm) shall be provided with an additional anchor per jamb.
- H. Slip-on drywall frame anchors shall be as provided by the manufacturer to assure performance specified.
- I. Base anchors shall be provided, other than slip-on drywall type, with minimum thickness of 0.042 inch (1.0mm). For existing masonry wall conditions that do not allow for the use of a floor anchor, an additional jamb anchor shall be provided.
- J. Prepare all frames for all mortise template hardware and reinforced only for surface mounted hardware. Drilling and/or tapping shall be completed by others.
- K. Minimum hardware reinforcing gages shall comply with Table 4 of ANSI/SDI A250.8.
- L. Provide glazing stops and beads where glazed lights are indicated.

#### 2.4 DOORS

- A. Interior doors: Provide interior doors in accordance with ANSI/SDI A250.8 and in the configuration and sizes as indicated on the door schedule:
  - 1. Level 1 - Standard duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
  - 2. Level 2 - Heavy duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
  - 3. Level 3 - Extra heavy-duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
  - 4. Level 4 - Maximum-duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
- B. Exterior doors: Provide exterior doors in accordance with ANSI/SDI A250.8 and in the configuration and size as indicated on the door schedule:
  - 1. Level 1 - Standard duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
  - 2. Level 2 - Heavy duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
  - 3. Level 3 - Extra heavy-duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
  - 4. Level 4 - Maximum-duty 1-3/4 inches (44.5 mm):
    - a. Model 1 - Full flush
- C. Face steel sheet shall meet at least one or more of the following requirements:
  - 1. Level 2
    - a. Model 1 - 0.042 inch (1.0 mm) minimum thickness
  - 2. Level 3
    - a. Model 1 - 0.053 inch (1.3 mm) minimum thickness
  - 3. Level 4
    - a. Model 1 - 0.067 inch (1.7 mm) minimum thickness
- D. End closure: The top and bottom of the doors shall be closed with channels or closures. The channels or closures shall have a minimum material thickness of 0.042 inch (1.0 mm).

## SECTION 08110

### STEEL DOORS AND FRAMES

1. Flush closure channels: Set back face of channel web flush with door top/bottom.
- E. Core: Provide in accordance with ANSI/SDI A250.8.
- F. Door edge design: Provide in accordance with ANSI/SDI A250.8.
- G. Minimum hardware reinforcing gages shall comply with Table 4 of ANSI/SDI A250.8.
- H. Provide louvers and vision lites where indicated on the Drawings in accordance with ANSI/SDI A250.8.
- I. Provide steel astragals where indicated on the Drawings or where required by the manufacturer or NFPA 80.

#### 2.5 FABRICATION

- A. Fabricate doors and frames in accordance with ANSI/SDI A250.8.
- B. Prime finish: Doors and frames shall be thoroughly cleaned, and chemically treated to insure maximum paint adhesion. All surfaces of the door and frame exposed to view shall receive a factory applied coat of rust inhibiting primer, either air-dried or baked-on. The finish shall meet the requirements for acceptance stated in ANSI/SDI A250.10 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."
- C. Factory applied finish: Meet the performance requirements and acceptance criteria as stated in ANSI/SDI A250.3. Color shall be:
  1. As selected from the manufacturers standard colors.
- D. Design clearances: Fabricate doors and frames to maintain the following clearances:
  1. The clearance between the door and frame shall be 1/8 inch (3.2 mm) in the case of both single swing and pairs of doors.
  2. The clearance between the meeting edges of pairs of doors shall be 3/16 inch (4.8 mm) plus or minus 1/16 inch (1.6 mm). For fire rated applications, the clearances between the meeting edges of pairs of doors shall be 1/8 inch (3.2 mm) plus or minus 1/16 inch (1.6 mm).
  3. The clearance measured from the bottom of the door to the bottom of the frame (undercut) shall be a maximum of 3/4 inch (19.1 mm) unless otherwise specified. Fire door undercuts shall comply with ANSI/NFPA 80, "Fire Doors and Fire Windows."
  4. The clearance between the face of the door and the stop shall be 1/16 inch (1.6 mm) to 3/32 inch (2.4 mm).
  5. All clearances shall be, unless otherwise specified in this document, subject to a tolerance of plus or minus 1/32 inch (0.8 mm).
  6. The clearance at the bottom shall be 3/4 inch (19.1 mm).
  7. The clearance between the face of the door and doorstep shall be 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm).
  8. All clearances shall be, unless otherwise specified, subject to a tolerance of plus or minus 1/32 inch (0.8 mm).

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Verify that project conditions are suitable before beginning installation of frames. Do not begin installation until conditions have been properly prepared.

## **SECTION 08110**

### **STEEL DOORS AND FRAMES**

1. Verify that completed openings to receive knock-down wrap-around frames are of correct size and thickness.
  2. Verify that completed concrete or masonry openings to receive butt type frames are of correct size.
  3. Verify that drywall construction walls are the correct thickness.
- B. If opening preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.2 INSTALLATION**

- A. Install frames plumb, level, rigid, and in true alignment in accordance with ANSI A250.11 and DHI A115.1G.
- B. Install fire rated doors and frames in accordance with NFPA 80.
- C. All frames other than slip-on types shall be fastened to the adjacent structure so as to retain their position and stability. Drywall slip-on frames shall be installed in prepared wall openings in accordance with manufacturer's instructions.
- D. Install frames as masonry is laid-up. Fill welded wrap-around frames in masonry construction solid with grout. Brace or fasten frame in such a way to prevent pressure of the grout from deforming frame. Coordinate with work specified in Section 04810.
- E. Install frames in stucco construction as work progresses. Fill welded wrap-around frames solid with grout where indicated. Brace or fasten frame in such a way to prevent pressure of the grout from deforming frame. Coordinate with work specified in Section 09220.
- F. Grout shall be mixed to provide a 4 inch (102 mm) maximum slump consistency, hand troweled into place. Grout mixed to a thin "pumpable" consistency shall not be used.
- G. If additives are used in masonry or plaster work during cold weather, field coat the inside of steel frames with a bituminous compound to prevent corrosion.
- H. Doors shall be installed and fastened to maintain alignment with frames to achieve maximum operational effectiveness and appearance. Doors shall be adjusted to maintain perimeter clearances specified. Shimming shall be performed by the installer as needed to assure the proper clearances are achieved.

#### **3.3 ADJUST AND CLEAN**

- A. Adjust doors for proper operation, free from binding or other defects.
- B. Clean and restore soiled surfaces. Remove scraps and debris and leave site in a clean condition.

#### **3.4 PROTECTION**

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

#### **3.5 SCHEDULE**

- A. Refer to Door and Frame Schedule appended to this section.

**END OF SECTION**



**SECTION 08212**  
**FLUSH WOOD VENEER DOORS**

08212 FLUSH WOOD VENEER DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Interior Flush Wood Veneer Doors:
  - 1. 5-ply flush bonded particle-core doors.
  - 2. Flush fire-rated wood doors.

1.2 RELATED SECTIONS

- A. Section 08110 – Steel Doors and Frames.
- B. Section 08710 – Door Hardware.
- C. Section 08800 – Glazing.

1.3 REFERENCES

- A. ANSI A208.1 – Particleboard.
- B. ASTM E 90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- C. ASTM E 413 – Classification for Rating Sound Insulation.
- D. AWI Section 1300 – Architectural Flush Doors.
- E. NFPA 80 – Standard for Fire Doors and Other Opening Protectives.
- F. UBC 7-2-1997/UL 10C – Positive Pressure Fire Tests of Door Assemblies.
- G. WDMA Finish System TR-6, Catalyzed Polyurethane.
- H. WDMA I.S.1-A – Architectural Wood Flush Doors.

1.4 SUBMITTALS

- A. Comply with Division 1 – Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including door construction description and WDMA I.S.1-A and AWI classifications.
- C. Schedules: Submit manufacturer's schedules, including door dimensions, cutouts, species, finish, and hardware. Reference individual door numbers as indicated on the Drawings.
- D. Samples: Submit manufacturer's door finish samples, showing range of color variation.

## SECTION 08212

### FLUSH WOOD VENEER DOORS

- E. Test Reports: Submit manufacturer's test results of STC ratings from testing performed by independent testing agency for sound-retardant doors.
  - F. Manufacturer's Certification: Submit manufacturer's certification that doors comply with specified requirements and are suitable for intended application.
  - G. Cleaning Instructions: Submit manufacturer's cleaning instructions for doors.
  - H. Warranty: Submit manufacturer's standard warranty.
- 1.5 QUALITY ASSURANCE
- A. Tolerances for Warp, Telegraphing, Squareness, and Prefitting Dimensions: WDMA I.S.1-A.
  - B. Identifying Label: Each door shall bear identifying label indicating:
    - 1. Door manufacturer.
    - 2. Order number.
    - 3. Door number.
    - 4. Fire rating, if applicable.
  - C. Fire-Rated Doors: Labeled by Intertek/Warnock Hersey.
    - 1. Construction Details and Hardware Application: Approved by labeling agency.
  - D. Positive Pressure Opening Assemblies: UBC 7-2-1997/UL 10C.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Delivery:
    - 1. Deliver doors to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
    - 2. Package doors individually in polybags.
  - B. Storage:
    - 1. Store doors in accordance with manufacturer's instructions.
    - 2. Store doors in clean, dry area indoors, protected from damage and direct sunlight.
    - 3. Store doors flat on level surface.
    - 4. Do not store doors directly on concrete.
    - 5. Keep doors completely covered. Use covering which allows air circulation and does not permit light to penetrate.
    - 6. Store doors between 50 and 90 degrees F (10 and 32 degrees C) and 30 to 50 percent relative humidity.
  - C. Handling:
    - 1. Handle doors in accordance with manufacturer's instructions.
    - 2. Protect doors and finish during handling and installation to prevent damage.
    - 3. Handle doors with clean hands or clean gloves.
    - 4. Lift and carry doors. Do not drag doors across other doors or surfaces.
- 1.7 ENVIRONMENTAL REQUIREMENTS
- A. Do not subject doors to extreme conditions or changes in temperature or relative humidity in accordance with WDMA I.S.1-A.

## SECTION 08212

### FLUSH WOOD VENEER DOORS

#### 1.8 WARRANTY

- A. Warrant solid core, interior doors for life of installation against warpage, delamination, and defects in materials and workmanship.
- B. Defects noted during warranty period shall be corrected at no cost to Owner. Corrective work shall include labor and material for repair, replacement, refinishing, and rehanging as required.

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURER

- A. Doors shall be equal to VT Industries, Inc., 1000 Industrial Park, PO Box 490, Holstein, Iowa 51025. Toll Free (800) 827-1615. Phone (712) 368-4381. Fax (712) 368-4111. Website [www.vtindustries.com](http://www.vtindustries.com). E-mail [door\\_info@vtindustries.com](mailto:door_info@vtindustries.com).

##### 2.2 GENERAL

- A. Glass Mouldings:
  - 1. Non-rated Flush Doors: VT Industries Style VT1.
  - 2. Fire-Rated Doors: VT Industries Style 110, steel vision frame, beige prime finish.
- B. Glazing: As specified in Section 08800 (08 80 00).
- C. Door Louvers: As specified in Section 10225 (08 91 26).

##### 2.3 5-PLY FLUSH BONDED PARTICLE-CORE DOORS

- A. 5-Ply Flush Bonded Particle-Core Doors:
  - 1. Model: 5508, structural composite lumber, non-rated and 20-minute rated.
  - 2. Compliance: WDMA I.S.1-A.
    - a. Quality Grade: Premium grade, extra heavy duty.
    - b. Type: PC-5ME.
  - 3. 7-Ply and Non-Bonded Core Construction: Not acceptable.
  - 4. Door Thickness: 1-3/4 inches.
  - 5. Stiles:
    - a. Inner Stiles: 1-3/8 inches wide, before prefitting.
    - b. Structural Composite Lumber (SCL) With Outer Stile: Same species as face veneer.
    - c. Outer Stile: Apply after beveling and before face application.
  - 6. Rails:
    - a. Structural composite lumber (SCL).
    - b. Minimum Width Before Prefitting: 1-3/8 inches.
  - 7. Core:
    - a. Material: Structural composite lumber (SCL).
    - b. Average Density: 28 pcf to 32 pcf.
    - c. Compliance: ANSI A208.1, Grade 1-LD-2.
  - 8. Door Assembly:
    - a. Glue stiles and rails to core.
    - b. Sand entire assembly flat as a unit to ensure minimal telegraphing of core components through face veneers.



## SECTION 08212

### FLUSH WOOD VENEER DOORS

9. Composite Crossbands:
  - a. Apply to core before application of matching hardware stiles.
  - b. Exposed Crossbanding: Not allowed along stile edges.
10. Veneers:
  - a. Apply to crossbanded core in hot press using Type I, exterior, water-resistant adhesive.
  - b. 5-ply construction.
11. Face Veneers:
  - a. Veneer Species: Red Oak.
  - b. Veneer Cut: Plain Sliced.
  - c. Veneer Match and Assembly:
  - d. Minimum Thickness Before Sanding: 1/42 inch.

#### 2.4 FLUSH FIRE-RATED WOOD DOORS

- A. Flush Fire-Rated Wood Doors:
  1. Model: 5511-2, 45-, 60-, and 90-minute rated.
  2. Compliance: WDMA I.S.1-A.
    - a. Quality Grade: Premium.
    - b. Type: FD-5.
  3. Door Thickness: 1-3/4 inches.
  4. Outer Stiles: Same species as face veneer.
  5. Inner Stiles:
    - a. Structural composite lumber (SCL), 45-minute rated; Noncombustible material, 60- and 90-minute rated.
    - b. Warranted for use with standard-weight mortise butt hinges and No. 12, 1-1/4-inch steel threaded-to-head screws.
  6. Rails:
    - a. Structural composite lumber (SCL), 45-minute rated; Noncombustible material, 60- and 90-minute rated.
    - b. Width: Manufacturer's standard width.
  7. Core:
    - a. Fire-retardant mineral board.
    - b. Weight: 30.8 pcf to 34.7 pcf.
    - c. Does not contain asbestos or added urea formaldehyde.
  8. Composite Crossbands:
    - a. Apply to core before application of matching hardware stiles.
    - b. Exposed Crossbanding: Not allowed along stile edges.
  9. Face Veneers:
    - a. Veneer Species: Red Oak.
    - b. Veneer Cut: Plain Sliced.
    - c. Veneer Match and Assembly: .
    - d. Minimum Thickness Before Sanding: 1/42 inch.
  10. Positive Pressure:
    - a. Where UBC 7-2-1997/UL 10C standards for positive pressure apply, doors shall be constructed in accordance with Category A guidelines as published by Intertek/Warnock Hersey.
    - b. Smoke Gasketing: Apply smoke gasketing around frame perimeter to meet S-rating.
    - c. Intertek/Warnock Hersey Category A Guidelines: Edge sealing systems not allowed on frames.
  11. Electronic Barcode: "VTsmartdoor" barcode technology.
    - a. Location: Fire label, hinge stile of doors.

## SECTION 08212

### FLUSH WOOD VENEER DOORS

- b. Provide fire-rated door assembly information required for Owner's annual fire-door inspection in accordance with NFPA 80, Paragraph 5.2.1.

#### 2.5 FABRICATION

- A. Prefit Doors:
  - 1. Prefit and bevel doors at factory to fit openings.
  - 2. Prefit Tolerances: WDMA I.S.1-A and AWI Section 1300.
- B. Factory-machine doors for mortised hardware, including pilot holes for hinge screws and lock fronts.

#### 2.6 FINISHES

- A. Doors shall receive factory finishing.
- B. Factory Finishing: WDMA System TR-6, catalyzed polyurethane, premium grade. WDMA finish Types 2 and 3 are not optimal.
  - 1. Stain coat.
  - 2. Sealer: 3 coats.
  - 3. Sanding: 320-grit sandpaper.
  - 4. Topcoat: 2 coats.
- C. Stain Color: To be selected by Architect.
- D. Top and Bottom Rails: Factory sealed with wood sealer.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine locations to receive doors. Notify Architect of conditions that would adversely affect installation or subsequent use. Do not begin installation until unacceptable conditions are corrected.
- B. Ensure frames are solidly anchored, allowing no deflection when doors are installed.
- C. Ensure frames are plumb, level, square, and within tolerance.

#### 3.2 PREPARATION

- A. Allow doors to become acclimated to building temperature and relative humidity for a minimum of 24 hours before installation.

#### 3.3 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Install doors at locations indicated on the Drawings.
- C. Install doors plumb, level, square, true to line, without warp or rack.
- D. Seal exposed surfaces with a minimum of 2 coats of polyurethane within 4 days of fitting each door.

**SECTION 08212**  
**FLUSH WOOD VENEER DOORS**

- E. Install door hardware as specified in Section 08710.

3.4 ADJUSTING

- A. Adjust doors to swing freely, without binding in frame.
- B. Adjust hardware to operate properly.
- C. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- D. Remove and replace damaged doors that cannot be successfully repaired, as determined by Architect.

3.5 CLEANING

- A. Clean doors promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.6 PROTECTION

- A. Protect installed doors from damage during construction.
- B. Place polybags over doors after adjusting and cleaning.

END OF SECTION

## SECTION 08411

### ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

#### 08411 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

##### PART 1 GENERAL

###### 1. Related Documents

- a. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

###### 2. Summary

- a. Section Includes: Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
  - 1) Types of Kawneer Aluminum Storefront Systems include:
    - a) Trifab™ VG 451T Framing System – 2" x 4-1/2" (50.8 mm x 114.3 mm) nominal dimension; Thermal; Front, Center, Back, Multi-Plane, Structural Silicone or Weatherseal Glazed (Type B); Screw Spline, Shear Block, Stick or Punched Opening Fabrication.

###### 3. Definitions

- a. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

###### 4. Performance Requirements

- a. Storefront System Performance Requirements:

- 1) Wind loads: Provide storefront system; include anchorage, capable of withstanding wind load design pressures are based on the Building Code; 10th Edition (2013).
- 2) Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft<sup>2</sup> (0.3 l/s · m<sup>2</sup>) at a static air pressure differential of 6.24 psf (300 Pa).
- 3) Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 10 psf (479 Pa) as defined in AAMA 501.
- 4) Uniform Load: A static air design load of 20 psf (958 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
- 5) Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
  - a) Glass to Exterior – 0.47 (low-e).
  - b) Glass to Center – 0.44 (low-e).
  - c) Glass to Interior – 0.41 (low-e).
- 6) Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than:
  - a) Glass to Exterior – 70<sub>frame</sub> and 69<sub>glass</sub> (low-e).
  - b) Glass to Center – 62<sub>frame</sub> and 68<sub>glass</sub> (low-e).
  - c) Glass to Interior – 56<sub>frame</sub> and 67<sub>glass</sub> (low-e).
- 7) Sound Transmission Class (STC) and Outdoor-Indoor Transmission Class (OITC): When tested to AAMA Specification 1801 and in accordance with ASTM E1425 and ASTM E90, the STC and OITC Rating shall not be less than:
  - a) Glass to Exterior – 38 (STC) and 31 (OITC).

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### ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

- b) Glass to Center – 37 (STC) and 30 (OITC).
- c) Glass to Interior – 38 (STC) and 30 (OITC).
- 8) Windborne-Debris-Impact Resistance Performance: Shall be tested in accordance with ASTM E 1886, information in ASTM E 1996 and TAS 201/203.
  - a) Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade.
  - b) Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.
- 5. Submittals
  - a. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed storefront system indicated.
  - b. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
  - c. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
  - d. Samples for Verification: For aluminum-framed storefront system and components required.
  - e. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed storefront.
  - f. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
    - 1) Joinery, including concealed welds.
    - 2) Anchorage.
    - 3) Expansion provisions.
    - 4) Glazing.
    - 5) Flashing and drainage.
  - g. Other Action Submittals:
    - 1) Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.
- 6. Quality Assurance
  - a. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
  - b. Manufacturer Qualifications: A manufacturer capable of providing aluminum-framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
  - c. Source Limitations: Obtain aluminum-framed storefront system through one source from a single manufacturer.
  - d. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
    - 1) Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
  - e. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

## SECTION 08411

### ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

- 1) Build mockup for type(s) of storefront elevation(s) indicated, in location(s) shown on Drawings.
  - f. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".
  - g. Structural-Sealant Glazing: Comply with ASTM C 1401, "Guide for Structural Sealant Glazing" for design and installation of structural-sealant-glazed systems.
  - h. Structural-Sealant Joints: Design reviewed and approved by structural-sealant manufacturer.
7. Project Conditions
- a. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings.
8. Warranty
- a. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
    - 1) Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

## PART 2 PRODUCTS

1. Manufacturers
- a. Basis-of-Design Product:
    - 1) Kawneer Company Inc.
    - 2) Trifab™ 451T (Thermal) Framing System
    - 3) System Dimensions: 2" x 4-1/2" (50.8 mm x 114.3 mm)
    - 4) Glass: Center, Exterior or Interior
  - b. Substitutions: Refer to Substitutions Section for procedures and submission requirements
    - 1) Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
    - 2) Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
    - 3) Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
    - 4) Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for storefront system performance criteria, and (2) has been engaged in the design, manufacture and fabrication of aluminum storefronts for a period of not less than ten (10) years. (Company Name)
    - 5) Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
    - 6) Samples: Provide samples of typical product sections and finish samples in manufacturer's standard sizes.
  - c. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.
2. Materials
- a. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.
  - b. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.

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### ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

- c. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
  - d. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
  - e. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
  - f. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.
3. Storefront Framing System
- a. Thermal Barrier (Trifab™ VG 451T):
    - 1) Kawneer IsoLock™ Thermal Break with a 1/4" (6.4 mm) separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
      - a) Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
  - b. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with non-staining, nonferrous shims for aligning system components.
  - c. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
  - d. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action
  - e. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
  - f. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.
4. Glazing Systems
- a. Glazing: As specified in Division 08 Section "Glazing".
  - b. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
  - c. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
  - d. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
  - e. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:
    - 1) Structural Sealant: ASTM C 1184, single-component neutral-curing silicone formulation that is compatible with system components with which it comes in contact, specifically formulated and tested for use as structural sealant and approved by a structural-sealant manufacturer for use in aluminum-framed systems indicated.
      - a) Color: Black

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### ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

- 2) Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.
  - a) Color: Matching structural sealant.
5. Entrance Door Systems
  - a. Entrance Doors: As specified in Division 08411 Section "Aluminum-Framed Entrances and Storefronts".
  - b. Entrance Door Hardware: As specified in Division 08411 Section "Door Hardware".
6. Accessory Materials
  - a. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants".
  - b. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.
7. Fabrication
  - a. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
    - 1) Profiles that are sharp, straight, and free of defects or deformations.
    - 2) Accurately fit joints; make joints flush, hairline and weatherproof.
    - 3) Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
    - 4) Physical and thermal isolation of glazing from framing members.
    - 5) Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
    - 6) Provisions for field replacement of glazing.
    - 7) Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
  - b. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
  - c. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.
  - d. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.
  - e. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.
8. Aluminum Finishes
  - a. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
  - b. Factory Finishing:
    1. Kawneer Permanodic™ AA-M10C22A44, AAMA 611, Architectural Class I Color Anodic Coating, color to be selected by Architect.

## PART 3EXECUTION

### 1.Examination

- a. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough



## SECTION 08411

### ALUMINUM FRAMED ENTRANCES AND STOREFRONTS

opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight framed aluminum storefront system installation.

- 1) Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
- 2) Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.
- 3) Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
- 4) Proceed with installation only after unsatisfactory conditions have been corrected.

#### 2. Installation

- a. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed storefront system, accessories, and other components.
- b. Install aluminum-framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- c. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.
- d. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront to the exterior.
- e. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

#### 3. Field Quality Control

- a. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.
  - 1) Testing: Testing shall be performed by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.
    - a) Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft<sup>2</sup>, whichever is greater.
    - b) Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf (300 Pa).
- b. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

#### 4. Adjusting, Cleaning, and Protection

- a. Clean aluminum surfaces immediately after installing aluminum-framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- b. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- c. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 08411

**SECTION 08411**

**ALUMINUM FRAMED ENTRANCES AND STOREFRONTS**



## **SECTION 08580**

### **ALUMINUM INTERIOR SLIDING SERVICE WINDOW**

#### **08580 ALUMINUM INTERIOR SLIDING SERVICE WINDOW**

##### **PART 1 – GENERAL**

###### **1.01 SUMMARY**

- A. This section includes:
  - 1. Aluminum, medium-duty interior sliding service windows as indicated in drawings and in sections.

###### **1.02 SUBMITTALS**

- A. Product Data: Submit Manufacturer's technical product data substantiating that products comply.
- B. Shop drawings: Submit for fabrication and installation of windows. Include details, elevations and installation requirement of finish hardware and cleaning.
- C. Certification: Provide printed data in sufficient detail to indicate compliance with the contract documents.

###### **1.03 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver windows crated to provide protection during transit and job storage
- B. Inspect windows upon delivery for damage. Unless minor defects can be made to meet the Architect's specifications and satisfaction, damaged parts should be removed and replaced.
- C. Store windows at building site under cover in dry location.

###### **1.04 PROJECT CONDITIONS**

- A. Field measurements: Check opening by accurate field measurement before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

###### **1.05 WARRANTY**

All material and workmanship shall be warranted against defects for a period of one (1) year from the original date of purchase.

##### **PART 2 - PRODUCTS**

###### **2.01 ACCEPTABLE MANUFACTURER'S**

- A. Basis of design: Design is based on aluminum, interior sliding service window manufactured by C.R. Laurence Co., Inc. (800) 421-6144

###### **2.02 MATERIALS**

- A. Frames: Aluminum frame modules shall be constructed of 6063-T5 extruded aluminum. Window rolls on top-hung ball bearing rollers. Catch locks included with all interior windows. Overall frame sizes are to be in accordance with the contract drawings.
- B. Finish: All aluminum to be clear anodized.
- C. Glazing: The glazing vinyl supplied is for ¼" in thickness. Glass not included, to be supplied by others.
- D. Options: Keyed lock, full bottom track. D4 Overhead track.

## **SECTION 08580**

### **ALUMINUM INTERIOR SLIDING SERVICE WINDOW**

- E. Models: Florence Daisy (XX). X = sliding panel, O = fixed panel, as viewed from clerks side.

#### **PART 3 – EXECUTION**

##### **3.01 INSTALLATION**

- A. Install window in accordance with manufacturer's printed instructions and recommendations. Repair damaged units as directed (if approved by the manufacturer and the architect) or replace with new units.

##### **3.02 CLEANING**

- A. Clean frame and glazing surfaces after installation, complying with requirements contained in the manufacturer's instructions. Remove excess glazing sealant compounds, dirt or other substances.

##### **3.03 PROTECTION**

- A. Institute protective measures required throughout the remainder of the construction period to ensure that all the windows do not incur any damage or deterioration, other than normal weathering, at the time of acceptance.

**END OF SECTION**

## SECTION 08700

### FINISH HARDWARE

#### 08700 FINISH HARDWARE

##### 1.01 GENERAL:

Work under these specifications shall conform to Contract Documents for the General Construction of the Building.

##### 1.02 ITEMS NOT INCLUDED:

This Section does not cover items generally known as rough hardware, nor items of Finish Hardware, when noted elsewhere in the Specifications as being furnished, or included with unit' items, by other suppliers or contractors, including hardware for casework, aluminum exterior doors or security doors.

##### 2.01 MATERIALS AND INSTALLATION INFORMATION:

- A. See Door, Frame and Hardware Schedule on drawings for location and type of hardware for each door.
- B. Approved hardware shall be as follows:
  - 1. Hinges: Exterior doors, Hager BB 1199, 4-1/2 x 4-1/2 x US26D, Interior doors, Hager BB 1279, 4-1/2 x 4-1/2 US26D
  - 2. Closers: Norton 7500 Series.
  - 3. Panic Device: Sargent 80 Series, US26D.
  - 4. Locksets: Corbin-Russwin, US26D.
  - 5. Cylinders: Corbin-Russwin, Mortise Cylinders or Rim Cylinders
  - 6. Accessories: (Push-Pull, Kick Plates, Weather-strip, Threshold, Stops, etc.) Brookline Industries, Stanley Hardware, National Guard Products, Triangle Brass or Trimco.
- C. All hardware, mounting and location to conform to Kentucky Building Code and shall be approved by the Architect.

##### 2.02 HARDWARE FINISH:

All hardware specified herein shall be US26D unless noted otherwise.

##### 3.01 MOUNTING:

All hardware shall be firmly and rigidly attached to the doors and frames. Door closers, specified to be surface mounted, shall be thru-bolted to the door with oval head sex bolts. All door pulls and other surface mounted items shall be thru-bolted to the door with oval head sex bolts, except push and kick-plates. Out-swinging doors shall have hinges with non-removable pins.

##### 3.02 APPLICATION:

- A. Finish hardware shall be installed under the Carpentry Section 06200, using mechanics skilled in this type of work. Installation shall be in a neat, workmanship manner, in accordance with the approved hardware and door schedule.
- B. All items of hardware shall be secure and free working in manner intended. Hardware shall be accurately mortised and fitted before painting. Hardware shall not be applied until the painting is finished.
- C. After the hardware is installed, the General Contractor shall cover all exposed surfaces of kickplates, push plates, pulls, locksets, exit devices, holders, etc., with a suitable covering, such as masking tape and polyethylene film, to protect the hardware from scratches, abrasion, and tarnishing. This is to be left on until the building is completed and ready for final inspection.

## **SECTION 08700**

### **FINISH HARDWARE**

- D. Upon completion of application, the Contractor shall deliver to the Architect, for the Owner's maintenance personnel, two (2) copies of all installation instructions, templates, wrenches, installation tools, etc., supplied by the various manufacturers and packed with the hardware, necessary for installation and maintenance.

#### **3.03 KEYING:**

Each lock shall have four (4) change keys and locks shall be keyed alike as directed. All locks shall be subject to Master Key PER THE Owner's direction. Deliver to the Architect six (6) Master Keys per Master Key group. No master key shall be delivered to any other person.

#### **3.04 SELECTIONS AND ORDERING:**

- A. The Architect shall be provided with Shop Drawings for approval. Approved Shop Drawings shall then authorize and direct General Contractor to place his written order for such hardware. Upon receipt of written order, hardware supplier will furnish the necessary copies of detailed schedules to all parties concerned within ten (10) days. He will furnish all necessary blueprints, templates and such other detailed information, relative to the installation of this hardware.
- B. In preparing his bid or schedule, the hardware supplier shall check the suitability and adaptability of all items specified in relation to all details and surrounding conditions. The Architect's attention shall be called to any items not suitable or adaptable, and to any manifest errors, typographical or otherwise, so that corrections may be made before any hardware is furnished.

#### **3.05 DISCREPANCIES:**

Shortages and/or incorrect items (based on Plans and Specifications in effect at the time of the selection of the Builder's Finishing Hardware) shall be replaced with correct materials by the Hardware Distributor, at no additional cost to the General Contractor or Owner.

The General Contractor shall provide adequate locked storage space with shelving and be responsible for the schedule quantities of hardware when delivered to the job, and for the payment of invoices covering such material, when and as delivered.

END

## SECTION 08800

### FLAT GLASS AND GLAZING

#### 08800 FLAT GLASS AND GLAZING

##### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Flat glass materials.

##### 1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry.
- B. Section 07900 - Sealants.
- C. Section 08110 - Steel Doors and Frames.
- D. Section 08210 - Wood Doors.
- E. Section 08411 - Aluminum Framed Storefronts
- F. Section 08810 - Solar Control Coated Glass

##### 1.3 SYSTEM DESCRIPTION

- A. Design requirements:
  - 1. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass in accordance with 2013 Kentucky Building Code.
  - 2. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass to a design in accordance with ASTM E 1300.
  - 3. Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

##### 1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. [[Product Data](#)]: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Selection Samples: For each finish product specified, two complete sets of color samples representing manufacturer's full range of available colors and patterns.
- D. Verification Samples:
  - 1. Flat Glass Materials: Two 4 inch by 4 inch (102 by 102 mm) samples of each glass type specified.
- E. Certificates: Product certificates signed by the manufacturer certifying material compliance with specified performance characteristics and criteria, and physical requirements.
- F. Warranty documents specified herein.



## **SECTION 08800**

### **FLAT GLASS AND GLAZING**

#### **1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Flat Glass Materials: Minimum five years documented experience producing glass products specified this section.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### **1.7 PROJECT CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Environmental Requirements: Installation of glass products at ambient air temperature below 50 degrees F (10 degrees C) is prohibited.
- C. Field Measurements: When construction schedule permits, verify field measurements with drawing dimensions prior to fabrication of glass products.

### **PART 2 PRODUCTS**

- A. All flat glass materials, glazing and accessories.
- B. All 1/4" float plate glass mirrors for Toilet Rooms as shown on the Drawings. Framed mirrors shall be by the Division 10 Contractor if applicable.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that openings for glazing are correct size and within tolerance.
- B. Verify that glazing channels and recesses are clean and free of obstructions, that weeps are clear, and that channels and recesses are ready for glazing.

#### **3.2 PREPARATION**

- A. Clean contact surfaces to receive sealant with solvent; wipe dry.
- B. Seal porous glazing channels and recesses with primer or sealer compatible with substrate.
- C. Prime surfaces to receive sealant in accordance with sealant manufacturer's instructions.

#### **3.3 INSTALLATION**

- A. Install all materials in accordance with manufacturer's instructions.
- B. Install sealants in accordance with sealant manufacturers' instructions.

## **SECTION 08800**

### **FLAT GLASS AND GLAZING**

- C. Install glazing in steel doors, side-lites and borrowed-lites.
- D. Install glazing in flush wood doors in accordance with manufacturer's instructions.
- E. Install glazing in non-insulated, and insulated glazing specified elsewhere in Aluminum Entrances and Storefronts, in accordance with manufacturer's instructions.
- F. Install insulated glazing, specified elsewhere in Aluminum Windows in accordance with manufacturer's instructions.

#### **3.4 CLEANING**

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after glass installation is complete.
- C. Clean glass surfaces and adjacent surfaces.

#### **3.5 PROTECTION**

- A. Protect installed products until completion of project.
- B. Repair or replace damaged products before Substantial Completion.



## **SECTION 08810**

### **SOLAR CONTROL COATED GLASS**

#### **08810 SOLAR CONTROL COATED GLASS**

##### **PART 1: GENERAL**

###### **1.01 SECTION INCLUDES**

Double-Glazed Solar Control Insulating Glass Units.

###### **1.02 REFERENCES**

ANSI Z 97.1 - Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

ASTM C 1036 - Standard Specification for Flat Glass.

ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.

ASTM C 1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Glass.

ASTM E 773 - Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units.

ASTM E 774 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units

ASTM E 2188 - Standard Test Method for Insulating Glass Unit Performance.

ASTM E 2190 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units.

CPSC 16CFR-1201 - Safety Standard for Architectural Glazing Materials.

Glass Association of North America (GANA) Glazing Manual.

###### **1.03 DEFINITIONS**

- A. Sealed Insulating Glass Unit Surfaces:
  - Surface No. 1: Exterior surface of outer lite.
  - Surface No. 2: Interior surface of outer lite.
  - Surface No. 3: Exterior surface of inner lite.
  - Surface No. 4: Interior surface of inner lite.
- B. Airspace: Space between lites of an insulating glass unit that contains dehydrated air or other inert specified gas.

###### **1.04 SUBMITTALS**

- A. Comply with Section 01.

## SECTION 08810

### SOLAR CONTROL COATED GLASS

- B. Product Data: Submit manufacturer's product data, including performance characteristics and installation instructions.
- C. Shop Drawings: Submit manufacturer's or fabricator's shop drawings, including plans, elevations, sections, and details, indicating glass dimensions, tolerances, types, thicknesses, and coatings.
- D. Samples: Submit manufacturer's samples of each type, thickness, and coating.
- E. Fabricator's Certification: Submit fabricator's certification by manufacturer.
- F. Cleaning Instructions: Submit manufacturer's cleaning instructions.
- G. Warranty: Submit manufacturer's standard warranty for sealed insulating glass units.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Minimum of 5 years experience manufacturing solar control coated glass.
- B. Fabricator's Qualifications:
  - 1. Minimum of 5 years experience manufacturing sealed insulating glass units meeting ASTM E 2190, Class CBA.
  - 2. Certified by manufacturer.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Delivery:
  - 1. Deliver glass to site in accordance with manufacturer's instructions.
  - 2. Deliver glass in manufacturer's or fabricator's original containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:
  - 1. Store glass in accordance with manufacturer's instructions.
  - 2. Store glass in clean, dry area indoors.
  - 3. Protect from exposure to direct sunlight and freezing temperatures.
  - 4. Apply temporary coverings loosely to allow adequate ventilation.
  - 5. Protect from contact with corrosive chemicals.
  - 6. Avoid placement of glass edge on concrete, metal, and other hard objects.
  - 7. Rest glass on clean, cushioned pads at 1/4-points.
- C. Handling:
  - 1. Handle glass in accordance with manufacturer's instructions.
  - 2. Protect glass from damage during handling and installation.
  - 3. Do not slide 1 lite of glass against another.
  - 4. Do not use sharp objects near unprotected glass.

## SECTION 08810

### SOLAR CONTROL COATED GLASS

#### PART 2: PRODUCTS

##### 2.01 MANUFACTURER

- A. Guardian Industries Corp., 2300 Harmon Road, Auburn Hills, Michigan 48326. Toll Free (866) 482-7374. Phone (248) 340-1800. Web Sites [www.guardian.com](http://www.guardian.com), [www.sunguardglass.com](http://www.sunguardglass.com).
- B. Substitutions:  
Not permitted.

##### 2.02 FABRICATORS

- A. Sealed Insulating Glass Units, Heat-Strengthened Glass, Tempered Glass, and Spandrel Glass:
  - 1. Acceptable Fabricators: Certified by Guardian Industries Corp. to fabricate SunGuard Solar Control Coated Glass products.

##### 2.03 SOLAR CONTROL INSULATING COATED GLASS

- A. Double-Glazed Sputter-Coated Insulating Glass Units:
  - 1. Conformance: ASTM E 2190, Class CBA.
  - 2. Outboard Lite: Sputter-coated green-tinted float glass.
    - a. Annealed Green-Tinted Float Glass: ASTM C 1036, Type 1, Class 2, Quality q3.
    - b. Vacuum Deposition Sputtered Coating: ASTM C 1376.
    - c. Coating on Surface No. 2: SunGuard Silver 20.
    - d. Glass Thickness: 6 mm (1/4 inch).
    - e. Heat Treatment: [None] [Heat-strengthened, ASTM C 1048, Kind HS] [Tempered; ASTM C 1048, Kind FT; CPSC 16CFR-1201; ANSI Z 97.1].
  - 3. Air Space: 12 mm (1/2 inch) wide, hermetically sealed, dehydrated air space.
  - 4. Inboard Lite: Clear float glass.
    - a. Annealed Clear Float Glass: ASTM C 1036, Type 1, Class 1, Quality q3.
    - b. Glass Thickness: 6 mm (1/4 inch).
    - c. Heat-Treatment: [None] [Heat-strengthened, ASTM C 1048, Kind HS] [Tempered; ASTM C 1048, Kind FT; CPSC 16CFR-1201; ANSI Z 97.1].
  - 5. Glass Unit Performance Characteristics:
    - a. Visible Light Transmittance: 15 percent
    - b. Visible Light Reflectance Outdoors: 24 percent
    - c. Direct Solar Energy Transmittance: 8 percent
    - d. Direct Solar Energy Reflectance Outdoors: 13 percent
    - e. Winter U-Value Nighttime: 0.40
    - f. Summer U-Value Daytime: 0.41
    - g. Solar Heat Gain Coefficient: 0.19
    - h. Summer Relative Heat Gain: 48
  - 6. Edge Seals: ASTM E 773, with aluminum spacers and silicone sealant for glass-to-spacer seals.
  - 7. Sealant: Approved by glass manufacturer.

**SECTION 08810**  
**SOLAR CONTROL COATED GLASS**

**PART 3: EXECUTION**

**3.01 EXAMINATION**

- A. Examine areas to receive glass. Notify Architect of conditions that would adversely affect installation. Do not proceed with installation until unsatisfactory conditions are corrected.

**3.02 PREPARATION**

- A. Verify glazing openings are correct size and within tolerance.
- B. Verify glazing channels, recesses, and weeps are clean and free of obstructions.

**3.03 GLAZING**

- A. Install glass in accordance with manufacturer's instructions, except where local codes or GANA Glazing Manual indicate more stringent requirements.

**3.04 FIELD QUALITY CONTROL**

- A. Coated glass, when viewed from minimum of 10 feet, exhibiting slightly different hue or color not apparent in hand samples, will not be cause of rejection of glass units, as determined by Architect.
- B. Verify glass is free of chips, cracks, and other inclusions that could inhibit structural or aesthetic integrity.

**3.05 CLEANING**

- A. Clean glass promptly after installation in accordance with manufacturer's instructions.
- B. Remove labels from glass surface.
- C. Do not use harsh cleaning materials or methods that would damage glass.

**3.06 PROTECTION**

- A. Protect installed glass from damage during construction.
- B. Protect installed glass from contact with contaminating substances resulting from construction operations.
- C. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.

**END OF SECTION**

**SECTION 08810**  
**SOLAR CONTROL COATED GLASS**





## SECTION 09260

### GYPSUM BOARD ASSEMBLIES

#### 09260 GYPSUM BOARD ASSEMBLIES

##### PART 1 GENERAL

###### 1.1 SECTION INCLUDES

- A. Gypsum board and joint treatment products.
- B. Water resistant gypsum board and joint treatment products.
- C. Mold and Mildew resistant gypsum board products.
- D. Fire rated gypsum area separation walls.
- E. Gypsum shaft liner.
- F. Abuse resistant gypsum board.
- G. Mold resistant gypsum board.
- H. Sound dampening area separation walls.
- I. Gypsum soffit board.
- J. Gypsum sheathing board.
- K. Accessories for the installation and trimming of gypsum board partitions and ceilings.

###### 1.2 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. [ [Product Data](#) ]: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Indicate special details associated with fireproofing, acoustic seals, or curved sheet installations.
- D. Maintenance Data: Manufacturer's recommendations for cleaning each type of product specified.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

###### 1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Installer: Company specializing in performing Work of this section with minimum three years.

###### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store gypsum board in accordance with GA-801.
- B. Ship materials with a weathertight cover and in manufacturer's original packages showing manufacturer's name and product brand name.
- C. Remove plastic shipping bags upon receipt and storage. Failure to remove may increase the

## SECTION 09260

### GYPSUM BOARD ASSEMBLIES

likelihood of mold growth.

- D. Store materials inside and protected from damage by weather and direct sunlight. Stack flat; protect ends, edges, and faces of gypsum boards from damage. Protect steel studs and metal accessories from moisture.

#### 1.5 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not install interior products until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Lafarge North America Inc., 12018 Sunrise Valley Drive, Suite 600, Reston, VA 20191. ASD. Tel: (703) 480-3800. Fax: (703) 796-0062. Email: [catherine.boggs@lafarge-na.com](mailto:catherine.boggs@lafarge-na.com); Web: [www.lafargenorthamerica.com](http://www.lafargenorthamerica.com).
- B. Substitutions: Per architect's approval.
- C. Requests for substitutions will be considered in accordance with provisions of Division 1

### 2.2 GYPSUM PRODUCTS, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area that correspond with the support system indicated.

### 2.3 INTERIOR GYPSUM MATERIALS

- A. Regular Gypsum Board: Gypsum core panel surfaced with paper on front and back edges and complying with ASTM C 1396 and ASTM C 36.
  - 1. Acceptable Product: Lafarge Regular Drywall.
  - 2. Thickness: 5/8 inch (12.7 mm), unless otherwise indicated.
  - 3. Width: 48 inches (1219 mm).
  - 4. Width: 54 inches (1372 mm).
  - 5. Length: Use longest length available, avoiding unnecessary joints.
  - 6. Edges:
    - a. Use tapered edges.
- B. Regular Mold Resistant Gypsum Board: Gypsum core panel enhanced with moisture-resistant wax emulsion and chemically treated to resist mold and mildew in the core and surfaced with mold and mildew resistant paper on front, back and long edges and complying with ASTM C 1396 Section 7 and ASTM C 630.
  - 1. Acceptable Product: Lafarge Mold Defense Drywall .
  - 2. Thickness: 5/8 inch (12.7 mm), unless otherwise indicated.
  - 3. Width: 48 inches (1219 mm).
  - 4. Width: 54 inches (1372 mm).
  - 5. Length: Use longest length available, avoiding unnecessary joints.

## SECTION 09260

### GYPSUM BOARD ASSEMBLIES

6. Edges:
    - a. Use tapered edges.
  7. Mold and Mildew Resistance: Panel score of 10 when tested in accordance with ASTM D 3273.
- C. Fire Rated Gypsum Board: Gypsum core panel with glass fibers to enhance fire resistance of the core; surfaced with ivory-colored paper on front and strong liner paper on back; and complying with ASTM C 1396 Section 5 and ASTM C 36, Type X.
1. Acceptable Product: Lafarge Firecheck Type X Drywall.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1219 mm).
  4. Width: 54 inches (1372 mm).
  5. Length: Use longest length available, avoiding unnecessary joints.
  6. Edges:
    - a. Use tapered edges.
- D. Fire Rated Mold-Resistant Gypsum Board: Gypsum core panel with glass fibers to enhance fire resistance of the core; core also enhanced with moisture-resistant wax emulsion and chemically treated to resist mold and mildew; surfaced with a mold and mildew resistant paper on the front, back and long edges; and complying with ASTM C 1396 Section 7 and ASTM C 630, Type X.
1. Acceptable Product: Lafarge Mold Defense Type X Firecheck.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1219 mm).
  4. Width: 54 inches (1372 mm).
  5. Length: Use the longest length available, avoiding unnecessary joints.
  6. Edges:
    - a. Use tapered edges.
  7. Mold and Mildew Resistance: Panel score of 10 when tested in accordance with ASTM D 3273.
- E. Water-Resistant Gypsum Board: Gypsum core wall panel with additives to enhance water resistance of core; surfaced with green-colored face paper and gray backing paper; and complying with ASTM C 1396 and ASTM C 630.
1. Acceptable Product: Lafarge Watercheck.
  2. Thickness: 5/8 inch (12.7 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
- F. Fire Rated Water-Resistant Gypsum Board: Gypsum core wall panel with glass fibers to enhance fire resistance of the core; and with additives to enhance water resistance of core; surfaced with green-colored face paper and gray backing paper; and complying with ASTM C 1396 and ASTM C 630, Type X.
1. Acceptable Product: Lafarge Fire Watercheck.
  2. Thickness: 5/8 inch (12.7 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
- G. Shaftliner Gypsum Board: Gypsum core shaftwall panel with glass fibers to enhance fire resistance of core; surfaced with green water repellant paper on front and back; and complying with ASTM C 1396 Section 6, Type X, ASTM C 442.
1. Acceptable Product: Lafarge Shaftliner Type X Drywall.
  2. Thickness: 1 inch (25.0 mm).

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### GYPSUM BOARD ASSEMBLIES

3. Width: 24 inches (610 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Double Beveled.
- H. Shaftliner Gypsum Board Mold Resistant: Gypsum core shaftwall panel with glass fibers to enhance fire resistance of core, and chemically treated to resist mold and mildew in the core; surfaced with green water repellent; chemically treated to resist mold and mildew on the surface on front and back; complying with ASTM C 1396 Section 6, Type X, ASTM C 442.
1. Acceptable Product: Lafarge Mold Defense Shaftliner Type X Drywall.
  2. Thickness: 1 inch (25.0 mm).
  3. Width: 24 inches (610 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Double Beveled.
  6. Mold and Mildew Resistance: Panel score of 10 when tested in accordance with ASTM D 3273.
- I. Abuse Resistant and Mold-Resistant Gypsum Board: Gypsum abuse resistant drywall panel enhanced with glass fibers and a high-density gypsum core; surfaced on the front, back and long edges with reinforced mold and mildew resistant, heavy facing paper; and complying with ASTM C 1396 Section 5 and ASTM C 36, Type X.
1. Acceptable Product: Lafarge Protecta AR 100 with Mold Defense Drywall.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
  6. Mold and Mildew Resistance: Panel score of 10 when tested in accordance with ASTM D 3273.
- J. Impact Resistant and Mold-Resistant Gypsum Board: Gypsum impact resistant drywall panel enhanced with glass fibers and a high-density gypsum core; surfaced on the front, back and long edges with reinforced mold and mildew resistant, heavy facing paper; and complying with ASTM C 1396 Section 5 and ASTM C 36, Type X.
1. Acceptable Product: Lafarge Protecta HIR 300 with Mold Defense Drywall.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
  6. Mold and Mildew Resistance: Panel score of 10 when tested in accordance with ASTM D 3273.
- K. Sag Resistant Gypsum Board for Ceilings: Gypsum core panel with glass fibers, surfaced with ivory-colored face paper and gray backing paper; and complying with ASTM 1396, ASTM C 1395 Section 12 and ASTM C 36.
1. Acceptable Product: Lafarge Sagcheck Drywall.
  2. Thickness: 5/8 inch (12.7 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
- L. Level Five Skim-Coat Gypsum Board: Gypsum core panel for Level Five applications; surfaced with factory applied skim-coat on face layer and gray backing paper; and complying with ASTM C 1396 Section 5, ASTM C 36 and ASTM C 840.
1. Acceptable Product: Lafarge Rapid Deco L5 Level Five Drywall.
  2. Thickness: 5/8 inch (12.7 mm).
  3. Width: 48 inches (1219 mm)

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### GYPSUM BOARD ASSEMBLIES

4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
  6. Accessory Material: Provide Rapid Deco Joint Compound as recommended by Manufacturer.
- M. Fire Rated Level Five Gypsum Board: Gypsum core panel for Level Five applications; with glass fibers to enhance fire resistance of the core; surfaced with factory applied skim-coat on face layer and gray backing paper, and complying with ASMT 1396 Section 5, ASTM C 36 and ASTM C 840, Type X.
1. Acceptable Product: Lafarge Rapid Deco L5 Level Five Type X Drywall.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1219 mm)
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
  6. Accessory Material: Provide Rapid Deco Joint Compound as recommended by Manufacturer.
- N. Fire Rated and Mold Resistant Level Five Gypsum Board: Gypsum core panel for Level Five applications; with glass fibers to enhance fire resistance of the core; surfaced with factory applied skim-coat on face layer and mold and mildew gray backing paper, and complying with ASMT 1396 Section 7, ASTM C 630 and ASTM C 840, Type X.
1. Acceptable Product: Lafarge Rapid Deco L5 Level Five Type X Drywall with Mold Defense.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Tapered.
  6. Accessory Material: Provide Rapid Deco Joint Compound as recommended by Manufacturer.

#### 2.4 GYPSUM SHEATHING AND SOFFIT PANELS

- A. Exterior Gypsum Soffit Board: Gypsum core soffit panel with additives to enhance sag resistance of core; surfaced with paper on front and back; and complying with ASTM C 1396 Section 8 and ASTM C 931.
1. Acceptable Product: Lafarge Soffitboard.
  2. Thickness: 1/2 inch (12.7 mm).
  3. Width: 48 inches (1220 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges:
    - a. Tapered.
- B. Fire Rated Exterior Gypsum Soffit Board: Gypsum core soffit panel with additives to enhance fire-resistance and sag resistance of core; surfaced with paper on front and back; and complying with ASTM C 1396 Section 8 and ASTM C 931, Type X.
1. Acceptable Product: Lafarge Firecheck Soffitboard Type X.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1220 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges:
    - a. Tapered.
- C. Exterior Gypsum Sheathing Board: Gypsum core sheathing surfaced with paper on front and back; and complying with ASTM C 1396 Section 9 and ASTM C 79, Treated Core.
1. Acceptable Product: Lafarge Sheathing Treated Core; additives to enhance water resistance of core.
  2. Thickness: 1/2 inch (12.7 mm).
  3. Width: 48 inches (1219 mm).

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### GYPSUM BOARD ASSEMBLIES

4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Square.
- D. Exterior Gypsum Sheathing Board: Gypsum core sheathing surfaced with paper on front and back; and complying with ASTM C 1396 Section 9 and ASTM C 79, Treated Core, Type X.
1. Acceptable Product: Lafarge Firecheck Sheathing Treated Core Type X.
  2. Thickness: 5/8 inch (15.9 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Square.
- E. Glass-Mat Gypsum Sheathing Board: Gypsum core sheathing surfaced with fiberglass mat on front and back: complying with ASTM 1396 and ASTM C1177.
1. Acceptable Product: Lafarge Weather Defense Platinum Sheathing.
  2. Thickness: 1/2 inch (12.7 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Square.
- F. Fire Rated Glass-Mat Gypsum Sheathing Board: Gypsum core sheathing surfaced with fiberglass mat on front and back: complying with ASTM 1396 Type X and ASTM C1177.
1. Acceptable Product: Lafarge Weather Defense Platinum Sheathing Type X
  2. Thickness: 5/8" (15.9 mm).
  3. Width: 48 inches (1219 mm).
  4. Length: Use longest length available, avoiding unnecessary joints.
  5. Edges: Square.

## 2.5 GYPSUM JOINT TREATMENT AND FINISH PRODUCTS

- A. Joint Treatment Tape: Complying with ASTM C 475 and GA-216.
- B. Joint Compound: Vinyl type pre-mixed compound; complying with ASTM C 475; acceptable product(s):
1. Lafarge Rapid Coat All Purpose Compound (White, Beige, Yellow).
  2. Lafarge Rapid Coat All Purpose Compound (White).
  3. Lafarge Rapid Coat Mid-weight All Purpose Compound (White).
- C. Joint Compound: Setting type lightweight; job mixed chemical-hardening compound; off white color; complying with ASTM C 475; acceptable product(s):
1. Lafarge Rapid Joint 20 Lightweight Setting Compound.
  2. Lafarge Rapid Joint 45 Lightweight Setting Compound.
  3. Lafarge Rapid Joint 90 Lightweight Setting Compound.
  4. Lafarge Rapid Joint 210 Lightweight Setting Compound.
- D. Joint Compound: Level Five vinyl type pre-mixed compound; off-white color or tinted gray color; complying with ASTM C 475 and fulfilling ASTM C 840; designed for joint finishing of Level Five gypsum board; acceptable product(s):
1. Rapid Deco L5 Level Five All Purpose Compound (White, Tinted).

## 2.6 ACCESSORY MATERIALS

- A. Corner Bead: Formed galvanized steel angle, min. base steel 0.014 in. thick, and complying with ASTM C 1047.

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### GYPSUM BOARD ASSEMBLIES

- B. Casing Bead: Formed galvanized steel trim, minimum base steel thickness of 0.014 inch (0.35 mm), complying with ASTM C 1047, type(s) as follows:
  - 1. J-shaped U-bead, for face nailing and finishing with joint treatment.
  - 2. J-shaped U-bead, requiring no finishing.
  - 3. L-shaped, for application over edge and finishing with joint treatment.
- C. Control Joint: Extruded vinyl formed with V-shaped slot covered with removable flexible vinyl strip; complying with ASTM C 1047.
- D. Control Joint: Bent zinc sheet formed with V-shaped slot, covered with plastic tape, with perforated flanges; complying with ASTM C 1047.
- E. Screws: ASTM C 954 or ASTM C 1002 or both with heads, threads, points, and finish as recommended by panel manufacturer.
- F. Nails: ASTM C 514 with heads, lengths, configurations, and finish as recommended by panel manufacturer.
- G. Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable type as recommended by panel manufacturer.
- H. Insulation: ASTM C 665, Type I, mineral fiber (either glass, rock, or slag) insulation blankets without membrane facing.

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Verify site conditions are ready to receive work and framing and opening dimensions are as indicated on the Drawings.
- B. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

##### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Coordinate preparation of Level 5 gypsum board with manufacturers requirements.

##### 3.3 INSTALLATION

- A. Application: Apply and maintain conditions during installation in accordance with GA-216 and GA-238 and as follows:
  - 1. Keep gypsum board dry throughout application.
  - 2. Do not use gypsum board that has visible mold growth.
  - 3. Apply gypsum board on walls with a minimum 1/4 inch (6.4 mm) gap between the gypsum board and the floor.
  - 4. Do not apply gypsum board over other building materials where conditions exist that are favorable to mold growth.
  - 5. Maintain a sound weather-tight building envelope including, such elements as the roof, sealants, windows, etc.



## SECTION 09260

### GYPSUM BOARD ASSEMBLIES

6. Immediate and appropriate remediation measures must be taken as soon as water leaks or condensation sources are identified.
  7. Provide routine cleaning and maintenance operations to prevent saturation of the gypsum board.
  8. If gypsum board is damaged by water, assess the need for replacement in accordance with GA-231.
- B. Install accordance with GA 216 and the following:
1. Metal Framing: ASTM C 754.
  2. Gypsum Sheathing Board: ASTM C 1280 and GA-253.
  3. Fire Resistant Construction: GA 600.
  4. Gypsum Board and Joint Treatment: ASTM C 840 and GA-214.
  5. Gypsum panel manufacturer's published recommendations.
- C. Finishing: Tape, fill, sand and finish joints in accordance with ASTM C 840 and GA-214.
1. Level 1: Plenums and service corridors.
  2. Level 2: Water resistant gypsum backing board indicated to receive tile.
  3. Level 3: Gypsum board indicated to receive heavy or medium textured coatings and heavy-grade wall coverings.
  4. Level 4: Gypsum board indicated to receive light textured coatings and light-grade wall coverings.
  5. Level 5: All other gypsum board.
  6. Level 5 Skim Coated Gypsum Wall Board: Skim coat joints with Rapid Deco Joint compound specified.

#### 3.4 PROTECTION

- A. Protect work from damage and deterioration until date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

#### 3.5 SCHEDULES

- A. Exterior Wall Sheathing:
1. Gypsum sheathing board.
- B. Exterior Soffits:
1. Use exterior gypsum soffit board.
- C. Other Interior Partitions Indicated As Fire Rated:
1. Use fire rated gypsum board unless otherwise indicated.
- D. Other Interior Partitions:
1. Use regular gypsum board unless otherwise indicated.
- E. Fire Rated Interior Ceilings, Bulkheads, and Soffits:
1. Use fire rated gypsum board unless otherwise indicated.
- F. Other Interior Ceilings, Bulkheads, and Soffits:
1. Use gypsum ceiling board unless otherwise indicated.

END

**SECTION 09510**  
**ACOUSTICAL PANEL CEILINGS**

09510 ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Acoustical ceiling panels.
2. Exposed grid suspension system.
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.

B. Related Sections:

1. Codes
2. Gypsum Board
3. HVAC
4. Electrical Work

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products which have not been approved by Addenda, the specified products shall be provided without additional compensation.
2. Submittals which do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

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### ACOUSTICAL PANEL CEILINGS

3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
  4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
  5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
  6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
  7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
  8. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
  9. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.
  10. ASTM E 1264 Classification for Acoustical Ceiling Products.
  11. ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
  12. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
  13. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.
- B. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
  - C. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components
  - D. International Code Council-Evaluation Services - Evaluation Report, ESR-1308, Fire- and Nonfire-Resistance-Rated Suspended Ceiling Framing Systems
  - E. ASCE 7 Standard - American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
  - F. CISCA Seismic Zones 3 & 4 - Ceilings and Interior Systems Construction Association Guidelines for Seismic Restraint for Direct Hung Suspended Ceiling Assemblies

#### 1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.
- B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.
- C. Shop Drawings: Layout and details of acoustical ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.

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### ACOUSTICAL PANEL CEILINGS

- D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.
- E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

#### 1.5 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
- B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
  - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
    - a. Flame Spread: 25 or less
    - b. Smoke Developed: 50 or less
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

#### 1.7 PROJECT CONDITIONS

- A. Space Enclosure:

All ceiling products and suspension systems must be installed and maintained in accordance with Armstrong written installation instructions for that product in effect at the time of installation and best industry practice. Prior to installation, the ceiling product must be kept clean and dry, in an environment that is between 32°F (0°C) and 120°F (49°C) and not subject to Abnormal Conditions. Abnormal conditions include exposure to chemical fumes, vibrations, moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.

HumiGuard Plus Ceilings: Installation of the products shall be carried out where the temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC

## SECTION 09510

### ACOUSTICAL PANEL CEILINGS

systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry. The ceilings must be maintained to avoid excessive dirt or dust buildup that would provide a medium for microbial growth on ceiling panels. Microbial protection does not extend beyond the treated surface as received from the factory, and does not protect other materials that contact the treated surface such as supported insulation materials.

#### 1.8 WARRANTY

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:
  - 1. Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.
  - 2. Grid System: Rusting and manufacturer's defects
  - 3. Acoustical Panels with BioBlock Plus or designated as inherently resistive to the growth of micro-organisms installed with Armstrong suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
- B. Warranty Period Humiguard:
  - 1. Acoustical panels: Ten (10) years from date of substantial completion.
  - 2. Grid: Ten (10) years from date of substantial completion.
  - 3. Acoustical panels and grid systems with HumiGuard Plus or HumiGuard Max performance supplied by one source manufacturer is thirty (30) years from date of substantial completion.
- C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

#### 1.9 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
  - 1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
  - 2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

#### Part 2-PRODUCTS

##### 2.1 MANUFACTURERS

- A. Ceiling Panels:
  - 1. Armstrong World Industries, Inc.

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### ACOUSTICAL PANEL CEILINGS

#### 2.2.0 SUSPENSION SYSTEMS

- A. Components: Main beams and cross tees In accordance with the International Building Code
  - 1. Structural Classification: ASTM C 635, Heavy Duty.
  - 2. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
  - 3. Represented Systems: Prelude XL 15/16" Exposed Tee System as manufactured by Armstrong World Industries.
- B. Attachment Devices: In accordance with the International Building Code.
- C. Wire for Hangers and Ties: In accordance with the International Building Code.
- D. Wall Moldings:
  - 1. Nominal 7/8 inch x 7/8 inch hemmed, pre-finished angle molding (7800) (7802) (7803) (780036) (HD7801)
  - 2. Nominal 15/16 inch x 15/16 inch hemmed, pre-finished angle molding (7809)
- E. Accessories:
  - 1. BERC2 - 2 inch Beam End Retaining Clip, 0.034 inch thick, hot-dipped galvanized cold-rolled steel per ASTM A568 - used to join main beam or cross tee to wall molding.

#### 2.3.1 ACOUSTICAL CEILING UNITS

- A. Acoustical Panels Type ACT-1:
  - 1. Surface Texture: Medium
  - 2. Composition: Mineral Fiber
  - 3. Color: White
  - 4. Size: 24in X 24in X 7/8in
  - 5. Edge Profile: Angled Tegular for interface with compatible Armstrong grid.
  - 6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.75.
  - 7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35
  - 8. Articulation Class (AC): ASTM E 1111; Classified with UL label on product carton 170.
  - 9. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
  - 10. Flame Spread: ASTM E 1264; Class A (UL)
  - 11. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.86.

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### ACOUSTICAL PANEL CEILINGS

12. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
13. Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
14. Acceptable Product: Fine Fissured Open Plan, 1756 as manufactured by Armstrong World Industries.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

### 3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.
- B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.
  1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

### 3.3 INSTALLATION

- A. Install suspension system and panels in accordance with the International Building Code.
- B. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
- C. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

### 3.4 ADJUSTING AND CLEANING

- A. Replace damaged and broken panels.
- B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.
  1. Ceiling Touch-Up Paint, (Item #5760, 8oz. bottles) (Item #5761, quart size cans), "global white" latex paint should be used to hide minor scratches and nicks in the surface and to cover field regularized edges that are exposed to view.

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**ACOUSTICAL PANEL CEILINGS**

- C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

**END OF SECTION**





## SECTION 09650

### RESILIENT WALL BASE

#### 09650 RESILIENT WALL BASE

##### PART 1 GENERAL

###### 1.01 SUMMARY

Section Includes: RESILIENT WALL BASE

###### 1.02 REFERENCED DOCUMENTS

###### A. ASTM International

1. E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
2. E648, Standard Test Method for Critical Radiant Flux of Flooring Systems Using a Radiant Energy Source.
3. E662, Test Method for Specific Density of Smoke Generated by Solid Materials.
4. F137, Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus.
5. F925, Standard Test Method for Resistance to Chemicals of Resilient Flooring.
6. F1861, Standard Specification for Resilient Wall Base.

###### B. Other Referenced Documents

1. National Fire Protection Association (NFPA), NFPA 255; Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
2. National Fire Protection Association (NFPA), NFPA 258; Test Method for Specific Density of Smoke Generated by Solid Materials.
3. California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
4. The Collaborative for High Performance Schools (CHPS).

###### 1.03 SUBMITTALS

- A. Product Data: Submit product data, including manufacturer's specification summary sheet for specified products.
- B. Shop Drawings: Submit shop drawings showing layout, finish colors, patterns and textures.
- C. Samples: Submit selection and verification samples for finishes, colors, and textures.
- D. Quality Assurance Submittals: Submit the following
  1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
  2. Manufacturer's Instructions: Manufacturer's installation and maintenance instructions.
- E. Maintenance Information: Maintenance information for installed products in accordance with Division 1 sections.
  1. Methods for maintaining installed products.
  2. Precautions against cleaning materials and methods detrimental to finishes and performance.
- F. Warranty: Warranty documents specified herein.

###### 1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installing work similar to that required for this project.
- B. Regulatory Requirements
  1. Fire Performance characteristics: Provide resilient wall base with the following Fire performance characteristics as determined by testing products in accordance with ASTM method (and NFPA method) indicated below by a certified testing laboratory or another testing and inspecting agency acceptable to authorities having jurisdiction.
    - a. ASTM E648 (NFPA 253), Critical Radiant Flux of Floor Covering Systems; Class 1, Greater than 0.45 W/cm<sup>2</sup>.

## SECTION 09650

### RESILIENT WALL BASE

- b. ASTM E662 (NFPA 258), Specific Optical Density of Smoke Generated by Solid Materials; < 450.
  - C. Single-Source Responsibility: Obtain resilient wall base tile and manufacturer's recommended adhesive from a single supplier.
  - D. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, Manufacturer's conditions, recommended adhesive depending on product, substrate type and type of installation, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with requirements in Division 1.
- 1.05 DELIVERY, STORAGE AND HANDLING
  - A. General: Comply with requirements in Division 1.
  - B. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
  - C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with Identification labels intact.
  - D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and acclimated to site conditions at temperature and humidity conditions recommended by manufacturer.
- 1.06 PROJECT CONDITIONS
  - A. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive rubber flooring shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature of 65° -85° F for 48 hours prior to, during and thereafter installation of rubber flooring. Rubber flooring and adhesive shall be conditioned in the same manner. Rubber flooring/tile must be un-boxed at least 48 hours prior to installation in the areas in which it will be installed.
- 1.07 SEQUENCING AND SCHEDULING
  - A. Finishing Operations: Install resilient wall base after finishing operations, including floor covering, painting and ceiling operations, have been completed.
- 1.08 MAINTENANCE
  - A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1, Closeout Submittals Section.
  - B. Quantity: Furnish quantity of resilient wall base equal to 5% of amount to be installed.
  - C. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.
  - D. Maintenance of finished resilient wall base to be conducted per Manufacturer's Maintenance Guide.
- 1.09 WARRANTY
  - A. Manufacturer's Materials Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
    - 1. Warranty: 1 year limited warranty commencing on Date of Substantial Completion. Notice of any defect must be made in writing to manufacturer within 30 days after buyer learns of the defect.

## SECTION 09650

### RESILIENT WALL BASE

#### PART 2 PRODUCTS

##### 2.01 RESILIENT WALL BASE

- A. Manufacturer: Flexco Corporation, 1401 E. 6th Street, Tuscumbia, AL35674. Phone: 800-633-3151, Fax: 800-346-9075, Web: [www.flexcofloors.com](http://www.flexcofloors.com), or EQUAL.
- B. Test results
  - 1. ASTM D570, Water Absorption of Plastics; < 0.15%.
  - 2. ASTM E84 (NFPA 255), Surface Building Characteristics of Building Materials; Class C.
  - 3. ASTM E648 (NFPA 253), Critical Radiant Flux; Class 1, > 1.0 W/cm<sup>2</sup>.
  - 4. ASTM E662 (NFPA 258), Specific Optical Density of Smoke Generated by Solid Materials; Passes.
  - 5. ASTM F925, Resistance to Chemicals; Passes, List Available.
  - 6. ASTM F1515, Light Stability; Excellent.
  - 7. ASTM F1861, Standard Specification for Resilient Wall Base - Types TS, TP & TV, Group 1 & 2, Styles A&B; (Federal Specification SSW40a, Type II, Styles A&B).
  - 8. NFPA 101 Life Safety Code, Wall Base; Interior floor trim material used at the junction of the wall and the floor to provide a functional or decorative border, and not exceeding 6 in. (150 mm) in height shall meet the requirements for the interior wall finish for its location or the requirements for Class II interior floor finish as described (CFR > .22 W/cm<sup>2</sup> / < .45 W/cm<sup>2</sup>) using ASTM E 648. If Class I floor finish is required (CFR > .45 W/cm<sup>2</sup>), the interior floor trim shall be Class I.
  - 9. Complies with California Proposition 65
  - 10. Approved for Collaborative for High Performance Schools 01350, Low-Emitting Material Criteria.
- C. Materials
  - 1. Vinyl Wall Base, color to be selected by architect.
    - a. Complies with ASTM F 1861 Type TV (Thermoplastic Vinyl), Group 2 (Layered).
    - b. Contains 10% Post Industrial Recycled Content.
    - c. Profile (select one):
      - 1) Standard Toe (Cove base at hard floor surfaces)
      - 2) No Toe (Straight at carpet)
    - d. Height (see Finish Schedule):
      - 1) 4" (101.6 mm)
      - 2) 6" (152.4 mm) (at Corridors)
    - e. Length (select one):
      - 1) 120' (36.57 m) Coils
    - f. Thickness (select one):
      - 1) 1/8" (3.175 mm)
    - g. Corner Installation:
      - 1) Job Site Formed by Installers.

#### PART 3 EXECUTION

##### 3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's requirements as published in Flexco installation instructions.
- B. Adhesive: Flexco 106 Wall Base Adhesive.
- C. Caulking: Flexco colored caulking as required.

##### 3.02 EXAMINATION

- A. Site Verification of Conditions: Confirm substrate conditions (which have been previously addressed under other sections) are acceptable for product installing in accordance with manufacturer's instructions.
- B. Material Inspection: In accordance with manufacturer's installing requirements, visually inspect materials prior to installing. Material with visual defects shall not be installed.

## **SECTION 09650**

### **RESILIENT WALL BASE**

#### **3.03 PREPARATION**

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage while installing.
- B. Substrate Preparation: Prepare substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as paint, dust, grease, oils, solvent, old adhesive residue, vinyl wall coverings, non-porous surfaces and all other contaminants that may interfere with adhesive bond.
- C. Do not install over existing floor covering or over substrates not approved by manufacturer.

#### **3.04 INSTALLING**

- A. Refer to Flexco installation instructions for specific resilient wall base detailed specifications on installing.
  - 1. Finish Floor Covering Designs: As selected by Architect.

#### **3.05 FIELD QUALITY REQUIREMENTS**

- A. Manufacturer's Field Services: Upon Owner's request and with minimum 72 hours notice, provide manufacturer's field service consisting of product use recommendations and periodic site visits to confirm installing of product is in accordance with manufacturer's instructions.

#### **3.06 PROTECTION**

- A. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of substantial completion.
- B. Restrict cleaning for first 72 hours.

#### **3.07 INITIAL MAINTENANCE PROCEDURES**

- A. General: Include in contract sum cost for initial maintenance procedures and execution by professional maintenance personnel after resilient wall base has been installed for 72 hours as specified in the Flexco maintenance instructions.

#### **3.08 CLEANING**

Cleaning: See Flexco maintenance instructions. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project s

## SECTION 09652

### RESILIENT FLOORING

#### 09652 RESILIENT FLOORING

##### 1.01 WORK INCLUDED:

- A. Furnish and install all flexible floor covering materials where shown on drawings in "Finish Schedule" and otherwise indicated or specified herein.

##### 2.01 MATERIALS:

- A. Vinyl Tile:
  - 1. Vinyl composition tile, 12" x 12" x 1/8", Excelon, as manufactured by Armstrong (or equal). Color to be selected from manufacturer's full range.
- B. Adhesive: For vinyl tile flooring and rubber base shall be as recommended by manufacturer.
- C. Seam Sealer: For sheet vinyl flooring shall be heat-weld or chemical bond as recommended by manufacturer.
- D. Wax: For standard type vinyl floors shall be as recommended by flooring manufacturer.
- E. Easing Strips: Where resilient floor abuts other floor materials, and as directed by Architect, use easing strips for changes in level, in colors selected by Architect.

##### 3.01 INSTALLATION:

- A. Inspect floors to receive resilient flooring; inspect walls to receive vinyl base; make necessary adjustments to floor and/or wall surfaces so that materials will go in place level, plumb and square.
- B. Clean concrete floors of extraneous materials such as oils, dirt, cement, drywall mud, etc., which would have adverse effects on adhesive or flooring.
- C. Floor tile shall be laid in checkerboard field. Apply floor covering in strict accordance with manufacturer's specifications for type of sub-floors used so as to insure good contact with smooth even joints with finished surface in a smooth true plane. Tile showing broken corners or fracture lines across their surface shall be warmed, carefully removed and new tile of exact original color and thickness substituted.

##### 3.02 CLEANING:

- A. At completion of work of all other trades and immediately prior to final inspection, clean all tile thoroughly with "Brittenall" or equal, removing all foreign matter. After all other cleaning has been finished and immediately before final inspection, give all floors two (2) coats of wax, machine buffed.

##### 3.03 PROTECTION:

- A. All tile floor covering shall be closed to all other work and traffic for not less than seven (7) days after application.

##### 3.04 THRESHOLD STRIPS:

- A. Furnish and Install at interior doors only, vinyl tapered edge strips at all junctions of resilient floor covering and other flooring materials.

END



## SECTION 09653

### PREMIUM RESILIENT FLOORING

#### 09653 PREMIUM RESILIENT FLOORING

##### 1 GENERAL

##### 1.1 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1 apply as if repeated here.

##### 1.2 SECTION INCLUDES

- A. Provision of all labour, materials, equipment and incidental services necessary to supply and install resilient tile flooring, including all necessary fillers, adhesives, primers, and accessories.

##### 1.3 REFERENCES

- A. ASTM D2047-99; Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
- B. ASTM E84-03a; Test Method for Surface Burning Characteristics of Building Materials.
- C. ASTM E429; Test Method for Measurement and Calculation of Reflecting Characteristics of Metallic Surfaces using Integrating Sphere Instruments.
- D. ASTM E648-00; Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- E. ASTM E662-01; Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- F. ASTM E2179-03; Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors.
- G. ASTM F142-93 (2000); Test Method for Indentation of Resilient Floor Coverings (McBurney Test).
- H. ASTM F510-93 (1999); Test Method for Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method.
- I. ASTM F925-02; Test Method for Chemical Resistance of Resilient Sheet Flooring.
- J. ASTM F970-00; Test Method for Static Load Limit.
- K. ASTM F1066-99; Specification for Vinyl Composition Floor Tile.
- L. ASTM F1265-03; Test Method for Resistance to Impact for Resilient Flooring.
- M. ASTM F1515-03; Test Method Measuring Light Stability of Resilient Vinyl Flooring by Color Change.

##### 1.4 QUALITY ASSURANCE

- A. Installer
  - 1. Resilient flooring installer shall have a minimum of five (5) years continuous, documented experience in the installation of resilient tile flooring for projects of similar size and complexity, and shall be certified in the installation of the flooring specified herein by the manufacturer. Submit documentation to the Architect prior to commencement of work.
- B. Pre-installation Meeting
  - 1. Convene a pre-installation meeting for the Products specified in this sections. Attendees must include, as a minimum, representatives of the following:
    - a) Contractor (Site Superintendent & Project Manager)
    - b) Flooring Subcontractor (Site Foreman & Project Manager)
    - c) Product Manufacturer and/or Distributor (Technical Representatives), and
    - d) Architect.
  - 2. As a minimum, the agenda for the pre-installation meeting shall cover such issues as:
    - a) Substrate conditions (flatness, concrete cure time, moisture content, alkaline levels, etc.).
    - b) Schedule.



## **SECTION 09653**

### **PREMIUM RESILIENT FLOORING**

c) Other trades working in areas to receive resilient flooring.

#### **1.5 SAMPLES**

- A. Submit duplicate full sized tile samples of each color specified.

#### **1.6 DELIVERY, HANDLING AND STORAGE**

- A. Deliver Products to the site in original, unopened cartons and containers with manufacturer's labels intact. Labels shall indicate product designation, lot numbers and colors.
- B. Store Products in cool, dry, well-ventilated area at 50 to 81°F, and away from any open flame, spark or other heat source.
- C. Move Products to areas designated for flooring installation, and open tile cartons 24 hours prior to installation to allow tile Products to acclimatize.

#### **1.7 LEED REQUIREMENTS**

- A. Documentation not required

#### **1.8 ENVIRONMENTAL CONDITIONS**

- A. Room temperature, subfloor, tile, and adhesive must be maintained at a temperature of 70°F for 48 hours prior to installation prior to, during and following the installation. A fluctuation of +/- 5°F within this range is acceptable.
- B. Tile and adhesive shall be stored on site for a minimum of 48 hours prior to installation, and tile removed from the cartons or pallet and back stacked to facilitate equalization of temperature, and to assure tiles lie flat.

#### **1.9 SEQUENCING AND SCHEDULING**

- A. Installation of resilient tile shall not commence until all overhead mechanical, electrical, and dust-generating work is completed.
- B. Schedule resilient tile installation for completion prior to installation of millwork.

#### **1.10 CLOSEOUT SUBMITTALS**

- A. Maintenance Data
  - 1. Provide data for maintenance of resilient flooring for incorporation into Operations and Maintenance Manual.
- B. Maintenance Materials
  - 1. Deliver 2% of total area of each color, pattern and type flooring material required for this project for maintenance use.

## **2 PRODUCTS**

### **2.1 TILE MATERIALS**

- A. Luxury Vinyl Tile: Select Step, Color to be selected, equal to ASTM F1700 Class III, 0.1181" thick, 6"x48" planks, Borders and/or Keys; Luxury Commercial Flooring by Mohawk Industries Inc., or equal. Color as selected by Architect;
  - 1. Construction Commercial Grade Resilient Tile
  - 2. Classification ASTM F1700 - Class III, Type A - Smooth, Type B - Embossed
  - 3. Squareness ASTM F2055 - Passes - 0.010 in. max
  - 4. Size and Tolerance ASTM F2055 - Passes -  $\pm 0.016$  in. per linear foot
  - 5. Thickness ASTM F386 - Passes - As specified  $\pm 0.005$  in.
  - 6. Dimensional Stability ASTM F2199 - Passes -  $\leq 0.020$  in. per linear foot
  - 7. Static Load Limit ASTM F970 - Passes, modified - 1500 psi
  - 8. Residual Indentation ASTM F1914 - Passes - Average less than 8%
  - 9. Slip Resistance ASTM D2047 - Passes -  $> 0.6$  Wet, 0.6 Dry
  - 10. Resistance to Chemicals ASTM F925 - Passes - No Change
  - 11. Resistance to Light ASTM F1515 - Passes -  $\Delta E \leq 8$
  - 12. Resistance to Heat ASTM F1514 - Passes -  $\Delta E \leq 8$

## SECTION 09653

### PREMIUM RESILIENT FLOORING

- 13. Critical Radiant Flux ASTM E648 - Passes -  $\geq 0.45$  watts/cm<sup>2</sup>, Class 1
- 14. Smoke Density ASTM E662 - Passes -  $< 450$

#### 2.2 ADHESIVES AND ACCESSORIES

- A. Substrate filler and leveler: Portland cement based latex filler requiring water only to produce cementitious paste, as recommended by flooring manufacturer for use with their product; equivalent to Henry #445 Fast-Setting Flooring Underlayment.
- B. Primer: latex floor primer for concrete and wood substrates; equivalent to Henry #336 Floor Primer.
- C. Adhesive: PS-30 by American Biltrite.
- D. Initial Cleaner: Taski-Radical Cleaner.
- E. Surface Cleaner: neutral detergent solution; Taski-R50 Neutral Cleaner.
- F. Surface Primer/Sealer: stain-resistant; Taski Over & Under Floor Primer.
- G. Surface Polish: commercial floor polish; Taski-Vision Star Floor Glaze.

### 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine all substrate conditions and ensure acceptability prior to commencing installation of resilient flooring. Report any unacceptable conditions prior to commencing work. Commencement of installation work shall imply acceptance of conditions.
- B. Ensure concrete floors are dry, by using test methods recommended by tile manufacturer, and exhibit negative alkalinity, carbonization or dusting.
- C. Perform moisture testing on areas to receive flooring. Moisture test results should meet the flooring manufacturer's recommendations but shall not exceed 3 lbs/1000ft<sup>2</sup>/24 hours.
- D. Perform pH alkaline testing on concrete floor slabs areas to receive resilient flooring. Alkali readings shall be 8 to 10. Should alkaline readings exceed recommended tolerances, neutralize slab alkalinity using methods described in Estrie Floor Preparation documentation (latest Version).

#### 3.2 SUBSTRATE PREPARATION

- A. Conform to the requirements of Mohawk Industries Floor Preparation documentation (latest version) for directions on preparing substrates prior to installation of resilient flooring.
- B. Remove substrate ridges and bumps by grinding or scraping. Fill low spots, cracks, joints, holes and other voids with specified filler. Prohibit traffic until filler is cured.

#### 3.3 TILE APPLICATION

- A. Apply adhesive uniformly using recommended notched trowel in accordance with Mohawk Stonewalk Non-PVC Flooring Installation instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- B. Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles shall be minimum half tile width.
- C. Install flooring to produce the following pattern:
  - 1. square grid pattern with all joints aligned, and
  - 2. with pattern grain:
    - a) parallel for all units and parallel to width (short dimension) of room.
- D. As installation progresses, roll flooring with 100 lb. roller to ensure full adhesion. Roll floor again in its entirety after installation.
- E. Cut tile and fit neatly around fixed objects, and floor protrusions. Flooring shall run continuously under all millwork without interrupting floor pattern.
- F. Install flooring in pan-type floor access covers. Maintain floor pattern and direction.
- G. [Continue flooring through areas to receive demountable partitions without interrupting floor pattern.]

## SECTION 09653

### PREMIUM RESILIENT FLOORING

- H. Terminate flooring at centerline of door in openings where adjacent floor finish or color is dissimilar.
- I. Install reducers at unprotected or exposed edges where flooring terminates.
- J. Finish stair treads and landings with resilient tile as designated in the Room Finish Schedule, and install with nosings.

#### 3.4 CLEANING AND POLISHING

- A. Remove wet adhesive residue using a clean, white cloth dampened with soapy water. Use minimal amount of mineral spirits for dried adhesive residue. Do not reuse container. Dispose of container and adhesive in accordance with federal, provincial/state, and local waste disposal regulations. Do not flush adhesive down drains.
- B. Initial Surface Protection
  - 1. Apply surface protection after 7 days after completion of installation. Prohibit all traffic on floor surface prior to application of surface protection.
  - 2. Remove excess adhesive from floor, base and wall surfaces without damage to such surfaces. Remove all dust, dirt, and other debris.
  - 3. **DO NOT AT ANY TIME DURING THE INITIAL MAINTENANCE OR THEREAFTER FLOOD THE FLOOR WITH WATER OR MAINTENANCE SOLUTION.** Thoroughly scrub the floor clean using a 175 RPM swing machine or auto scrubber equipped with green or blue pad(s) and Taski-Radical deep cleaner. Dilute cleaner as recommended on the label. **Do Not Use A Black or Brown Pad.**
  - 4. Pick up cleaner solution using a wet/dry vacuum or auto scrubber.
  - 5. Rinse the floor thoroughly and pick up the rinse water using a wet/dry vacuum or auto scrubber.
  - 6. Allow the floor to dry completely.
  - 7. Apply two (2) cross coats of Taski-Under Cover or Taski-Over & Under floor primer.
  - 8. After the primer has dried, apply two (2) cross coats of Taski-Vision Star Floor Glaze.
- C. Final Surface Protection
  - 1. Apply final surface protection immediately prior to final inspection by the Architect.
  - 2. Clean floors with neutral detergent solution specified (4 to 6 oz/gal), to flooring manufacturer's instructions.
  - 3. Apply three coats of commercial floor polish specified.

#### 3.5 PROTECTION OF FINISHED WORK

- A. Protect new floors from scratches, gouges, scuff marks and other damage from time initial surface protection application, until final inspection.
- B. Following installation and cleanup of the tile, protect the tile from other sub-trades by laying sheets of brown Kraft paper over the tile, and then lay plywood sheets.
- C. Visually check tile installation to ensure curing of adhesive is occurring by pulling back corner of one tile. If tile will not peel back easily, the curing process is underway. Do not attempt test until at least 24 hours after completion of installation.
- D. Allow only light traffic on floor for the first 72 hours.
- E. Allow moderate to heavy traffic on floor after 72 hours; placement of furniture and rolling traffic.

END OF SECTION

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### BROADLOOM CARPET

#### 09681 BROADLOOM CARPET

##### PART 1: GENERAL

###### 1.1 SECTION INCLUDES:

- A. Manufacturers
- B. Testing Protocols
- C. Performance Requirements
- D. Product Specifications
- E. Environmental Requirements
- F. Warranties
- G. Exclusions
- H. Installation
- I. Maintenance
- J. Accessories

###### 1.2 REFERENCES

American Association of Textile Chemists and Colorists (AATCC):

- AATCC 16, Test Method of Colorfastness to Light.
- AATCC 107, Test Method for Colorfastness to Water.
- AATCC 129, Test Method for Colorfastness to Ozone in the Atmosphere Under High Humidity.
- AATCC 134, Test Method for Electrostatic Propensity of Carpets.
- AATCC 165-(93), Test Method for Colorfastness to Crocking: Carpets – AATCC Crock meter Method.
- AATCC 175-(98), Test Method for Stain Resistance: Pile Floor Coverings
- AATCC 189, Test Method for Fluorine Content of Carpet Fibers
- AATCC 164, Test Method for Colorfastness to Oxides of Nitrogen in the atmosphere under High Humidities.

American Society for Testing and Materials (ASTM):

- ASTM D418-(12), Methods for Testing Pile Yarn Floor Covering Construction (Finished Pile thickness Only)
- ASTM D5848, Standard Test Method for Mass Per Unity of Pile Yarn for Floor Covering.
- ASTM D5823, Standard Test Method for Tuft Height of Pile Floor Coverings
- ASTM D5793, Standard Test Method for Binding Sites Per Unity Length or Width of Pile Yarn Floor Coverings.
- ASTM D1335 – Standard Test Method for tuft Bind of Pile Yarn Floor Covering.
- ASTM E648- Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- ASTM E662 – Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- ASTM D3676, Standard Specification for Rubber Cellular Cushion Used for Carpet or Rug Underlay (covers thickness, Compression Resistance, Volume, Density, Compression Set, and Accelerated Aging).
- ASTM D3574, Standard Test Methods for Flexible Cellular Materials – Slab, Bonded, and Molded Urethane Foams.
- ASTM D3936, Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.

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### BROADLOOM CARPET

#### International Standards Organization (ISO):

- ISO 2551, Test Method for Dimensional Stability (Aachen test)

#### Supplemental Testing Procedures:

- PT-155-Rev. 86, Loop Pile Run Resistance test

#### Carpet and Rug Institute (CRI):

- CRI Indoor Air Quality Testing and Labeling Program

#### U.S. Department of Housing and Urban Development (HUD):

- HUD UM 44D-(93), HUD Building Product Standards and Certification Program for Carpet.

### 1.3 PERFORMANCE REQUIREMENTS

#### Comply with the following performance requirements:

- Radiant Panel: ASTM E648: >.45 watts/sq. cm: Class 1
- Smoke Density: ASTM E662: 450 Flaming Mode - Maximum
- Static Generation: AATCC 134: 3.5 KV - Maximum
- Lightfastness: AATCC 16E: Min 4.0 at 40 hrs.
- Crocking: AATCC 165: 4.0 - Wet/Dry
- Cold Water Bleed: AATCC 107: 3.0 - Minimum
- Ozone Fade: AATCC 129: 3.0 - Minimum
- Soil Protection: AATCC 189: 500 PPM Min.
- CRI Green Label Plus Air Quality Certification: Pass
- Stain Protection: AATCC 175: Equal to or greater than 8.0 on Red 40 stain test
- CRI Appearance Retention Rating 3.0 minimum - Heavy Traffic  
3.5 minimum - Severe Traffic

#### Comply with the following construction performance requirements:

- Must have no secondary backing post applied in manufacturing process that could eventually delaminate through installed application.
- Must be impervious to moisture

#### Special Performance Requirements

- Must have Soil and Stain Resist treatment
- Must have minimum 20 dpf fiber
- Must have Trilobal cross-section
- Must have permanent anti-stat yarn.
- Must be type 6 fiber
- Everset Test Requirements
  - AATCC 175 - 8.0 minimum on red 40 stain scale.
  - AATCC 165 - 5.0 on color transfer scale
  - AATCC 107 (Modified) (High PH Water) 4.5 - gray scale
  - AATCC 175 (Modified) (10% bleach) 4.0 - gray scale

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### BROADLOOM CARPET

#### 1.4 SUBMITTALS

- Manufacturer's Data  
Submit two (2) copies of manufacturer's specifications and installation instructions for Broadloom carpet and related items specified.
- Fiber Requirements  
Submit certification from the fiber producer verifying the following:
  - Use of the specified fiber in the submitted carpet product.
- Warranties  
Submit warranties as described in Section 1.13
- Maintenance
  - Maintenance Manual – submit manual of carpet manufacturer's recommendations for the general care, cleaning and maintenance of carpet products.
- Certificate of Compliance  
Submit certified test reports that carpet meets all the performance requirements stated above in section 1.3 Performance requirements. Submit certified test reports from a NVLAP Certified Lab that carpet meets all performance criteria.
- Shop Drawings  
For carpeted areas submit shop drawings showing installation of carpeting, pattern direction, necessary installation accessories, and provisions for work of other trades. Show location of different patterns or styles of carpet. Also show locations of any threshold conditions
  - The contractor will supply reproducible prints on request, to facilitate shop drawing preparation.
- Samples  
Submit standard-size carpet samples of each type of carpet, in each specified pattern, color and construction.

Any alternates to specified products must be submitted for approval by a representative of the end user or architect/design firm at least ten (10) working days prior to bid or proposal.

- Final Sample Submittal  
Submit two (2) sets of samples for each carpet type.
- No carpet shipments are permitted until acceptance of final samples is given by representative of the end user or architect/design firm, certifying that samples are the approved color, pattern and texture.
- Custom Color only  
A representative of the end user or architect/design firm, certifying that the samples are the approved color, pattern and texture, shall sign high quality color samples.
- Samples submitted are assumed to be the manufacturer's best obtainable match to the color described under Materials Section.

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### BROADLOOM CARPET

- Must have federally registered Branded trademark.
- EverSet Procedures:
  - Demonstrate that carpet stain resistance technology conforms to the following minimum requirements:
    - Application System:
      - Topical applications are not acceptable.
      - Must be durable to liquid stains after 10 commercial hot water extractions and show min. of 3.5 on AATCC gray transfer scale after extractions on all stains.
    - Cleanability:
      - 96% of all water based liquid stains, whether coloring stains such as wine, kool aid, coffee, coke or neutral stains must be removed by water only.
      - Chemical cleaning agents are not acceptable as cleaning agents.
      - Must have stain removal warranty with no time limit from spill to removal date (all other stain warranties state 3 day maximum prior to stain removal).
      - Must be able to enhance stain resistance of all solution dyed fibers (Invista, Solutia, BASF) to include stains covered by EverSet.
    - Resists the following stain classes:
      - Must show stain protection against neutral tains..
    - Resist Color destroying compounds:
      - Must show bleach resistance on 24 hr bleach test (10% solution) with a 3.0 on AATCC gray scale after 10 commercial hot water extractions.

#### 1.5 CLOSEOUT SUBMITTALS

- Maintenance Data  
Include maintenance procedures, recommended cleaning and stain removal materials, and recommended cleaning schedule. Include product data and Material Safety data Sheets (MSDS) for cleaning and stain-removal materials.
- Installation Instructions  
Include detailed installation procedures. Include carpet installation procedures, adhesive types, trowel sizes, spread rates, open times, and Material Safety data sheets (MSDS) for all carpet adhesives.
- Warranties and Performance Certifications  
Submit written warranties for all products as well as Performance testing results on all items included in Warranty section (including all testing results mandated by EverSet warranty on EverSet products) and Performance section of this specification.

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### BROADLOOM CARPET

#### 1.6 QUALITY ASSURANCE

- Single Source Responsibility: Provide products from a single manufacturer.
  - Warranties must be standard and not job specific.
  - All styles must come from the same manufacturer.
  - Must be single source fiber extrusion and yarn manufacturing.

#### 1.7 QUALIFICATIONS

- Manufacturer  
Company specializing in manufacturing commercial carpet with minimum five (5) years (documented) experience.
- Installer/Flooring Contractor Qualifications
  - Carpet contractor must provide all the necessary licenses, performance bonds, and insurance certificates that comply with all local, state, and federal laws, ordinances, or codes prior to the start of the installation.
  - Carpet contractor shall be a firm established not less than five (5) years and, if requested, shall submit evidence of having furnished and installed commercial carpet projects of similar size and scope for at least five (5) years.
  - Flooring Contractor to provide references at the request of the owner.
  - Carpet Contractors must also be mill certified for installing products.
  - Carpet Contractor will be responsible for the proper product installation, including floor preparation, in those areas indicated in the Drawings.
  - Carpet Contractor to provide owner a written warranty that guarantees the completed installation be free from defects in materials and workmanship for a period of two (2) years after job completion.

#### 1.8 PRE-INSTALLATION MEETINGS

- Convene one (1) week prior to commencing work of this section.
- Require attendance of (manufacturer), (installer), (contractor), (owner), (architect) and other parties directly affecting the work of this section.

#### 1.9 DELIVERY, STORAGE AND HANDLING

- Deliver carpet in sealed protective rolls and accessories in sealed containers. Segregate each product (if several product styles are involved), according to style, color, pattern, dye lot, run number, and quantity.
- Store products in an enclosed and dry area protected from damage and soiling.



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### BROADLOOM CARPET

#### 1.10 SITE ENVIRONMENTAL REQUIREMENTS

- Do not install carpet until areas have been fully enclosed and environmental conditions have reached the levels indicated during occupancy.
- Maintain ambient temperature and humidity conditions during and after installation of carpet at levels indicated during occupancy.
- Allow carpet to reach room temperature or minimum temperature recommended by manufacturer before beginning installation.
- Protect adhesives from freezing. Follow manufacturer's recommendations for minimum temperatures to which adhesives are exposed.

#### 1.11 FIELD MEASUREMENTS

- Verify that field measurements are as indicated on drawings.

#### 1.12 SEQUENCING

- Sequence installation so as to minimize possibility of damage and soiling of carpet.
- Do not commence installation until painting and finishing work are complete, and ceiling and overhead work have been tested, approved and completed.
- Remove and replace existing carpet (renovations) in accordance with pre-approved architectural plan.

#### 1.13 WARRANTY

##### Warranty Performance Requirements:

- Warranties must be for Lifetime on all items.
- Lifetime warranties must cover face components and backing components
- Warranties must be non-prorated
- Carpet manufacturer must warrant both product and adhesive systems.
  - Fiber must have lifetime static warranty.
- Warranty – include coverage for:
  - Provide carpet installer's warranty against defects in installation
  - Provide full spectrum of Manufacturer's Lifetime warranties as outlined below:
    - Wear
    - Tuft Bind
    - Static
    - Edge Ravel
    - Zippering
    - Delamination
    - Impervious to Liquids
    - Dimensional Stability
- Supplemental Lifetime Warranty Items:
  - Protection against Anionic Stains

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### BROADLOOM CARPET

- Protection against Neutral Stains
- Protection against Color transfer (wet/dry).
- Protection against Water Bleed.
- Protection against Alkalies.
- "Water" Stain Removal warranty.

#### 1.14 EXTRA MATERIALS

- Provide percent overage of calculated yardage for each type of carpet (include carpet needed for complete installation plus waste and usable scraps in calculated yardage) as specified by architect and/or end user. Recycle waste, unusable scrap and any carpet damaged during installation through manufacturer's environmental program.
- Elevator carpet: Provide extra stock for two (2) complete carpet changes for each elevator cab.
- Deliver specified attic stock to Owner's designated amounts and to designated storage space, properly packaged and identified. Redirect small pieces of waste to be appropriately recycled.

## PART 2: PRODUCTS

### 2.1 MANUFACTURERS

- The Mohawk Group, 500 TownPark Lane, #400, Kennesaw, GA 30144. Telephone 800.554.6637. Web Site: [www.themohawkgroup.com](http://www.themohawkgroup.com)
- Substitutions or Equals:
  - Substitutions are allowed only if they meet the following criteria:
    - Acceptance of alternate product(s) that are accepted as equals must be approved by parties (including, but not limited to) parties that have material interest in the specifications including: Designer, Architect, End-User and Flooring Contractor.
    - Products must meet the following:
      - Must document NO 4 PCH
      - Must not contain SBR Latex
      - Must not contain PVC
      - Unitary backs not acceptable
    - Length of manufacturing Specific Product (s): Must be in production at least 5 Years.
    - Must have documented installations.

### 2.2 CARPET CONSTRUCTION

- All yarn and other carpet materials shall be manufacturer's first quality.
- Carpet shall have the following construction characteristics.
  - Must have no secondary backing
  - Must have multi-layer tufting foundation.

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### BROADLOOM CARPET

#### DETAILED PRODUCT CONSTRUCTION SPECIFICATIONS

##### SANCTUARY ONLY:

Style Name	Spectrum III 36
Style Number	BQ112
Brand	Bigelow
Product Type	Broadloom
SPECIFICATIONS	
Minimum Sq. Yd.	No minimum
Construction	Tufted
Surface Texture	Level Solid Cut
Gauge	1/10 (39.37 rows per 10 cm)
Density	5,400
Weight Density	194,400
Stitches Per Inch	11.6 (48.43 per 10 cm)
Finished Pile Thickness	.240" (6.10 mm)
Dye Method	Piece Dyed
Backing Material	ActionBac
Fiber Type	Fortis™ Nylon
Face Weight	36.0 oz. per sq. yd. (1221 g/m2)
Pattern Repeat	None
Soil Release Technology	Sentry
Indoor Air Quality	Green Label Plus 10749226
PERFORMANCE	
Static	AATCC-134 Under 3.5 KV
Flammability	ASTM E 648 Class 1 (Glue Down)
Smoke Density	ASTM E 662 Less than 450
WARRANTIES	
Warranties	<a href="#">Lifetime Limited Wear Warranty</a> Lifetime Static

##### OFFICES, CLASSROOMS, CORRIDORS, ETC.:

Style Name	Kudos
Style Number	BQ110
Brand	Bigelow
Product Type	Broadloom
SPECIFICATIONS	
Minimum Sq. Yd.	No minimum

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### BROADLOOM CARPET

Construction	Tufted
Surface Texture	Textured Multicolored Loop
Gauge	1/10 (39.37 rows per 10 cm)
Density	7402
Weight Density	162,844
Stitches Per Inch	8.5 per inch (39.76/10 cm)
Finished Pile Thickness	.132 avg (3.35 mm)
Dye Method	Solution Dyed
Backing Material	Unibond Flex
Nylon Type	Colorstrand SD Nylon
Protective Treatment	Sentry Plus
Face Weight	30 oz. per sq. yd. (1017 g/m <sup>2</sup> )
Pattern Repeat	.8" x 1.0"
Indoor Air Quality	<a href="#">Green Label 14148216</a>
PERFORMANCE	
Static	3.0 kv when tested under the Standard Shuffle Test 70 degrees Fahrenheit (21 degrees Celsius) - 20% R.H.
Flammability	Passes DOC-FF-1-70 Pill Test
Flooring Radiant Panel Test	Meets NFPA Class 1 when tested under ASTM E-648 glue down
Smoke Density	NBS Smoke Chamber NFPA-258 - Less than 450 Flaming Mode
CRI Green Label Plus Certified	Y
WARRANTIES	
Warranties	<a href="#">Lifetime Limited weldlok Plus Warranty</a> <a href="#">10 year Clorfastness and Stain Warranty</a> Lifetime Static

All specifications are subject to normal manufacturing tolerances

#### 2.3 ENVIRONMENTAL ATTRIBUTES AND CRITERIA

- Environmental claims by manufacturer must comply with FTC guidelines.
- Low Emitting Materials – Broadloom Carpet. Carpet must pass the Carpet and Rug Institute Green Label Plus Program for VOC emissions.
- Low Emitting Materials: Carpet and all installation components including adhesives, sealers, seam welds and seam sealers must meet the *Low Emitting Materials* standards as outlined in U.S. Green Building Council LEED criteria. Adhesives must meet VOC emissions standards per South Coast Air Quality Management District Rule #1168.
- Installation adhesives must pass the CRI Green Label plus equivalent protocol for VOC emissions.

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### **BROADLOOM CARPET**

- End of Life Reclamation – Carpet manufacturers must have existing program in place to achieve landfill diversion. Refer to Section 3.7 of this section for specific requirements for reclamation of material. ReCover – Carpet recycling program, call toll free 877-373-2925.
- Environmentally Preferred Product – Carpet must have third party certification (such as Scientific Certification Systems) in accordance with NSF-140 as an Environmentally Preferred Product (EPP).
- Recycled Content: Carpet must contain 15% post-consumer recycled content based on total product weight.
- Recycled Content: Carpet must contain 4% pre-consumer recycled content based on total product.
- Carpet Face Yarn: In accordance with Executive Order 13101, carpet face yarn must contain minimum 15% pre-consumer Recycled content.
- Manufacturer's recycled yarn content claim must be third party certified by Scientific Certification Systems or other third party auditing company.

#### **2.4 ACCESSORIES**

- Leveling Compound: Latex type as recommended by carpet manufacturer; compatible with carpet adhesive and curling/sealing compound used on concrete.
- Multipurpose Adhesive: Low VOC NuBroadlok™ premium multipurpose adhesive or NuSprayLok™ adhesive, as recommended by carpet manufacturer for direct glue down of carpeting; comply with CRI Green Label Certification Program.
- Non-Metallic Carpet edge Guard: Extruded or molded heavy-duty vinyl or rubber carpet edge guard of size and profile indicated; minimum two (2) inch wide anchorage flange; colors selected by (Architect) (Designer) from manufacturer's standard range of colors.
- Miscellaneous Materials: As recommended by manufacturer of carpet, cushion, and other carpet products; as required to complete installation.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- Examine substrates for conditions under which carpeting is to be installed.
- Verify that floor surfaces are smooth and flat within tolerances specified in Section 3.2 and are ready to receive work.
- Beginning of installation means installer accepts existing substrate conditions.

#### **3.2 PREPARATION**

- Allow new concrete to cure for 90 days before carpet installation starts.

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### **BROADLOOM CARPET**

- Perform moisture content testing as required by manufacturer's instructions to ensure pH readings of no more than nine (9). Moisture transmission of 5.0-lbs/sq. ft per 24 hours is acceptable. If values exceed this level, follow manufacturer's recommendations for moisture transmission mitigation. Do not proceed until unsatisfactory conditions have been corrected.
- Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes and other defects with sub-floor filler.
- Fill, level and make smooth cracks 1/16 inch or more, holes, unevenness, and roughness with compatible latex floor patching compounds. Feather floor filling or leveling compound a minimum of four (4) ft. Sweep floor of loose granular debris prior to filling. After filling, allow filler to dry. Damp mop floor with warm water and allow to dry. Vacuum after mopping to ensure that loose granular debris is removed and to provide a proper substrate to install Broadloom carpet. Prohibit traffic until filler is cured.
- Vacuum floor again immediately before installation of carpeting.
- Confirm compatibility of NuBroadlok™ premium multipurpose adhesive with curing compounds on concrete floors.
- Preheat areas to receive carpet to a minimum temperature of 68° F for 72 hours prior to installation, with a relative humidity of not more than 65 percent. Maintain minimum temperature of 50° F thereafter. Carpet and adhesive must be stored at a minimum temperature of 68° F, for 72 hours prior to installation.
- Store NuBroadlok™ premium multi purpose adhesive and other liquid materials in same atmospheric conditions as carpet, 68° F for at least 72 hours.

#### **3.3 INSTALLATION**

- Install carpet in accordance with the Technical Bulletins provided by the manufacturer for tufted and/or woven products. These technical bulletins will offer the proper instructions to install carpet including: (1) Conducting Site Testing and conditioning, (2) Floor Preparation, (3) Installation of the carpet, including layout (seaming, carpet layout and cutting, power stretching, approved adhesives systems and seam sealers, etc.) As a supplement, the CRI 104, section 8 will supply additional installation support guidance for your installation.
- Adhesives and Sealers: Carpet adhesives and sealers include, but may not be limited to, Nu Broadlok™ premium multipurpose adhesive, Nu Broadlok™ Latex Carpet Edge Sealers, and Nu Broadlok™ Solvent Free Carpet Seam Sealer.
- Install carpet under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets in each space.
- Provide cut outs where required. Conceal cut edges with protective edge guards or flanges.
- Install carpet under open-bottom items and install tight against walls, columns, and cabinets so that the entire floor area is covered with carpet. Cover over floor-type door closers.
- Install edging guards at openings and doors wherever carpet terminates, unless indicated otherwise.

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### **BROADLOOM CARPET**

- Perform cutting in accordance with manufacturer's recommendation using tools designed for carpet being installed. Verify carpet match before cutting to insure minimal variation between dye lots.
- Install carpet from same dye lot and run within each continuous carpet area.
- Seal seams with manufacturer recommended seam sealer, if applicable.
- Install carpet with pile-lay in same direction except when indicated otherwise on drawings.
- Use leveling compound where necessary. Feather floor leveling compounds minimum of 4 ft.
- Do not bridge building expansion joints with continuous carpeting. Provide for movement.
- Apply seam adhesive to base of edge glued down. Lay adjoining piece with seam straight, not overlapped or peaked, and free of gaps.
- Roll with appropriate roller for complete contact of adhesive to carpet backing.
- Trim carpet neatly at walls, and around interruptions  
OR
- Extend carpet at base finish up vertical surface to form base. Terminate top of base with cap strip.
- Complete installation of edge strips, concealing exposed edges.
- Cut carpet at fixtures, architectural elements, and perimeters.
- Use a fixed reducer trip to secure broadloom area in open perimeter designs.
- Install carpet on stairs using acceptable permanent adhesive. Furnish and use compatible edge strip and nosing products as required.

#### **3.4 FIELD QUALITY CONTROL**

- Inspect completed carpet installation on each floor
- Verify that installation is complete; work is properly done and acceptable
- Remove and replace, at no additional cost to owner, any work found not to be acceptable.

#### **3.5 CLEANING**

- On completion of installation in each area, remove dirt and scraps from surface of finished carpet. Clean soiling, spots, or excess adhesive on carpet with cleaning materials recommended by carpet manufacturer.
- Remove debris; sort pieces from carpet scraps
- At completion of work, vacuum carpet using commercial vacuuming equipment as recommended by manufacturer. Remove spots and replace carpet where spots cannot be removed. Remove

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### BROADLOOM CARPET

rejected carpet pieces and replace with new carpeting. Remove any protruding yarns with shears or sharp scissors.

#### 3.6 PROTECTION

- Do not permit traffic over unprotected carpet surface.
- Protect carpet against damage during construction. Cover with 6-mil thick polyethylene covering joints during construction period whenever protection is required so that carpet will be without soiling, deterioration, wear, or damage at time of completion.
- Damaged carpet will be rejected. As carpet is installed, remove trimmings, scraps of carpet and installation materials.
- Maintain protection of carpeting on each floor or area until work is accepted.

#### 3.7 CARPET RECLAMATION – BROADLOOM CARPETING AND CARPET TILE

This specification is for carpet reclamation and is designed to manage carpet recycling for any type of used carpet or carpet pad.

- CARPET REMOVAL – BROADLOOM
  - Remove used carpet in carpet pieces, roll tightly, and pack neatly in container. (Include carpet scrap and waste from new installation.) Immediately remove used carpet from Site. For reclamation projects coordinated by Mohawk Reclamation Department, place in Mohawk provided covered containers.
  - Deposit only clean, dry used carpets in containers. Clean shall be defined as carpet free from demolition debris or asbestos contamination, garbage, and tack strips.
- CARPET REMOVAL – CARPET TILE
  - Remove used carpet tile and stack neatly on pallets. Neatly stack carpet tiles or repack in cardboard boxes prior to placing in container. Do not stack higher than 6 feet on pallets. (Include carpet scrap and waste from new installation.) Immediately remove used carpet from Site. For reclamation projects coordinated by Mohawk Reclamation Department, place in Mohawk provided covered containers.
  - Deposit only clean, dry used carpets in containers. Clean shall be defined as carpet free from demolition debris or asbestos contamination, garbage, and tack strips.
- CONTAINER HANDLING
  - Place used carpet in container supplied by Mohawk Reclamation Department. Containers are fully enclosed and shall be kept locked or supervised.
  - Broadloom carpet must be segregated in separate containers from tile carpeting.
  - Use effective packing techniques to maximize the amount of material in the container. On average the following amounts are the related container capacities.

<u>Container Size</u>	<u>Broadloom Capacity</u>	<u>Tile Capacity</u>
53' Foot	4,800	3,500
48' Foot	4,000	3,000
24' Pup Trailer	2,000	1,500

- CONTAINER REMOVAL



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### **BROADLOOM CARPET**

When container is full, contact Mohawk Reclamation Department to coordinate pickup and drop-off of replacement container if needed. If container is locked for security purposes, remove the lock prior to pick up.

The Mohawk Reclamation Department toll free number is (877) 3RE-CYCL or (877) 373-2925

- **RECLAMATION CERTIFICATE**  
The Mohawk Reclamation Department will issue a reclamation certificate once used carpet is removed from the job site and or dealer location and delivered to reclamation facility.

END OF SECTION

## SECTION 09900

### PAINTING

#### 09900 PAINTING

##### 1.01 WORK INCLUDED:

- A. Paint all unfinished surfaces: also all surfaces defined in "Outline of Work To Be Done" listed below.
- B. Prime paint all unfinished steel members and touch up marred surfaces to original condition.

##### 2.01 GENERAL:

- A. Do not commence finish painting until all dust and dirt producing construction operations have ceased, unless authorized to do so by the Architect.
- B. Paint as used herein includes emulsions, oils, polyvinyl, oil paints, sealers, stains, varnishes and similar coatings.
- C. Paints to be first quality, of a reputable manufacturer, Coronado, Sherwin-Williams, Glidden, Porter, or approved equal. Type of paint shall be as specifically recommended by the manufacturers for use where and as applies. Materials listed in 09900 are as manufactured by Coronado Paints.
- D. Paint Contractor shall inspect all areas to be painted and shall bring to the General Contractor's attention any areas having major defects which would create an unacceptable finished condition.
- E. Painting Contractor shall be responsible for filling nail holes and gaps or spaces at splices and joints of wood trim; also, perform incidental caulking to create continuous uninterrupted surfaces and corners.
- F. Touch-up that leaves "spotty" appearance will be cause for requiring entire wall surface to be re-painted.
- G. Submit color chart to Architect for his selection of colors to be used throughout the project.

##### 2.02 EXTERIOR PAINTING REQUIREMENTS:

- A. Galvanized Metal: Treat with chemical cleaner  
1 coat 35-153 Rust Scat zinc chromate primer  
2 coats 31 series Rust Scat urethane enamel
- B. Ferrous Metal: 1 coat 35-147 Rust Scat red oxide primer  
Rust and dirt removed; 2 coats 31 series Rust Scat urethane enamel  
Remove shop markings;  
Re-prime marred surfaces.
- C. Gypsum board soffits: 1 coat 40-11 Superkote latex primer sealer  
2 coats 12 series Superkote latex semi gloss
- D. Wood, paint finish: 1 coat 5-11 Superkote oil house paint primer  
2 coats 8 Line Superkote alkyd semi gloss
- E. Stucco, Plaster: Same as "D" above

##### 2.03 INTERIOR PAINTING REQUIREMENTS:

- A. Galvanized Metal: Treat with chemical cleaner  
1 coat 35-153 Rust Scat zinc chromate primer  
2 coats 27 series Superkote alkyd semi gloss

## SECTION 09900

### PAINTING

- |    |   |   |
|----|---|---|
| B. | Ferrous Metal:<br>Rust and dirt removed;<br>Remove shop markings;<br>Re-prime rusted & marred surfaces. | 1 coat 35-147 Rust Scat red oxide primer<br>2 coats 27 series Superkote alkyd semi gloss  |
|    |   |   |
| C. | Wood, natural finish:   | Stain to desired color 69-27 Supreme oil stain<br>1coat 109-10 Superkote satin sanding sealer<br>1coat 151-100 Supreme eggshell varnish |
|    |   |   |
| D. | Wood, paint finish:   | 1 coat 37-11 Superkote alkyd primer undercoat<br>2 coats 27 series Superkote alkyd semi gloss   |
|    |   |   |
| E. | Gypsum drywall:   | 1 coat 40-11 Superkote primer-sealer<br>2 coats 32-1 Superkote latex, semi gloss  |
|    |   |   |
| F. | Masonry, concrete block, LATEX:   | 1coat 16-11 Superkote latex block filler<br>2coats 32 series Superkote latex semi gloss   |
|    |   |   |
| G. | Masonry, concrete block, ENAMEL:  | 1 coat block filler, sprayed and rolled<br>2 coats semi gloss enamel  |
|    |   |   |
| H. | Concrete, precast slabs:  | 1 coat 78-11 Superkote latex enamel undercoat<br>1 coat 42-1 Superkote San-Tec latex texture point                                      |

#### 2.04 OUTLINE OF WORK TO BE DONE:

Paint and finish all exposed, unfinished interior and exterior surfaces including, but not limited to the following:

- |    |   |
|----|---|
| A. | Exterior:   |
| 1. | All galvanized and ferrous metals, including all gutters, scuppers, downspouts, pipe and handrails, brackets, ornamental iron, exposed ferrous metal pipe, conduits, pipe hangers, iron valves, fittings, metal doors and frames, prime painted mechanical equipment. Gutters, downspouts and flashing to be prime painted before erecting. |
| 2. | Wood, plywood and MDO Board.  |
| 3. | Plaster and stucco.   |
| 4. | Concrete block.   |
| 5. | Gypsum board soffits.   |
|    |   |
| B. | Interior:   |
| 1. | All wood including windows, doors, frames, trim, moulding, doors to be sealed top and bottom and finished front, back and both edges.   |
| 2. | Underside of countertops.   |
| 3. | Interior of all wood casework not factory finished.   |
| 4. | Gypsum wallboard.   |
| 5. | Concrete block.   |
| 6. | Poured-in-place or precast concrete.  |
| 7. | All galvanized and ferrous metals, brackets, exposed hangers.   |
| 8. | Exposed electrical conduit.   |
| 9. | Exposed piping and pipe insulation.   |

## SECTION 09900

### PAINTING

10. Prime painted mechanical and electrical equipment.

C. Materials not to be finished:

1. Exterior concrete stoops and steps.
2. All aluminum, chrome, copper and nickel finish metals.
3. Mechanical equipment with baked-on enamel factory finish.
4. Acoustical panels, tile and factory finished suspension grid.

#### 3.01 APPLICATION:

- A. Do not apply exterior paint in damp or rainy weather until the surface has thoroughly dried from the effects of such weather. Do not apply varnish or paint when temperature is below 40 degrees F.
- B. Surface to be stained or painted shall be clean, dry, smooth and adequately protected from dampness. Each coat of paint shall be well brushed on, worked out evenly and allowed to dry at least 48 hours before subsequent is applied.
- C. Finished work shall be uniform of approved color, smooth and free from runs, sags, brush marks, clogging or excessive flooding. Make edges of paint adjoining other materials or colors sharp and clean without overlapping.
- D. First coat (prime coat) for two-coat work shall be tinted to match color of finished coat.
- E. Mixing, use and clean-up of materials to conform to manufacturer's instructions.

#### 3.02 PAINTING OF MECHANICAL AND ELECTRICAL EQUIPMENT:

- A. This Painting Contractor shall provide all materials and labor for painting mechanical and electrical equipment exposed to view from any occupied spaces and to include pipe, conduit, insulation covered with cloth or paper products, sheet metal and equipment without factory finish.
- B. Exterior equipment including conduit and galvanized metals and equipment with only a factory prime coat shall be painted by this Painting Contractor.
- C. Paint colors to generally match those of the room finish; except color coding to meet electrical codes or OSHA regulations shall govern where applicable.
- D. Paint materials applied to metallic surfaces shall be rust-inhibiting paint similar and equal to Rust-O-Leum; apply one coat of rust-inhibiting paint and one coat of finish paint, either Rust-O-Leum or the paint used for the room finish.

END



## **SECTION 10280**

### **WASHROOM ACCESSORIES**

#### **10280 WASHROOM ACCESSORIES**

##### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Washroom accessories as scheduled in this Section and as indicated on the Drawings.

##### **1.2 RELATED REQUIREMENTS**

- A. Section 06100 - Rough Carpentry, coordination with blocking.
- B. Section 09260 - Gypsum Board, coordination with blocking.
- C. Section 09300 - Tiling, coordination with layout and installation.

##### **1.3 SUBMITTALS**

- A. Product Data: Submit manufacturer's data sheets for each product specified, including the following:
  - 1. Installation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Cleaning and maintenance instructions.
  - 4. Replacement parts information.
- B. Schedule: Submit a toilet accessory schedule, indicating the type and quantity to be installed in each washroom. Use room numbers as indicated on the Drawings.

##### **1.4 QUALITY ASSURANCE**

- A. Manufacturer: Provide products manufactured by a company with a minimum of 10 years successful experience manufacturing similar products.
- B. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.
- C. Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.
- D. Hazardous Materials: Comply with EU Directive "Restrictions of Hazardous Substances (RoHS) requirements."

##### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

##### **1.6 WARRANTY**

- A. Manufacturer's Warranty for Washroom Accessories: Manufacturer's standard 1 year warranty for materials and workmanship.

## SECTION 10280

### WASHROOM ACCESSORIES

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURER

- A. Basis of Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Bobrick Washroom Equipment, Inc., [www.bobrick.com](http://www.bobrick.com). Location of manufacturing shall be the United States.
- B. Substitutions: The Architect will consider products of comparable manufacturers as a substitution, pending the contractor's submission of adequate documentation of the substitution in accordance with procedures in Division 1 of the Project Manual. Documentation shall include a list of five similar projects of equivalent size where products have been installed for a minimum of two years, and manufacturer's certification that products are fabricated in the United States.

##### 2.2 TOILET ACCESSORY SCHEDULE

- A. Drawings for See Schedule.

#### PART 3 EXECUTION

##### 3.1 INSTALLATION

- A. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:
  - 1. Verify blocking has been installed properly.
  - 2. Verify location does not interfere with door swings or use of fixtures.
  - 3. Comply with manufacturer's recommendations for backing and proper support.
  - 4. Use fasteners and anchors suitable for substrate and project conditions
  - 5. Install units rigid, straight, plumb, and level, in accordance with manufacturer's installation instructions and approved shop drawings.
  - 6. Conceal evidence of drilling, cutting, and fitting to room finish.
  - 7. Test for proper operation.

##### 3.2 CLEANING AND PROTECTION

- A. Clean exposed surfaces of compartments, hardware, and fittings using methods acceptable to the manufacturer.
- B. Touch-up, repair or replace damaged products until Substantial Completion.

END OF SECTION

## SECTION 10520

### FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

#### 10520 FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

##### PART 1 -GENERAL

##### 1.01 SUMMARY

- A. This Section includes the following:
  - 1. Portable fire extinguishers
  - 2. Cabinets for portable fire extinguishers
- B. Related Sections include the following
  - 1. Section 09900, "Painting".

##### 1.02 REFERENCES

- A. American Disability Act (ADA)
  - ADA Accessibility Guidelines (ADAAG)
- B. American Society for Testing and Materials (ASTM)
  - A1008/A1008M      Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
  - C1036              Standard Specification for Flat Glass
  - E814                Standard Test Method for Fire Tests of Through-Penetration Fire Stops
- C. Federal Standard (FED-STD)
  - FED-STD-795      Uniform Federal Accessibility Standards (UFAS)
- D. National Fire Protection Association (NFPA)
  - NFPA 10   Portable Fire Extinguishers
- E. International Building Code (IBC)
- F. International Fire Code (IFC)

##### 1.03 SUBMITTALS

- A. Submit brochure and product data.



## SECTION 10520

### FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

#### 1.04 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10.
- B. Fire Extinguishers: Listed and labeled by Underwriter's Laboratory (UL) or Factory Mutual (FM) for type, rating, and classification.

#### PART 2 -PRODUCTS

#### 2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
  - 1. Ansul Inc.
  - 2. Larsen's Manufacturing Co.
  - 3. Encon Safety Products

#### 2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: Carbon steel, complying with ASTM A1008/A1008M, commercial quality, stretcher leveled, temper rolled.

#### 2.03 PORTABLE FIRE EXTINGUISHERS

- A. General: Provide fire extinguishers of type, size, and capacity for each cabinet and other locations indicated.
  - 1. Product: A 10-lb, multi-purpose, UL listed, dry chemical fire extinguisher with a minimum rating of 4-A:40-B:C..
- B. Mounting Brackets: Manufacturer's standard steel bracket, designed to secure extinguisher, of sizes required for types and capacities of fire extinguisher indicated, with plated or baked-enamel finish.
- C. Fire extinguishers installed outside shall be located in approved weather-tight fire extinguisher cabinets.

#### 2.04 FIRE EXTINGUISHER CABINETS

- A. General: Unless specified otherwise on construction drawings, provide fire extinguisher cabinet of type, size, and rating as indicated below, or equivalent.

## SECTION 10520

### FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

Trim Style & Projection	Inside Box Dimensions (H x W x D)	Manufacturer	Model #	Fire-Rated Model #	SNL Extinguisher Type
Recessed 5/16	24 x 9½ x 6	Larsen's	2409-R2	FS-2409-R2	I, III
Semirecessed 2½	24 x 9½ x 6	Larsen's	2409-6R	FS-2409-6R	I, III
Semirecessed 4½	24 x 9½ x 6	Larsen's	2409-RM	FS-2409- RM	I, III
Semirecessed 4½	27 x 12 x 8	Larsen's	2712-RM	FS-2712- RM	II
Surface Mounted (outdoor use only)	27¼ x 11½ x 8½	Encon Safety Products	0133700 3	N/A	I, II, III

- B. Cabinet Size: The minimum inside box dimensions shall be 24"H x 9½"W x 6"D for SNL Type I and Type III fire extinguishers, and 27"H x 12"W x 8"D for SNL Type II fire extinguishers.
- C. Cabinet Construction: Provide manufacturer's standard box, with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.
- D. Fire-Rated Cabinets: Listed and labeled to meet requirements of ASTM E814 for fire-resistance rating of wall where it is installed. Construct fire-rated cabinets with double walls fabricated from 0.0478-inch (1.2-mm) thick, cold-rolled steel sheet lined with minimum 5/8-inch (16-mm) thick, fire-barrier material. Provide factory drilled mounting holes.
  - 1. Cabinet Metal: Enameled-steel sheet.
  - 2. Shelf: Same metal and finish as cabinet.
- E. Cabinet Mounting: Suitable for the following:
  - 1. Recessed: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated.
  - 2. Semirecessed: Cabinet box partially recessed in walls of shallow depth to suit style of trim indicated.
  - 3. Surface Mounted: Cabinet box fully exposed and mounted directly on wall.
- F. Cabinet Trim Style: Fabricate cabinet trim in one piece with corners mitered, welded and ground smooth.
- G. Cabinet Trim Material: Steel sheet.
- H. Door Material: Steel sheet.
- I. Door Glazing: Clear Float Glass, ASTM C1036, Type 1, Class 1

## SECTION 10520

### FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

- J. Door Style: Vertical duo panel with frame.
- K. Door Construction: Provide a minimum ½-inch (13 mm) thick door frames.
- L. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide recessed door pull and friction latch. Provide continuous-type hinge permitting door to open 180 degrees.
- M. Cabinet and Door Finishes: Provide manufacturer's standard baked-enamel paint for the exterior and interior of the cabinet and doors.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed and semirecessed cabinets are to be installed. Verify that rough openings for cabinets are correctly sized and located.
- B. Examine fire extinguishers for proper charging and tagging. Remove and replace damaged, defective, or undercharged units.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION OF FIRE EXTINGUISHERS

- A. Comply with manufacturer's written instructions for installing fire extinguishers and mounting brackets.
- B. Mounting Height: Install extinguishers at heights indicated below.
  - 1. Install fire extinguishers mounted on hangers or brackets attached to a wall so that the top of the fire extinguisher is not more than 3½ ft. above the floor.
  - 2. In no case shall the clearance between the bottom of the fire extinguisher and the floor be less than 4 inches.
- C. Locations: Install extinguishers at locations indicated below.
  - 1. Install fire extinguishers at locations specified on the drawings or as directed by the authority having jurisdiction.
  - 2. Fire extinguishers shall be conspicuously located, along normal paths of travel, including exits from areas. Extinguishers shall not be obstructed or obscured from view.
- D. Install portable fire extinguishers on the hanger or in the bracket supplied, or place in the fire extinguisher cabinets provided. Verify that the extinguisher operating instructions face outward.

## **SECTION 10520**

### **FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES**

#### **3.03 INSTALLATION OF FIRE EXTINGUISHER CABINETS**

- A. Comply with manufacturer's written instructions for installing fire extinguisher cabinets.
- B. Mounting Height: Install fire extinguisher cabinets at the height required so that the top of the fire extinguisher is not more than 54 inches above the floor.
- C. Install fire extinguisher cabinets at locations specified on the drawings.
- D. Fire extinguisher cabinets shall protrude no more than 4 inches into corridors, passageways, or aisles.
- E. Repair/paint wall surfaces surrounding fire extinguisher cabinet damaged during installation to match existing wall surface.

#### **3.04 SIGNAGE**

- A. Identify bracket-mounted extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to wall surface.
- B. Identify fire extinguisher in cabinet with the words "FIRE EXTINGUISHER" applied to door.
  - 1. Application Process: Decals
  - 2. Lettering Color: Red
  - 3. Orientation: Vertical

#### **3.05 ADJUSTING, CLEANING, AND PROTECTION**

- A. Adjust cabinet doors that do not swing or operate freely.
- B. Refinish or replace cabinets and doors damaged during installation.
- C. Provide protection and maintain conditions that ensure that cabinets and doors are without damage or deterioration at the time of Construction Completion.

**END OF SECTION**



**SECTION 11330**  
**RESIDENTIAL APPLIANCES**

11330 RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Residential Appliances:
  - 1. Refrigeration.
  - 2. Cooking products.
  - 3. Microwave ovens.
  - 4. Dishwashers.
  - 5. Food waste disposers.
  - 6. Clothes care.

1.2 RELATED SECTIONS

- A. Section 06 40 00 - Architectural Woodwork.
- B. Section 06 61 16 - Solid Surfacing Fabrications.
- C. Section 26 05 00 - Common Work Results for Electrical.

1.3 REFERENCES

- A. ANSI A117.1 - Guidelines for Accessible and Useable Buildings and Facilities.
- B. EPA - Energy Star Appliances.
- C. Public Law 101-336 - Americans with Disabilities Act.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Model number and selected options for each appliance.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods.
  - 5. List of maintenance parts.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with referenced standards and the Americans with Disabilities Act as applicable for fixtures for the disabled.
- B. Energy Rating: Provide appliances with the EPA Energy Star label where applicable.

## SECTION 11330

### RESIDENTIAL APPLIANCES

- C. Coordinate rough-in requirements with adjacent construction. Coordinate components and fittings to ensure compatible parts are installed.
- 1.6 DELIVERY, STORAGE, AND HANDLING
  - A. Store products in manufacturer's unopened packaging until ready for installation.
- 1.7 PROJECT CONDITIONS
  - A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- 1.8 WARRANTY
  - A. Provide manufacturer's standard written limited one-year warranty for each type of appliance specified.
  - B. Provide manufacturer's standard written limited parts warranty for each type of appliance specified.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: GE Appliances, which is located at: AP4 Room 106 Appliance Park ; Louisville, KY 40225; Toll Free Tel: 800-626-2000; Tel: 502-452-3346; Fax: 502-452-0620; Email: [request info \(Steven.Anderson@appl.ge.com\)](mailto:Steven.Anderson@appl.ge.com); Web: [www.buildwithge.com](http://www.buildwithge.com)
- B. Requests for substitutions will be considered in accordance with provisions of Division 1.

### 2.2 REFRIGERATION

- A. Refrigerators and Freezers: As manufactured by GE Appliances.
  - 1. Side-By-Side Refrigerators: GE 'G' Series, model no.GSE2GGHBB. Quantity: One (1)
  - 2. Appearance: Black. (GSE2GGHBB)

### 2.3 COOKING PRODUCTS

- A. Ranges: Models, standard accessories/kits and custom accessories/kits as manufactured by GE Appliances.
  - 1. Free-Standing Electric Ranges: 30 inch (762 mm) GE Profile Series CleanDesign Free-Standing Electric Ranges, model no. JB450DFBB. Quantity: One (1)
  - 2. Appearance: JB450DFBB Black on black.

### 2.4 MICROWAVE OVENS

- A. Microwave Ovens: Models, standard accessories/kits and custom accessories/kits as manufactured by GE Appliances.
  - 1. Microwave Ovens: GE Series Over-the-Range Microwave Ovens, model no. JVMM6173RFSS. Quantity: One (1)
  - 2. Mounting: Undercabinet mounting.
  - 3. Undercabinet Mounting Kit: Model no. JXA019K.

## SECTION 11330

### RESIDENTIAL APPLIANCES

4. Filter Kit: Recirculating charcoal filter kit, model no. JX81J.
5. Appearance: Stainless steel with black accents.

#### 2.5 DISHWASHERS

- A. Dishwashers: Models, standard accessories/kits and custom accessories/kits as manufactured by GE Appliances.
  1. Built-In Dishwasher: GE Series Built-In Dishwashers, model no.GSD3360DSS. Quantity: One (1).
  2. Appearance: Stainless steel.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared. Coordinate rough-in with appliance sizes and utility requirements.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

#### 3.3 INSTALLATION

- A. Assemble appliances and trim and install in accordance with manufacturer's instructions and the following:
  1. Securely mount to substrate.
  2. Install appliances plumb and level and in proper relationship to adjacent construction.
  3. Connect appliances to building utility, supply and waste systems as applicable.
  4. Test for proper operation and drainage. Adjust until proper operation is achieved.

#### 3.4 PROTECTION

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

#### 3.5 APPLIANCE DATA SHEETS

- A. Refer to the manufacturer's data sheets as attached to this Section for required features and additional requirements.

END OF SECTION





## SECTION 11452

### RESIDENTIAL APPLIANCES

#### 11452 RESIDENTIAL APPLIANCES

##### 1.01 WORK INCLUDED:

- A. Provide Utility "rough-ins" for Owner-furnished Residential Appliances as shown on the drawings.
- B. Coordinate work of all trades so that Owner-furnished Appliances will fit into project as shown on the drawings.
- C. Provide assistance for receiving and unloading Owner-furnished Appliances, and storing within the project area.

##### 1.02 GENERAL:

- A. Owner will furnish to the job-site, all Residential Appliances including ovens, cook-tops, refrigerators, dishwashers, ice machine and microwaves for locations shown on the drawings. Owner-furnished Appliances shall be set in place by the Contractor.
- B. Contractor shall be responsible for un-crating.
- C. Owner shall be responsible for providing data to the Contractor showing required services.
- D. Appliance supplier shall be responsible for demonstration of operation of installed equipment.

##### 1.03 INSTALLATION:

- A. General Contractor and/or his Subcontractors shall make connections of water, waste and vent piping, and electric power including disconnect switches, for all Appliances. Work and materials shall be in compliance with all applicable safety and health codes.
- B. Appliance supplier shall be responsible for demonstrating operation of installed equipment, and shall provide assistance to the Contractor as pertaining to final hook-ups and connections.

##### 1.04 WARRANTY:

- A. Contractor shall guarantee workmanship for one (1) full year from date of Substantial Completion.

End



## 13210 BULLET RESISTANT PARTITIONS AND EQUIPMENT

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Bullet Resistant Transaction Windows.
- B. Bullet Resistant Pass-Through Drawers.

#### 1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry.
- B. Section 08700 - Hardware.
- C. Section 08810 - Glass.

#### 1.3 REFERENCES

- A. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.
- B. ASTM B 209/B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- C. NIJ Standard 0108.01 - (National Institute of Justice) Standard for Ballistic Resistant Protective Materials.
- D. Underwriters Laboratories: UL 752 - Standard for Bullet Resisting Equipment.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Design, fabricate and install all partition materials specified in this section to meet or exceed the requirements of UL 752.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Submit Manufacturer approved shop drawings detailing plan, section and elevation views as necessary to ensure proper field installation procedures. Coordinate locations with those listed in the Contract Drawings.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years' experience.
- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish areas designated by Architect.
  - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
  - 3. Refinish mock-up area as required to produce acceptable work.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

## 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 1.9 WARRANTY

- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Total Security Solutions, which is located at: 170 National Park Dr.; Fowlerville, MI 48836; Tel: 517-223-7807; Fax: 517-223-0805; Email: [request info \(info@tssbulletproof.com\)](mailto:requestinfo@tssbulletproof.com); Web: [www.tssbulletproof.com](http://www.tssbulletproof.com)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

### 2.2 BULLET RESISTANT TRANSACTION MODULES

- A. Construction:
  - 1. Model: Exterior.
  - 2. Rating: UL 752 Level 1.
  - 3. Frame: Stainless Steel.
  - 4. Counter Construction: Stainless Steel, No. 4 Brushed Finish.
  - 5. Deal Tray: Stainless steel - flip lid for exterior applications.
- B. Glazing: As specified in Article 2.2 of this section. Meets Underwriters Laboratories Standard 752 for bullet resistance and/or tested by H.P. White Laboratory for specified bullet resistance.
  - 1. Glazing Type: Laminated polycarbonate.

- C. Voice Transmission:
  - 1. System Type: Electronic.

## 2.3 PASS-THROUGH DRAWERS

- A. Through Wall Drawer: Secure drawer with removable stainless steel deal tray for money and credit card transactions. Deal tray is removable to provide a larger transfer area. Lockable storage compartment with a forward-hinge cover conceals contents from customer view.

## PART 3 EXECUTION

### 3.1 EXAMINATION

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

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

### 3.4 PROTECTION

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

END OF SECTION



## **DIVISION 15 MECHANICAL**

### **15000 MECHANICAL SYSTEMS**

#### **1 GENERAL**

- 1.1 The work included in this division consists of the furnishing of all labor, equipment, transportation, supplies, materials, appurtenances and services necessary for the satisfactory installation of the complete and operating system(s) indicated or specified in the contract documents.
- 1.2 Any materials, labor, equipment or services not mentioned specifically herein which may be necessary to complete or perfect any part of the systems in a substantial manner, in compliance with the requirements stated, implied, or intended in the drawings and/or specifications, shall be included as part of this contract.
- 1.3 It is not the intent of this section of the specifications to make any Contractor, other than the General Contractor (or Construction Manager, if applicable) responsible to the Owner, Architect and Engineer. All transactions such as the submittal of shop drawings, claims for extra costs, requests for material or equipment substitutions and the like shall be routed through the General Contractor (or CM). This section of the specifications shall not be construed as an attempt to arbitrarily assign responsibility for work, material, equipment or services to a particular trade or subcontractor. Unless specifically stated otherwise, the subdivision and assignment of work under the various sections shall be made by the General Contractor (or CM).
- 1.4 This Contractor's attention is directed to the General and Special Conditions, General Conditions, and to all other sections of the Contract Documents as they apply to this branch of this section of the work. These requirements are hereby made a part of the work specified in this section.

#### **2 EXAMINATION OF SITE AND CONDITIONS**

- 2.1 Each proposer shall inform himself of all of the conditions under which the work is to be performed. No allowance will be made for lack of knowledge concerning such conditions after bids are accepted.

#### **3 CODES, RULES, PERMITS, FEES, INSPECTIONS, REGULATIONS, ETC.**

- 3.1 The work shall be performed in accordance with applicable editions of all applicable codes and regulations including, but not limited to:
  - The National Electric Code
  - The International Building Code with Kentucky Building Code Amendments
  - The International Mechanical Code
  - The International Energy Conservation Code
  - The Kentucky Plumbing Code
  - Applicable NFPA Pamphlets
- 3.2 This contractor shall obtain all permits, inspections, etc. and pay all associated fees required for the performance of this work.

#### **4 GUARANTEES AND WARRANTIES**

- 4.1 This contractor shall guarantee all equipment, materials, and workmanship for a period on one year from final acceptance of the work. This shall be in addition to any manufacturer's warranties.



## **DIVISION 15 MECHANICAL**

### **5 RECORD DRAWINGS**

- 5.1 This contractor shall insure that any deviations from the design documents are recorded as they occur on record drawings kept at the job site.

### **6 MATERIALS AND WORKMANSHIP**

- 6.1 All equipment, materials and articles incorporated into the work shall be new and of comparable quality to that specified.
- 6.2 This contractor shall determine that proposed equipment can be installed in the space available and shall install equipment so components are readily accessible for inspection and service.
- 6.3 Materials, equipment and appliances shall conform to the standards of applicable industry organizations and shall bear their seal, particularly Underwriters Laboratories.

### **7 COOPERATION AND COORDINATION WITH OTHER TRADES**

- 7.1 This contractor shall give full cooperation to all other trades and shall furnish any information necessary for the satisfactory performance of their work. This contractor shall review the work required of other trades to ensure adequate coordination of the work.

### **8 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS**

- 8.1 Upon completion of this work, this contractor shall instruct the owner or his representative fully in the operations, adjustment and maintenance of all equipment furnished.
- 8.2 This contractor shall furnish three bound sets of instructions for operating and maintaining all systems and equipment included in this contract.

### **9 SCOPE OF THE WORK**

- 9.1 The work for this contract shall include all labor, materials, equipment, etc. required to install and place in service the systems indicated on the drawings and/or specified herein.

### **10 REQUIRED SHOP DRAWINGS**

- 10.1 This contractor shall prepare and submit for review a minimum of five copies of shop drawings for the equipment and materials listed below. Shop drawings shall be reviewed by the mechanical contractor prior to submittal to the engineer and shall bear his review stamp with initials and date. Shop drawings submitted for materials and equipment, other than those listed, will not be reviewed.

Registers, Grilles, Diffusers and Louvers  
HVAC Equipment  
Plumbing Fixtures Fittings, Trim, Equipment and Specialties

### **11 CUTTING, PATCHING, AND REPAIRS**

- 11.1 This contractor shall be responsible for all cutting, patching, and repairs required for the performance of his work. All repairs shall be done by workmen skilled in the appropriate trade. This contractor is strongly encouraged to arrange to have such work done by the General Contractor's personnel or other subcontractors.

## **DIVISION 15 MECHANICAL**

- 11.2 This contractor shall be responsible for the fire-stopping of his work in accordance with State and Local requirements.

### **12 SMOKE AND FIRE PROOFING**

All penetrations by mechanical systems of Fire Rated Assemblies or Smoke partitions shall be made in accordance with the Kentucky Building Code and local requirements. All penetrations of building assemblies by mechanical systems shall be fire-stopped using approved materials and methods as required. Details of fire stopping shall be maintained for review by building officials.

### **13 MOTORS**

- 13.1 Motors shall be built in accordance with the latest standards of NEMA.

- 13.2 Each motor shall be provided with a conduit terminal box and adequate starting and protective equipment. The capacity shall be sufficient to operate associated driven devices under all conditions of operation and load without overload.

### **14 PAINTING**

- 14.1 In general, all finish painting shall be accomplished under the Painting Section of the specifications by the General Contractor; however, unless otherwise specified under other sections of these specifications, the following items shall be painted:

14.1.1 All exposed piping, valve bodies and fittings (bare and insulated), including hangers, platforms, etc.

14.1.2 All mechanical equipment not factory finished, except aluminum and stainless steel equipment.

14.1.3 All ductwork exposed in finished areas and on the building exterior (bare and insulated) and grilles, diffusers, etc. not factory finished.

### **15 INDEMNIFICATION**

The Contractor(s) shall hold harmless and indemnify the Engineer, employees, officers, agents and consultants from all claims, loss, damage, actions, causes of actions, expense and/or liability resulting from, brought for, or on account of any personal injury or property damage received or sustained by any person, persons, (including third parties), or any property growing out of, occurring, or attributable to any work performed under or related to this contract, resulting in whole or in part from the negligence of the Contractor, any subcontractor, any employee, agent or representative.

### **16 EXCAVATION AND SURFACE REPAIRS**

- 16.1 This contractor shall include all excavation, backfilling, grading, and surface repairs required to complete his work.

- 16.2 Piping shall be bedded in 6" minimum of fine gravel or other acceptable material. Piping shall be covered by 12" minimum of the same material. Beneath paved areas, the excavation shall be backfilled entirely with the bedding material.

## DIVISION 15 MECHANICAL

16.3 The following minimum depths of bury shall apply for exterior piping:

Domestic water	30 inches
Sanitary sewer	24 inches

### 17 PLUMBING FIXTURES, FITTINGS, TRIM AND EQUIPMENT

#### 17.1 General

17.1.1 All Plumbing and Service Water Heating Equipment shall comply with the standards the IECC and ASHRAE 90.1. All Plumbing equipment shall be for a single point electrical connection unless specified otherwise.

17.1.2 All Water Heaters and other Pressure Vessels shall be ASME listed.

17.2 Selections are shown on the drawings.

### 18 PIPE AND PIPE SUPPORT

18.1 Piping systems shall be installed in a neat and workmanlike manner. Piping systems shall be installed adequately pitched to drain to a low point. Piping systems shall be supported from the building by means of split ring type hangers attached to the building with rods. Wire and perforated tape hangers are not permitted. Where piping is insulated, hangers shall be installed outside of the insulation and supported by sheetmetal shields or rigid insulation blocks as appropriate.

18.2 Piping materials shall be as follows:

Condensate drain piping - Type M copper

Refrigerant Piping - Type L Copper tubing with forged or wrought copper fitting and silver soldered joints.

Soil, Waste and Vent Piping - Schedule 40 pvc pipe with drainage pattern fittings and solvent cement joints or Service Weight cast iron pipe with compression gasket or "No Hub" joints or Type DWV Copper pipe with cast bronze drainage pattern fittings and solder joints. **Plastic piping shall not be installed in return air plenums. Where plastic piping penetrates a fire rated assembly, the penetration shall be made in accordance with applicable standards.**

Domestic Water Piping - Interior above Slab - Type L hard copper tubing with wrought copper fittings and soldered joints.

Domestic Water Piping - Interior beneath Slab - Type K soft copper tubing with no joints beneath slab.

Domestic Water Piping - Exterior - Schedule 40 PVC pipe, NSF approved for underground domestic cold water pipe, with solvent weld joints.

## **DIVISION 15 MECHANICAL**

### **19 HVAC EQUIPMENT AND CONTROLS**

#### **19.1 EQUIPMENT**

19.1.1 All HVAC equipment shall comply with the requirements of the IECC and ASHRAE 90.1. All HVAC equipment shall be for a single point electrical connection unless specified otherwise.

19.1.2 Selections are shown on the drawings.

#### **19.2 CONTROLS**

19.2.1 All HVAC equipment controls shall comply with the requirements of the IECC and ASHRAE 90.1.

19.2.2 All wiring and conduit required in connection with the control system, except for the power wiring shown on the electrical plans, are the responsibility of this contractor.

19.2.3 All electrical work installed as part of the control system shall be in accordance with the National Electrical Code and other applicable codes and regulations.

### **20 REGISTERS, DIFFUSERS, GRILLES AND LOUVERS**

Selections shall be as shown on the drawings.

### **21 SHEET METAL AND FLEXIBLE DUCT**

21.1 Sheet metal shall be installed in accordance with the recommended methods outlined in the latest edition of SMACNA's Duct Manual and Sheet Metal Construction for Low Velocity Ventilation and Air Conditioning Systems.

21.2 Turns in rectangular duct shall be made using either square elbows with double turning vanes or radiused elbows with the radius of the center line of the duct equal to at least 1.5 times the width of the duct. Half radius turns are not permitted.

21.3 All ductwork connections, joints, seams, etc., shall be constructed and sealed in accordance with the IECC and ASHRAE 90.1.

21.4 Where round ducts serving air distribution devices are connected to rectangular branch ducts, provide either "spin-in" type fittings or manufactured 45 degree take offs.

21.5 Ducts connections to air distribution devices shall be made using smooth transitions of not less than 45 degrees from the duct to the full active area of the device.

21.6 Provide splitter dampers at all rectangular supply duct tees.

21.7 Provide flexible connectors at each duct connection to HVAC equipment.

21.8 The use of flexible duct is permitted only above lay in ceilings. Flexible duct shall not exceed 6 feet in length. Where flexible duct is used for runouts to diffusers, rigid elbows shall be installed at the neck of the diffuser.

## **DIVISION 15 MECHANICAL**

### **22 INSULATION**

- 22.1 Application of insulation materials shall be done in accordance with the manufacturer's recommendations.
- 22.2 Insulation, jackets and facings shall have composite fire and smoke hazard rating as tested by ASTM E-84, NFPA 255, and UL 723 procedures not exceeding Flame Spread 25, Smoke developed 50, and Fuel Contributed 50.
- 22.3 Pipe Insulation shall be fiberglass pipe insulation of a K factor less than .27 with an all service jacket unless specified otherwise.
- 22.4 Jackets for interior exposed pipe insulation shall be 6 oz. canvas with fire retardant lagging. Jackets for exterior pipe insulation shall be a .016 aluminum jacket or plastic jacket rated for the application with water tight seals.
- 22.5 Rigid External Duct Insulation shall be rigid fiberglass industrial board with foil, skim, kraft vapor barrier facing.
- 22.6 Duct Wrap External Duct Insulation shall be fiberglass faced duct wrap with foil, skim, kraft vapor barrier facing.
- 22.7 Internal Duct Insulation shall be fiberglass semi-rigid duct liner.
- 22.8 Supply and Return Ductwork shall minimally be internally lined with 1" thick duct liner. Additional insulation shall be added if required to bring total R values into compliance with the IECC or as specified following. Ductwork in the Attic, Exterior Ductwork, Outdoor Air Ductwork, and associated Plenums shall have a minimum insulation value of R-8. Other Ductwork and shall have a minimum insulation value of R-6.
- 22.9 Domestic Hot and Recirculating water piping shall be insulated as required by the IECC. Domestic Hot and Recirculating water shall have a minimum insulation thickness of 1" in recirculating systems. In non-recirculating systems, the first 10' of piping shall be insulated to a minimum thickness of 1".
- 22.10 Domestic cold water piping shall be insulated from the building entrance to a point 50 feet downstream.
- 22.11 Condensate drain piping shall be insulated with one half inch thick closed cell plastic type insulation.
- 22.12 Insulation Shields and inserts  
  
Insulation shields and inserts are required at all pipe hangers where the piping is insulated. Insulation inserts are required to prevent deformation of insulation at the hanger. Inserts shall be constructed of treated wood blocking or rigid insulation. Metal insulation shields shall be constructed of galvanized steel, formed to a 180 degree arc. Insulation shields shall be the following size:

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MECHANICAL**

PIPE SIZE	SHIELD GAUGE	SHIELD LENGTH
2" AND LESS	20	12"
2 1/2" TO 4"	18	12"
5" TO 10"	16	18"
12" AND GREATER	14	24"

- 22.13 Exposed outdoor air and exhaust air ductwork shall be externally insulated with rigid insulation. Concealed outdoor air and exhaust ductwork shall be insulated with duct wrap. Supply and return ductwork shall be internally insulated.

**23 SYSTEM START UP AND BALANCING**

- 23.1 All water circulating systems for the project shall be thoroughly cleaned before placing in operation to rid the system of dirt, piping compound, mill scale oil and any and all other material foreign to the water.
- 23.2 For the purpose of placing the heating, ventilating and air conditioning system in operation and certifying same, final testing and balancing shall be performed in complete accordance with AABC Standards for Field Measurements and Instrumentation for air and hydronic systems as published by the Associated Air Balance Council. This Contractor shall procure the services of an independent company that specializes in and whose business is to balance and test mechanical systems. The company shall be equipped and have the qualified technical personnel as required by AABC.
- 23.3 Instruments used for testing and balancing of air and hydronic systems shall have been calibrated within a period of six months prior to balancing. All final test analysis reports shall include a letter of certification listing instrumentation used and last date of calibration.
- 23.4 Four (4) copies of the complete test reports shall be submitted prior to final acceptance of the project. Preliminary test reports shall be submitted when requested.

END OF DIVISION 15



## SECTION 16010

### BASIC ELECTRICAL REQUIREMENTS

#### SECTION 16010 – BASIC ELECTRICAL REQUIREMENTS

##### 1. GENERAL

- A. The Instructions to Bidders, General and Special Conditions, and all other contract documents shall apply to the Electrical Contractor's work as well as to each of his Sub Contractor's work. Each Contractor is directed to familiarize himself in detail with all documents pertinent to this Contract. In case of conflict between these General Provisions and the General and/or Special Conditions, the affected Contractor shall contact the Engineer for clarification and final determination.
- B. Each Contractor shall be governed by any alternates, unit prices and Addendums or other required or implied contract instrument insofar as they may affect his part of the work.
- C. The work included in this division consists of the furnishing of all labor, equipment, transportation, excavation, supplies, material and appurtenances and performing all operations necessary for the satisfactory installation of complete and operating Electrical Systems indicated on the drawings and/or specified herein.
- D. Any materials, labor, equipment or services not mentioned specifically herein which may be necessary to complete or perfect any part of the Electrical Systems in a substantial manner, in compliance with the requirements stated, implied, or intended in the drawings and specifications, shall be included as part of this Contract. With submission of bid, the Contractor shall give written notice of any materials or apparatus believed inadequate or unsuitable; in violation of laws, ordinances, rules or regulations of authorities having jurisdiction; and any necessary items of work omitted. In the absence of such written notice, it shall be understood that the Contractor has included the cost of all required items in his bid, and that he will be responsible for the approved satisfactory functioning of the entire system without extra compensations.
- E. It is not the intent of this section of the specifications (or the remainder of the contract documents) to make any Contractor, other than the General Contractor (or Construction Manager, if applicable), responsible to the Owner, Architect and Engineer. All transactions such as submittal of shop drawings, claimment of work under the various sections shall be the responsibility of the General Contractor or Construction Manager, if applicable.
- F. It is the intent of this Contract to deliver to the Owners a "like new" project once work is complete. Although plans and specifications are complete to the extent possible, it shall be responsibility of the Contractors involved to remove and/or relocate or re-attach any existing or new systems which interfere with new equipment or materials to be installed by other trades without additional cost to the Owner.
- G. In general, whenever utilities are interrupted, either deliberately or accidentally, the Contractor shall work continuously to restore said service. The Contractor shall provide tools, materials, skilled journeymen of his own and other trades as necessary and premium time as needed, all without requests for extra compensation to the Owner, unless other arrangements have been made through the Owner and Architect.



## SECTION 16010

### BASIC ELECTRICAL REQUIREMENTS

#### H. Definitions:

- (1) Electrical Contractor - Any Contractor whether bidding or working independently or under the supervision of a General Contractor, that is: the one holding the Prime Contract, and/or Construction Manager and who installs any type of Electrical work, such as: power, lighting, television, telecommunications, data, fibre optic, intercom, fire detection and alarm, security, video, underground or overhead electrical, etc.
- (2) Electrical Sub-Contractor - Each or any Contractor contracted to, or employed by, the Electrical Contractor for any work required by the Electrical Contractor.
- (3) Engineer - The Consulting Mechanical-Electrical Engineers either consulting to the Owner, Architect, other Engineers, etc.
- (4) Architect - The Architect of Record for the project, if any.
- (5) Furnish - Deliver to the site in good condition.
- (6) Provide - Furnish and install in complete working order.
- (7) Install - Install equipment furnished by others in complete working order.
- (8) Contract Documents - All documents pertinent to the quality and quantity of all work to be performed on the project. Includes, but not limited to: Plans, Specifications, Addenda, Instructions to Bidders, (both General and Sub-Contractors), Unit Prices, Shop Drawings, Field Orders, Change Orders, Cost Breakdowns, Construction Manager's Assignments, Architect's Supplemental Instructions, Periodical Payment Requests, etc.

- I. Note: Any reference within these specifications to a specific entity, i.e., "Electrical Contractor" is not to be construed as an attempt to limit or define the scope of work for that entity or assign work to a specific trade or contracting entity. Such assignments of responsibility are the responsibility of the Contractor or Construction Manager that is holding the prime contract, unless otherwise provided herein.

#### 2. INTENT

- A. It is the intention of these specifications and all associated drawings to call for finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete and ready for use."
- B. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

#### 3. ELECTRICAL DRAWINGS AND SPECIFICATIONS

- A. The drawings are diagrammatic only and indicate the general arrangement of the systems and are to be followed insofar as possible. If deviations from the layouts are necessitated by

## SECTION 16010

### BASIC ELECTRICAL REQUIREMENTS

field conditions, detailed layouts of the proposed departures shall be submitted in writing to the Engineer for approval before proceeding with the work. The Contract Drawings are not intended to show every vertical or horizontal offset which may be necessary to complete the systems. Contractors shall, however, anticipate that additional offsets may be required and submit their bid accordingly.

- B. The drawings and specifications are intended to supplement each other. No Contractor or supplier shall take advantage of conflict between them, or between parts of either, but should this condition exist, the Contractor or supplier shall request a clarification of the condition at least ten days prior to the submission of bids so that the condition may be clarified by Addendum. In the event that such a condition arises after work is started, the interpretation of the Engineer shall be the determining factor. In all instances, unless modified in writing and agreed upon by all parties thereto, the Contract to accomplish the work shall be binding on the affected Contractor.
- C. The drawings and specifications shall be considered to be cooperative and complimentary and anything appearing in the specifications which may not be indicated on the drawings or conversely, shall be considered as part of the Contract and must be executed the same as though indicated by both.
- D. This Contractor shall make all his own measurements in the field and shall be responsible for correct fitting. He shall coordinate this work with all other branches of work in such a manner as to cause a minimum of conflict or delay.
- E. The Engineer shall reserve the right to make minor adjustments in location of conduit, fixtures, outlets, switches, etc., where he considers such adjustments desirable in the interest of concealing work or presenting a better appearance.
- F. Each Contractor shall evaluate ceiling heights called for on Architectural Plans. Where the location of Electrical equipment may interfere with ceiling heights, the Contractor shall call this to the attention of the Engineer in writing prior to making the installation. Any such changes shall be anticipated and requested sufficiently in advance so as to not cause extra work on the part of the Contractor or unduly delay the work.
- G. Should overlap of work between the various trades become evident, this shall be called to the attention of the Engineer. In such event neither trade shall assume that he is to be relieved of the work which is specified under his branch until instructions in writing are received from the Engineer.
- H. The Electrical drawings are intended to show the approximate location of equipment, materials, etc. Dimensions given in figures on the drawings shall take precedence over scaled dimensions and all dimensions whether given in figures or scaled shall be verified in the field. In case of conflict between small and large scale drawings, the larger scale drawings shall take precedence.
- I. The Electrical Contractor and his Sub Contractors shall review all drawings in detail as they may relate to his work (structural, architectural, site survey, mechanical, etc.). Review all drawings for general coordination of work, responsibilities, ceiling clearances, wall penetration points, chase access, fixture elevations, etc. Make any pertinent coordination or

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### BASIC ELECTRICAL REQUIREMENTS

apparent conflict comments to the Engineers at least ten days prior to bids, for issuance of clarification by written addendum.

- J. Where on any of the drawings a portion of the work is drawn out and the remainder is indicated in outline, or not indicated at all, the parts drawn out shall apply to all other like portions of the work. Where ornament or other detail is indicated by starting only, such detail shall be continued throughout the courses or parts in which it occurs and shall also apply to all other similar parts of the work, unless otherwise indicated.
- K. Always check ceiling heights indicated on Architectural Drawings and Schedules and insure that these heights may be maintained after all mechanical and electrical equipment is installed. If a conflict is apparent, notify the Engineer in writing for instructions.

#### 4. SHOP DRAWINGS

- A. Each Electrical Contractor shall submit to the Architect, within thirty (30) days after the date of the Contract, eight (8) sets of shop drawings and/or manufacturer's descriptive literature on all equipment required for the fulfillment of his contract. Each shop drawing and/or manufacturer's descriptive literature shall have proper notation indicated on it and shall be clearly referenced so the specifications, schedules, light fixture numbers, panel numbers, etc., so that the Architect may readily determine the particular item the Contractor proposes to furnish. All data and information scheduled, noted or specified shall be noted in red on the submittals. The Contractor shall make any corrections or changes required and shall resubmit for final approval as outlined above. Approval of such drawings, descriptive literature and/or schedules shall not relieve the Contractor from responsibility of deviation from drawings or specifications unless they have, in writing, directed the Architect's attention to such deviations at the time of submission of drawings, descriptive literature and schedules; nor shall it relieve them from responsibility for errors of any nature in shop drawings, descriptive literature and schedules. The term "as specified" will not be accepted.
- B. If the Contractor fails to comply with the requirements set forth above, the Architect shall have the option of selecting any or all items listed in the specifications or on the drawings; and the Contractor will be required to furnish all materials in accordance with this list.
- C. It shall be noted that approval of shop drawings by the Engineer applies only to conformance with the design concept of the project and general compliance with the information given in the contract documents. In all cases, the installing Contractor alone shall be responsible for furnishing the proper quantity of equipment and/or materials required, for seeing that all equipment fits the available space in a satisfactory manner and that piping, electrical and all other connections are suitably located.
- D. The Engineer's review and approval of shop drawings, schedules or other required submittal data shall not relieve the Contractor from responsibility for: the adaptability of the equipment or materials to the project; compliance with applicable codes, rules, regulations; information that pertains to fabrication and installation; dimensions and quantities; electrical characteristics; and coordination of the work with all other trades involved in this project. Nor shall it relieve him from responsibility for error in shop drawings or schedules.
- E. No final rough-in, connections, etc. shall be accomplished until approved equipment shop drawings are in the hands of the Contractors concerned. It shall be each Contractor's

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### BASIC ELECTRICAL REQUIREMENTS

responsibility to obtain approved shop drawings and to make all connections, etc. in the neatest and most workmanlike manner possible. Each Contractor shall coordinate with all the other Contractors having any connections, roughing-in, etc. to the equipment.

- F. All shop drawings are to be reviewed and stamped by the Contractor prior to submission to the Architect/Engineer to ensure general compliance with the specified equipment.

**NOTE: Any shop drawings received without being reviewed and stamped by the Contractor shall be returned Rejected without engineering review.**

- G. In accord with the provisions specified hereinbefore, shop drawings, descriptive literature and schedules shall be submitted on each of the following:

- Panelboards
- Light Fixtures
- Lighting Control Devices
- Disconnect Switches
- Wiring Devices

#### 5. SPECIAL WRENCHES, TOOLS AND KEYS

- A. Each Electrical Contractor shall provide, along with the equipment provided, any special wrenches or tools necessary to dismantle or service equipment or appliances installed by him. Wrenches shall include necessary keys, handles and operators for valves, cocks, etc. and keys to electrical panels, emergency generators, the alarm pull boxes and panels, etc. At least two of any such special wrench keys, etc. shall be turned over to the Architect prior to completion of the project.

#### 6. MAINTENANCE AND OPERATION MANUALS

- A. Upon substantial completion of the project, the Electrical Contractor shall deliver to the Engineers (in addition to the required Shop Drawings) three (3) complete copies of operation and maintenance instructions and parts lists for all equipment provided. These documents shall be at least to include:

- (1) Manufacturers Catalog Sheets.
- (2) Detailed operating instructions.
- (3) Detailed maintenance instructions including preventive maintenance schedules.
- (4) Manufacturer's Warranty Information
- (5) Parts list(s) along with addresses and phone numbers indicating where parts may be purchased.

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### BASIC ELECTRICAL REQUIREMENTS

#### 7. EXAMINATION OF SITE AND CONDITIONS

- A. Each Contractor shall inform himself of all of the conditions under which the work is to be performed, the site of the work, the structure of the ground, the obstacles that may be encountered, the availability and location of necessary facilities and all relevant matters concerning the work. All Contractors shall carefully examine all Drawings and Specifications and inform themselves of the kind and type of materials to be used throughout the project and which may, in any way, affect the execution of his work.
- B. Each Contractor shall fully acquaint himself with all existing conditions as to ingress and egress, distance of haul from supply points, routes for transportation of materials, facilities and services, availability of temporary or permanent utilities, etc. His work shall cover all expenses or disbursements in connection with such matters and conditions. **Each Contractor shall verify all work shown on the drawings and conditions at the site, and shall report in writing to the Engineer ten days prior to bid, any apparent omissions or discrepancies in order that clarifications may be issued by written addendum.** No allowance is to be made for lack of knowledge concerning such conditions after bids are accepted.

#### 8. EQUIPMENT AND MATERIALS SUBSTITUTIONS OR DEVIATIONS

- A. When any Contractor requests approval of substitute materials and/or equipment, and when under an approved formal alternate proposal, it shall be understood and agreed that such substitution, if approved, will be made without additional cost regardless of changes in connections, spacing, service, mounting, etc. In all cases where substitutions affect other trades, the Contractor offering such substitutions shall advise all such Contractors of the change and shall reimburse them for all necessary changes in their work. Any drawings, Specifications, Diagrams, etc., required to describe and coordinate such substitutions or deviations shall be professionally prepared at the responsible Contractor's expense. Special Note: Approval of Shop Drawings by the Engineer does not absolve the Contractor of this responsibility.
- B. Notwithstanding any reference in the specifications to any article, device, product, material, fixture, form, or type of construction by name, make, or catalog number, such reference shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Each Contractor, in such cases, may, at his option, use any article, device, product, material, fixture, form, or type of construction which in the judgement of the Engineer is equivalent to that specified, provided the provisions of paragraph (A) immediately preceding are met. Substitutions shall be submitted to the Engineer a minimum of ten days prior to bid date for approval to bid in written form through addenda or other method selected by the Engineer. If prevailing laws of cities, towns, states or countries are more stringent than these specifications regarding such substitutions, then those laws shall prevail over these requirements.
- C. Wherever any equipment and material is specified exclusively only such items shall be used unless substitution is accepted in writing by the engineers.
- D. Each Contractor shall furnish along with his proposal a list of specified equipment and materials which he proposes to provide. Where several makes are mentioned in the

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### BASIC ELECTRICAL REQUIREMENTS

Specifications and the Contractor fails to state which he proposes to furnish, the Engineer shall have the right to choose any of the makes mentioned without change in price.

9. SUPERVISION OF WORK

- A. Each Contractor and his Sub-Contractors shall personally supervise the work or have a competent superintendent that is approved by the Engineers on the project site at all times during progress of the work, with full authority to act for him in matters related to the project.

10. CODES, RULES, PERMITS, FEES, REGULATIONS, ETC.

- A. The Contractor shall give all necessary notices to the engineer before request for acceptance and final payment for the work.
- B. Ignorance of Codes, Rules, regulations, utility company requirements, laws, etc., shall not diminish or absolve Contractor's responsibilities to provide and complete all work in compliance with such.
- C. The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus or drawings required in order to comply with all applicable laws, ordinances rules and regulations, whether or not shown on drawings and/or specified.
- D. All materials furnished and all work installed shall comply with the current edition of the National Electrical Codes, National Fire Codes of the National Fire Protection Association, the requirements of local utility companies, and with the requirements of all governmental agencies or departments having jurisdiction.
- E. All material and equipment for the electrical systems shall bear the approval label, or shall be listed by the Underwriters' Laboratories, Incorporated. Listings by other testing agencies may be acceptable with written approval by the Engineer.
- F. All electrical work is to be constructed and installed in accordance with plans and specifications which have been approved in their entirety and/or reflect any changes requested by the State Fire Marshal, as applicable or required. Electrical work shall not commence until such plans are in the hands of the Electrical Contractor.
- G. The Contractor shall insure that his work is accomplished in accord with OSHA Standards and/or any other applicable government requirements.
- H. Where conflict arises between any code and the plans and/or specifications, the code shall apply except in the instance where the plans and specifications exceed the requirements of the code. Any changes required as a result of these conflicts shall be brought to the attention of the Architect at least ten working days prior to bid date, otherwise the Contractor shall make the required changes at his own expense. The provisions of the codes constitute minimum standards for wiring methods, materials, equipment and construction and compliance therewith will be required for all electrical work, except where the drawings and specifications require better materials, equipment, and construction than these minimum standards, in which case the drawings and specifications shall be the minimum standards.

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#### 11. COST BREAKDOWNS

- A. Within thirty days after acceptance of the Contract, each Contractor is required to furnish to the Architect one copy of a detailed cost breakdown on each respective area of work. These cost breakdowns shall be made on forms provided or approved by the Architect. Payments will not be made until satisfactory cost breakdowns are submitted.

#### 12. GUARANTEES AND WARRANTIES

- A. Each Electrical Contractor shall unconditionally guarantee all equipment, apparatus, materials, and workmanship entering into this Contract to be the best of its respective kind and shall replace all parts at his own expense, which are proven defective within one year from final acceptance of the work by the Engineer. The effective date of completion of the work shall be the date of the Engineer's Certificate of Substantial Completion.
- B. Items of equipment which have longer guarantees, as called for in these specifications, such as generators, engines, batteries, transformers, etc., shall have warranties and guarantees completed in order, and shall be in effect at the time of final acceptance of the work by the Engineer. The Contractor shall present the Engineer with such warranties and guarantees at the time of final acceptance of the work. The Engineer shall then submit these warranties, etc. to the Owner. The Owner reserves the right to use equipment installed by the Contractor prior to date of final acceptance. Such use of equipment shall in no way invalidate the guarantee except that Owner shall be liable for any damage to equipment during this period due to negligence of his operator or other employee.

#### 13. INSPECTION, APPROVALS AND TESTS

- A. Before requesting a final inspection from the Architect, each Contractor shall thoroughly inspect his installation to assure that the work is complete in every detail and that all requirements of the Contract Documents have been fulfilled. Failure to accomplish this portion of the Contract may result in charges from the Architect and/or Engineers for unnecessary and undue work on their part.
- B. The Contractor shall provide as a part of this contract electrical inspection by a competent Electrical Inspection Agency, licensed to provide such services in the State of Kentucky. The name of this agency shall be included in the list of materials of the Form of Proposal by the Contractor. All costs incidental to the provision of electrical inspections shall be borne by the Electrical Contractor.
- C. The Contractor shall advise the Inspection Agency in writing with an information copy of the correspondence to the Architect when he anticipates commencing work. Failure of the Inspection Agency to inspect the work in the stage following and submit the related reports may result in the Contractor's having to expose concealed work not so inspected. Such exposure will be at the expense of the responsible Contractor.
- D. An inspection shall be scheduled for rough as well as finished work. The rough inspection shall be divided into as many inspections as may become necessary to cover all roughing-in



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without fail and a report of each such inspection visit shall be submitted to the Architect and the Contractor within three days of the inspection.

- E. Approval by an Inspector does not relieve the Contractor from the responsibilities of furnishing equipment having a quality of performance equivalent to the requirements set forth in these plans and specifications. All work under this contract is subject to the inspection and approval of the Architect and/or Engineer, whose decision is binding.
- F. Before final acceptance, the Contractor shall furnish three copies of the certificates of final approval by the Electrical Inspector to the Engineer and one copy to the State Fire Marshal's Office, as applicable. Final payment for the work shall be contingent upon completion of this requirement.
- G. The Contractor shall test all wiring and connections for continuity and grounds before equipment and fixtures are connected, and when indicated or required, demonstrate by Megger Test the insulation resistance of any circuit or group of circuits. Where such tests indicate the possibility of faulty insulation, locate the point of such fault, pull out the conductor at fault, replace same with new and demonstrate by further test the elimination of such fault.

#### 14. CHANGES IN ELECTRICAL WORK

REFER TO GENERAL AND SPECIAL CONDITIONS.

#### 15. CLAIMS FOR EXTRA COST

REFER TO GENERAL AND SPECIAL CONDITIONS.

#### 16. SURVEYS, MEASUREMENTS AND GRADES

- A. The Contractor shall lay out his work and be responsible for all necessary lines, levels, elevations and measurements. He must verify the figures shown on the drawings before laying out the work and will be held responsible for any error resulting from his failure to do so.
- B. The Contractor shall base all measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work.
- C. Should the Contractor discover any discrepancy between actual measurements and those indicated, which prevents following good practice or the intent of the drawings and specifications, he shall notify the Engineer through normal channels of job communication and shall not proceed with his work until he has received instructions from the Engineer.



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#### 17. GENERAL GUIDELINES FOR SUBSURFACE ACTIVITY

- A. Each Electrical Contractor shall include all excavating, filling, grading and related items required to complete his work as shown on the drawings and specified herein.
- B. Electrical distribution lines and underground telephone or TV cables shall, in no case, be placed in the same trench with sanitary, storm, domestic or fire protection water lines. Phone cable may, at the Contractor's option, and if acceptable to both utility companies, be placed in a common trench with power lines as long as 8" of earth separation is maintained. T.V. cable shall, in all cases, be placed in a separate trench with two feet separation from electrical power lines.
- C. Depths of bury shall be as indicated on the drawings.

#### 18. SUBSURFACE DATA

- A. Subsurface investigations have been made and the results shown on the drawings. The information was obtained primarily for use in preparing foundation design. Each Electrical Contractor may draw his own conclusions from these drawings. No responsibility is assumed by the Owner for subsoil quality or conditions other than at the locations and at the time investigations were made. No claim for extra compensation, or for extension of time, will be allowed on account of subsurface conditions inconsistent with the data shown.
- B. Materials to be excavated shall be unclassified, and shall include earth, rock, or any other material encountered in the excavation to the depth and extent indicated on the drawings and specified herein. No adjustment in the Contract sum will be made on account of the presence or absence of rock, shale, or other materials encountered in the excavating.

#### 19. BENCH MARKS AND MONUMENTS

- A. Maintain carefully all bench marks, monuments and other referenced points. If disturbed or destroyed, replace as directed.

#### 20. EXCAVATION

- A. Each Electrical Contractor shall accept the site as he finds it and remove all trash, rubbish and material from the site prior to starting excavation for his work.
- B. Excavate trenches to sufficient width and depth for proper installation of the work and where required, smooth the bottom on the trench with hand tools.
- C. The removal of rock shall be accomplished by use of hand or power tools only. Blasting shall not be permitted unless authorized in writing by the Architect. Any damage to existing structures, exterior services or rock intended for bearing, shall be corrected at the responsible Contractor's expense.
- D. Keep trenches free from water while construction therein is in progress. Under no circumstances lay conduit or cable in water. Pumping or bailing water from this

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Contractor's trenches, which is required during construction shall be accomplished at his expense.

- E. In no case shall excavation work be accomplished that will damage in any way the new structure, existing structures, equipment, etc. Each Contractor shall take the necessary steps to prevent flow of eroded earth by water or landslide onto the property of others, or against the structures. The repair of all such damage, or any other damage incurred in the course of excavation, shall be borne by the responsible Contractor.

#### 21. BACKFILL

- A. Backfill shall be accomplished with clean debris free earth and the new earth tamped at 12" intervals so as to avoid earth sinks along the trench. The responsible Contractor will be required to return to the project and fill any sunken areas along the route of his work.
- B. Backfill trenches only after conduit and cable have been inspected, tested, and locations of pipe lines have been recorded on "record" drawings.
- C. The backfill below paved areas shall be brought to proper grade to receive the sub-base and paving. No paving shall be placed on un-compacted fill.
- D. The backfill below the sod (or seeded) areas shall be brought to within six inches of finished grade. The remaining six inches shall be backfilled with clean soil.

#### 22. TEMPORARY USE OF EQUIPMENT

- A. The permanent electrical equipment, when installed, may be used for temporary services, subject to an agreement between the Contractors involved, the Owner, and with the consent of the Engineer. Should the permanent systems be used for this purpose, these Contractors shall pay for all temporary connections required and any replacements required due to damage without cost, leaving the same in "as new" condition.
- B. Permission to use the permanent equipment does not relieve the Contractors who utilize this equipment from the responsibility for any damages to the building construction and/or equipment which might result because of its use.

#### 23. TEMPORARY SERVICES

- A. The Contractor shall arrange with the General Contractor or Construction Manager for temporary electrical and other services which he may require to accomplish his work.

#### 24. RECORD DRAWINGS

- A. The Contractor shall insure that any deviations from the design are being recorded daily or as necessary on record drawings being maintained by the Contractor. Dimensions from fixed, visible permanent lines or landmarks shown in vertical and horizontal ways shall be

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utilized. The Engineer shall review the as-built documents from time to time to insure compliance with this requirement. Compliance shall be a requirement for final payment. Pay particular attention to the location of underfloor or underground exterior in-contract or utility-owned or leased service lines, main switches and other appurtenances important to the maintenance and safety of the Electrical System.

#### 25. MATERIALS AND WORKMANSHIP

- A. All electrical equipment, materials and articles incorporated in the work shall be new and of comparable quality to that specified. All workmanship shall be first-class and shall be performed by electricians skilled and regularly employed in their respective trades. The Contractor shall determine that the equipment he proposes to furnish can be brought into the building(s) and installed within the space available. All equipment shall be installed so that all parts are readily accessible for inspection, maintenance, replacement, etc. Extra compensation will not be allowed for relocation of equipment for accessibility or for dismantling equipment to obtain entrance into the building(s).
- B. All conduit and/or conductors shall be concealed in or below walls, ceilings or floors unless otherwise noted. All fixtures, devices and wiring that are required shall be installed to make up complete systems as indicated on the drawings and specified herein.
- C. All materials, where applicable, shall bear Underwriters' Laboratories label or that of another Engineer-approved testing agency, where such a standard has been established.
- D. Each length of conduit, wireway, duct, conductor, cable, fitting, fixture and device used in the electrical systems shall be stamped or indelibly marked with the makers mark or name.
- E. All electrical equipment shall bear the manufacturer's name and address and shall indicate its electrical capacity and characteristics.
- F. All electrical materials, equipment and appliances shall conform to the latest standards of the National Electrical Manufacturers Association (NEMA) and the National Board of Fire Underwriters (NBFU) and shall be approved by the Owner's insuring agency if so required.

#### 26. QUALIFICATIONS OF WORKMEN

- A. All electrical work shall be accomplished by qualified workmen competent in the area of work for which they are responsible. Untrained and incompetent workmen as evidenced by their workmanship shall be relieved of their responsibilities in those areas. The Engineer shall reserve the right to determine the quality of workmanship of any workman and unqualified or incompetent workmen shall refrain from work in areas not satisfactory to him. Requests for relief of a workman shall be made through the normal channels of responsibility established by the Architect or the contract document provisions.
- B. All electrical work shall be accomplished by Journeymen electricians under the direct supervision of a licensed Electrician. All applicable codes, utility company regulations, laws and permitting authority of the locality shall be fully complied with by the Contractor.

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- C. Special electrical systems, such as Fire Detection and Alarm Systems, Communications Systems, Telecommunications or Data Systems, Lightning Protection Systems, Television or Video Systems, Special Electronic Systems, Control Systems, etc., shall be installed by approved workmen normally engaged or employed in these respective trades. As an exception to this, where small amounts of such work are required and are, in the opinion of the Engineer, within the competency of workmen directly employed by the Contractor involved, they may be provided by this Contractor.

#### 27. CONDUCT OF WORKMEN

- A. The Contractor shall be responsible for the conduct of all workmen under his supervision. Misconduct on the part of any workmen to the extent of creating a safety hazard, or endangering the lives and property of others, shall result in the prompt relief of that workman. The consumption or influence of alcoholic beverages, narcotics or illegally used controlled substances on the jobsite is strictly forbidden.

#### 28. COOPERATION AND COORDINATION BETWEEN TRADES

- A. The Contractor is expressly directed to read the General Conditions and all detailed sections of these specifications for all other trades and to study all drawings applicable to his work, including Architectural, Mechanical and Structural Drawings, to the end that complete coordination between trades will be effected. Each Contractor shall make known to all other affected trades the intended positioning of materials and equipment and intended order of work. Coordinate all work with that of other trades and proceed with the installation in such a manner as to assure no delays to other trades. Similarly, determine the intended locations and sizes of equipment, roughing-in requirements and equipment which is to be provided by others, but is to be connected by each Electrical Contractor. Failure of the responsible Contractor to make known his needs and to determine the requirements of others will not be cause for additional compensation to correct interferences which could have been avoided by proper coordination.
- B. Each Electrical Contractor shall be responsible for coordination with the General Contractor, equipment suppliers, manufacturers, Mechanical Contractor(s), etc., to insure that necessary provisions for connections, operational switches, disconnect switches, fused disconnects, etc., for electrically operated equipment provided under other divisions of the specifications, or called for on the plans, or required by codes are made.
- C. If any discrepancies occur between accompanying drawings and these specifications and drawings and specifications covering other Contracts, each trade shall report such discrepancies to the Engineer far enough in advance so that a workable solution can be presented. No extra payment will be allowed for relocation of conduit, wireway, bus duct, conductors, equipment, etc., not installed in accordance with the above instructions, and which interfere with work and equipment of other trades.
- D. In areas where air diffusers and lighting fixtures are to be installed, the Mechanical Trades, the Electrical Trade and the General Trades shall coordinate the location of their respective

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construction and installations to as to provide a combined symmetrical arrangement that is acceptable to the Engineer and Architect.

#### 29. PROTECTION OF EQUIPMENT

- A. The Contractor shall be entirely responsible for all material and equipment furnished by him in connection with his work and special care shall be taken to properly protect all parts thereof from damage during the construction period. Such protection shall be by a means acceptable to the Engineer. All rough-in conduit shall be properly plugged or capped during construction in a manner approved by the Engineer. Equipment damaged while stored on site either before or after installation shall be repaired or replaced (as determined by the Engineer) by the responsible Contractor.

#### 30. CONCRETE WORK

- A. The Contractor shall be responsible for the provision of all concrete work required for the installation of any of his systems or equipment. If this work is provided by another trade, it will not relieve the Electrical Contractor of his responsibilities relative to dimensions, quality of workmanship, locations, etc. In the absence of other concrete specifications, all concrete related to Electrical work shall be 3000 PSI minimum compression strength at 28 days curing and shall conform to the standards of the American Concrete Institute Publication ACI-318. Heavy equipment shall not be set on pads for at least seven days after pour.
- B. All concrete pads shall be complete with all pipe sleeves, embeds, anchor bolts, reinforcing steel, concrete, etc., as required. Pads larger than 18" in width shall be reinforced with minimum #4 round bars on 6" centers both ways. All reinforcing steel shall be per ASTM requirements, tied properly, lapped 18 bar diameters and supported appropriately up off form, slab or underlayment. Bars shall be approximately 3" above the bottom of the pad with a minimum 2" cover. All parts of pads and foundations shall be properly rodded or vibrated. If exposed parts of the pads and foundations are rough or show honeycomb after removing forms properly adhered repairs shall be made. If structural integrity is violated, the concrete shall be replaced. All surfaces shall be rubbed to a smooth finish.

Special Note: All pads and concrete lighting standard bases shall be crowned slightly in center to avoid water ponding beneath equipment.

- C. In general, concrete pads for small equipment shall extend 6" beyond the equipment's base dimensions. For large equipment with service access panels, extend pads 18" beyond base or overall dimensions to allow walking and servicing space at locations requiring service access.
- D. Exterior concrete pads shall be 4" minimum above grade and 4" below grade on a tamped 4" dense grade rock base unless otherwise noted or required by utility company. Surfaces of all foundations and bases shall have a smooth finish with three-quarter inch radius or chamfer on exposed edges, troweled or rubbed smooth. Be certain all exterior pads are crowned approximately 1/8" per foot of slope from center for drainage.

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31. RESTORATION OF NEW OR EXISTING SHRUBS, PAVING, ETC.

- A. The Contractor shall restore to their original condition all paving, curbing surfaces, drainage ditches, structures, fences, shrubs, existing or new building surfaces and appurtenances, and any other items damaged or removed by his operations. Replacement and repairs shall be in accordance with good construction practice and shall match materials employed in the original construction of the item to be replaced. All repairs shall be to the satisfaction of the Engineer, and in accord with the Architect's standards for such work, as applicable.

32. MAINTENANCE OF EXISTING UTILITIES AND LINES

- A. The locations of all piping, conduits, cables, utilities and manholes existing, or otherwise, that come within the contract construction site, shall be subject to continuous uninterrupted maintenance with no exception unless the Owner of the utilities grants permission to interrupt same temporarily, if need be. Provide one week's written notice to Engineer, Architect and Owner prior to interrupting any utility service or line. Also see Article 4. - General, this section.
- B. Known utilities and lines as available to the Engineer are shown on the drawings. However, it is additionally required that, prior to any excavation being performed, each Contractor ascertain that no utilities or lines, known or unknown, are endangered by the excavation.
- C. If the above mentioned utilities or lines occur in the earth within the construction site, the Contractor shall first probe and make every effort to locate the lines prior to excavating in the respective area.
- D. Cutting into existing utilities and services shall be done in coordination with and as designated by the Owner of the utility. The Contractor shall work continuously to restore service(s) upon deliberate or accidental interruption, providing premium time and materials as needed without extra claim to the Owner.
- E. The Contractor shall repair to the satisfaction of the Engineer any surface or subsurface improvements damaged during the course of the work, unless such improvement is shown to be abandoned or removed.
- F. Machine excavation shall not be permitted within ten feet of existing gas or fuel lines. Hand excavate only in these areas, in accord with utility company, agency or other applicable laws, standards or regulations.
- G. Protect all new or existing lines from damage by traffic, etc. during construction.
- H. Protect existing trees, indicated to remain with fencing or other approved method. Hold all new subsurface lines outside the drip line of trees, offsetting as necessary to protect root structures. Refer to planting or landscaping plans, or in their absence, consult with the Architect.

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#### 33. CUTTING, PATCHING AND REPAIRING

- A. Each Electrical Contractor shall be responsible for all openings, sleeves, trenches, etc. that he may require in floors, roofs, ceilings, walls, etc. and shall coordinate all such work with the General Contractor and all other trades. Before submitting a bid proposal, and in order to avoid conflict and disagreement during construction, the Electrical Contractor shall coordinate any openings which are to be provided with the General Contractor. Improperly located openings shall be reworked at the expense of the responsible Contractor.
- B. Each Electrical Contractor shall plan his work ahead and shall place sleeves, frames or forms through all walls, floors and ceilings during the initial construction, where it is necessary for conduit, bus duct, conductors, wireways, etc. to go through; however, when this is not done, this Contractor shall do all cutting and patching required for the installation of his work, or he shall pay other trades for doing this work when so directed by the Architect. Any damage caused to the buildings by the workmen of the responsible Contractor must be corrected or rectified by him at his own expense.
- C. Each Electrical Contractor shall cut holes in casework, equipment panels, etc. (if any), as required to pass pipes in and out.
- D. Each Electrical Contractor shall notify other trades in due time where he will require openings of chases in new concrete or masonry. He shall set all concrete inserts and sleeves for his work. Failing to do this, he shall cut openings for his work and patch same as required at his own expense.
- E. Openings in slabs and walls shall be cut with core drill. Hammer devices will not be permitted. Edges of trenches and large openings shall be scribe cut with a masonry saw.
- F. Cast iron sleeves shall be installed through all walls where pipe enters the building below grade. Sleeves shall be flush with each face of the wall and shall be sufficiently larger than the entering pipe to permit thorough caulking with lead and oakum between pipe and sleeve for waterproofing.
- G. In all cases, sleeves shall be at least two pipe sizes larger than nominal pipe diameter.
- H. Sleeves passing through roof or exterior wall or where there is a possibility of water leakage and damage shall be caulked water tight for horizontal sleeves and flashed and counter-flashed with lead (4 lb.) or copper and soldered to the piping, lapped over sleeve and properly weather sealed.
- I. All rectangular or special shaped openings in plaster, stucco or similar materials including gypsum board shall be framed by means of plaster frames, casing beads, wood or metal angle members as required. The intent of this requirements is to provide smooth even termination of wall, floor and ceiling finishes as well as to provide a fastening means for lighting fixtures, panels, etc. Lintels shall be provided where indicated over all openings in bearing walls, etc.
- J. No cutting is to be done at points or in a manner that will weaken the structure and unnecessary cutting must be avoided. If in doubt, contact the Architect.



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- K. Each Electrical Contractor shall be responsible for properly shoring, bracing, supporting, etc. any existing and/or new construction to guard against cracking, settling, collapsing, displacing or weakening while openings are being made. Any damage occurring to the existing and/or new structures, due to failure to exercise proper precautions or due to action of the elements, shall be promptly and properly made good to the satisfaction of the Architect.
- L. All work improperly done or not done at all as required by the Electrical trades in this section will be performed by the General Contractor at the direction of the Contractor whose work is affected. The cost of this work shall be paid for by the Contractor responsible.

#### 34. SMOKE AND FIRE PROOFING

- A. The Contractor shall not penetrate rated fire walls, ceilings or floors with conduit, cable, bus duct, wireway or other raceway system unless all penetrations are protected in a code compliant manner which maintains the rating of the assembly. Smoke and firestop all openings made in walls, chases, ceiling and floors. Patch all openings around conduit, wireway, bus duct, cable tray, etc., with appropriate type material to smoke stop walls and provide needed fire rating at fire walls and floors.
- B. Smoke and fire proofing materials and method of application shall be approved by the local authority having jurisdiction. Submit shop drawings to Engineer for approval on materials to be used and method of installation.
- C. Provide fire-stop systems that are produced and installed to resist the spread of fire according to requirements indicated, resist passage of smoke and other gasses, and maintain original fire-resistance rating of construction assembly.
- D. Provide fire-stop systems with F-ratings, and T-ratings, indicated, as determined per ASTM E814, but not less than that equaling or exceeding fire-resistance ratings of the construction assembly.

#### 35. QUIET OPERATION, SUPPORTS, VIBRATION AND OSCILLATION

- A. All work shall operate under all conditions of load without any objectionable sound or vibration, the performance of which shall be determined by the Engineer. Noise from moving machinery or vibration noticeable outside of room in which it is installed, or annoyingly noticeable noise or vibration inside such room, will be considered objectionable. Sound or vibration conditions considered objectionable by the Engineer shall be corrected in an approved manner by the Contractor (or Contractors responsible) at his expense.
- B. All equipment subject to vibration and/or oscillation shall be mounted on vibration supports suitable for the purpose of minimizing noise and vibration transmission, and shall be isolated from external connections such as piping, ducts, etc., by means of flexible connectors, vibration absorbers or other approved means. Surface mounted equipment such as panels, switches, etc., shall be affixed tightly to their mounting surface.



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- C. The Contractor shall provide supports for all equipment furnished by him using an approved vibration isolating type as needed. Supports shall be liberally sized and adequate to carry the load of the equipment and the loads of attached equipment, piping, etc. All equipment shall be securely fastened to the structure either directly or indirectly through supporting members by means of bolts or equally effective means. No work shall depend from the supports or work of unrelated trades unless specifically authorized in writing by the Architect or Engineer.

#### 36. FINAL CONNECTIONS TO EQUIPMENT

- A. The roughing-in and final connections to all electrically operated equipment furnished under this and all other sections of these specifications, or by others, shall be included in the Contract and shall consist of furnishing all labor and materials for connection. The Contractor shall carefully coordinate with equipment suppliers, manufacturer representatives, the vendor or other trades to provide complete electrical and dimensional interface to all such equipment (kitchen, hoods, mechanical equipment, panels, refrigeration equipment, Owner's equipment, etc.).

#### 37. WELDING

- A. The Contractor shall be responsible for quality of welding done by his organization and shall repair or replace any work not done in accordance with the Architect's or structural Engineer's specifications for such work. If required by the Engineer, the responsible Contractor shall cut at least three welds during the job for X-raying and testing via an Engineer-approved method. These welds are to be selected at random and shall be tested as a part of the responsible Contractor's work. Certification of these tests and X-rays shall be submitted, in triplicate, to the Engineer. In case a faulty weld is discovered, the Contractor shall be required to furnish additional tests until satisfactory results are obtained.

#### 38. ACCESSIBILITY

- A. The Contractor shall be responsible for the sufficiency of the size of shafts and chases, the adequate clearance in double partitions and suspended ceilings for the proper installation of his work. He shall cooperate with the General Contractor (or Construction Manager) and all other Contractors whose work is in the same space, and shall advise each Contractor of his requirements. Such spaces and clearances shall, however, be kept to the minimum size required to ensure adequate clearance and access.
- B. The Contractor shall locate all equipment which must be serviced, operated, or maintained in fully accessible positions. Equipment shall include but not be limited to junction boxes, pull boxes, contactors, panels, disconnects, controllers, switchgear, etc. Minor deviations from drawings may be made to allow for better accessibility, and any change shall be approved where the equipment is concealed.
- C. Each Contractor shall provide the access panels for each concealed junction box, pull box, fixtures or electrical device requiring access or service as shown on Engineer's plans or as required. Locations of these panels shall be identified in sufficient time to be installed in the

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normal course of work. All access panels shall be installed in accord with the Architect's standards for such work.

D. Access Doors; in Ceilings or Walls:

- (1) Manufacturers: Titus, Kreuger, Milcor or approved equivalent.
- (2) Installation in mechanical, electrical, or service spaces:  
14 gauge aluminum brushed satin finish, 1" border.
- (3) Installation in finished areas:  
14 gauge primed steel with 1" border to accept the architectural finishes specified for the space. Confirm these provisions with the Architect prior to obtaining materials or installing any such work.

39. ELECTRICAL CONNECTIONS

- A. The Electrical Contractor shall furnish and install all wiring except: (1) temperature control wiring; (2) equipment control wiring; and (3) interlock wiring. All of this type of wiring shall be provided by the supplier or installer of the equipment it serves. The Electrical Contractor shall furnish and install all power wiring complete from power source to motor or equipment junction box, including power wiring through starters. The Electrical Contractor shall install all starters not factory mounted on equipment. Unless otherwise noted, the supplier of equipment shall furnish starters with the equipment. Also refer to Division 15 of Specifications, shop drawings and equipment schedules for additional information.
- B. The Division 15 Mechanical Contractor(s) shall, regardless of voltage, furnish and install all temperature control wiring and conduit and all interlock wiring, and equipment control wiring and conduit for the equipment that the Mechanical Contractor furnishes. All such conduit and raceway installations shall be provided in accord with these Division 16 requirements.
- C. After all circuits are completed and energized, the Electrical Contractor shall be responsible for all power wiring. All control wiring shall be the responsibility of the Mechanical Contractor. Motors and equipment shall be provided for current characteristics as shown on the drawings.

40. MOTORS

- A. Each motor shall be provided by the equipment supplier or manufacturer with conduit terminal box, adequate starting and internal thermal overload protective equipment as specified or required. The capacity shall be sufficient to operate associated driven devices under all conditions of operation and load and without overload, and at least of the horsepower indicated or specified. Each motor shall be selected for quiet operation, maximum efficiency and lowest starting KVA per horsepower as applicable. Also, see Division 15 of Specifications for further requirements and scheduled sizes.

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#### 41. CUTTING AND PATCHING

- A. Unless otherwise indicated or specified, each Contractor shall provide his own cutting and patching necessary to install the work specified in this Division. Patching shall match adjacent surfaces to the satisfaction of the Engineer and shall be in accord with the Architect's standards for such work, as applicable.
- B. No structural members shall be cut without the approval of the Engineer and all such cutting shall be done in a manner directed by him.

#### 42. SLEEVES AND PLATES

- A. Each Contractor shall provide and locate all sleeves and inserts required for his work before the floors and walls are built, or shall be responsible for the cost of cutting and patching required where sleeves and inserts were not installed, or where incorrectly located. Each Contractor shall do all drilling required for the installation of his hangers. Drilling of anchor holes may be prohibited in post-tensioned concrete construction, in which case the Contractor shall request approved methods from the Architect and shall carefully coordinate setting of inserts, etc., with the Structural Engineer and/or Architect.
- B. Sleeves shall be provided for all electrical conduit passing thru concrete floor slabs and concrete, masonry, tile and gypsum wall construction. Sleeves shall not be provided for piping running embedded in concrete or insulating concrete slabs on grade, unless otherwise noted.
- C. Where sleeves are placed in exterior walls below grade, the space between the pipe or conduit and the sleeves shall be packed with oakum and lead, mechanical waterstop or other approved material and made completely water tight by a method approved by the Engineer and/or Architect.
- D. Where conduit motion due to expansion and contraction will occur, make sleeves of sufficient diameter to permit free movement of pipe. Check floor and wall construction finishes to determine proper length of sleeves for various locations; make actual lengths to suit the following:
  - (1) Terminate sleeves flush with walls, partitions and ceiling.
  - (2) In areas where pipes are concealed, as in chases, terminate sleeves flush with floor.
  - (3) In all areas where pipes are exposed, extend sleeves  $\frac{1}{4}$  inch above finished floor, except in rooms having floor drains, where sleeves shall be extended  $\frac{3}{4}$  inches above floor.
- E. Sleeves shall be constructed of 24 gauge galvanized sheet steel with lock seam joints for all sleeves set in concrete floor slabs terminating flush with the floor. All other sleeves shall be constructed of galvanized steel pipe unless otherwise indicated on the drawings.
- F. Fasten sleeves securely in floors, walls, so that they will not become displaced when concrete is poured or when other construction occurs around them. Take precautions to

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prevent concrete, plaster or other materials being forced into the space between pipe and sleeve during construction. Fire and smoke stop all sleeves in a manner approved by the local authority having jurisdiction or per prevailing codes. Submit shop drawings for approval to the Engineer and/or Architect on the proposed materials and methods.

43. WEATHERPROOFING

- A. Where any work pierces waterproofing, including waterproof concrete, the method of installation shall be as approved by the Architect and/or Engineer before work is done. The Contractor shall furnish all necessary sleeves, caulking and flashing required to make openings absolutely watertight.
- B. Wherever work penetrates roofing, it shall be done in a manner that will not diminish or void the roofing guarantee or warranty in any way. Coordinate all such work with the roofing installer.

44. OPERATING INSTRUCTIONS

- A. Upon completion of all work and all tests, each Contractor shall furnish the necessary skilled labor and helpers for operating his systems and equipment for a period of three days of eight hours each, or as otherwise specified. During this period, instruct the Owner or his representative fully in the operations, adjustment, and maintenance of all equipment furnished. Give at least one week's written notice to the Owner, Architect and Engineer in advance of this period. The Engineer may attend any such training sessions or operational demonstrations. The Contractor shall certify in writing to the Engineer that such demonstrations have taken place, noting the date, time and names of the Owner's representative that were present.
- B. Each Contractor shall furnish three complete bound sets for approval to the Engineer of typewritten and/or blueprinted instructions for operating and maintaining all systems and equipment included in this contract. All instructions shall be submitted in draft, for approval, prior to final issue. Manufacturer's advertising literature or catalogs will not be acceptable for operating and maintenance instructions.
- C. Each Contractor, in the above mentioned instructions, shall include the maintenance schedule for the principal items of equipment furnished under this contract and a detailed, easy to read parts list and the name and address of the nearest source of supply.

45. SCAFFOLDING, RIGGING AND HOISTING

- A. Each Contractor shall furnish all scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any equipment and apparatus furnished. Remove same from premises when no longer required.

46. CLEANING

- A. Each Contractor shall, at all times, keep the area of his work presentable to the public and clean of rubbish caused by his operations; and at the completion of the work, shall remove

## SECTION 16010

### BASIC ELECTRICAL REQUIREMENTS

all rubbish, all of his tools, equipment, temporary work and surplus materials, from and about the premises, and shall leave the work clean and ready for use. If the Contractor does not attend to such cleaning immediately upon request, the Engineer may cause cleaning to be done by others and charge the cost of same to the responsible Contractor. Each Contractor shall be responsible for all damage from fire which originates in, or is propagated by, accumulations of his rubbish or debris.

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- B. After completion of all work and before final acceptance of the work, each Contractor shall thoroughly clean all equipment and materials and shall remove all foreign matter such as grease, dirt, plaster, labels, stickers, etc., from the exterior of materials, equipment and all associated fabrication. Pay particular attention to finished area surfaces such as lighting fixture lenses, lamps, reflectors, panels, etc.

#### 47. PAINTING

- A. Each fixture device, panel, junction box, etc., that is located in a finished area shall be provided with finish of color and type as selected or approved by the Architect or Engineer. If custom color is required, it shall be provided at no additional cost to the Owner. All other equipment, fixtures or devices located in finished or unfinished areas, that are not required to have or are provided with finish color or coating shall be provided in a prime painted condition, ready to receive finish paint or coating. All galvanized metal in finished areas shall be properly prepared with special processes to receive finish paint as directed and approved by the Architect.

#### 48. CONTRACTOR'S USE OF ENGINEER'S CADD FILES

It is understood that the Contractor may wish to obtain the Engineer's computer generated drawings for use in preparation of Shop Drawings. If this permission is granted then the Contractor must conform to the following understanding:

- (1) The Data contained in the files are part of the Engineer's instrument of service and shall not be used for any purposes other than a convenience in the preparation of shop drawings for the referenced project. Any firm being granted the use of these files shall agree to make no claim and hereby waive any claim or cause of action against Engineers that may result from the use of these electronic files. Furthermore, your firm shall indemnify and hold the Engineer harmless against all damages, liabilities or costs, including attorney's fees and defense costs arising from or resulting from your use of these files.
- (2) These electronic files are not the construction documents and may differ from the Contract Documents. The Engineer will make no representation regarding the accuracy or completeness of the electronic files transmitted. By use of these files, the Contractor is not relieved of the required duty to fully comply with the signed and sealed Contract Document, and all duly noted Addenda.
- (3) The electronic drawings are diagrammatic in nature and are not to be considered as being dimensionally accurate. The responsibility of the Contractor to determine, set, check, confirm and coordinate all dimensions, take field measurements, verify field

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### BASIC ELECTRICAL REQUIREMENTS

conditions, and coordination of work with other contractors is not relieved by usage of these files.

- (4) Under no circumstances shall delivery of the electronic files to any firm be deemed a sale of the drawings by the Engineer's, and no warranties are made, either expressed or implied, of these files as to their fitness for any particular purpose. In no event shall the Engineers be liable for any loss of profit or any consequential damages as a result of the use of the electronic files.

#### 49. INDEMNIFICATION

- A. The Contractor shall hold harmless and indemnify the Engineer, employees, officers, agents and consultants from all claims, loss, damage, actions, causes of actions, expense and/or liability resulting from, brought for, or on account of any personal injury or property damage received or sustained by any person, persons, (including third parties), or any property growing out of, occurring, or attributable to any work performed under or related to this contract, resulting in whole or in part from the negligence of the Contractor, any subcontractor, any employee, agent or representative.

END OF SECTION



## SECTION 16110

### RACEWAYS AND FITTINGS

#### SECTION 16110 - RACEWAYS AND FITTINGS

##### 1. GENERAL

- A. This section is intended to specify the raceways, conduit, conduit fittings, hangers, junction boxes, splice boxes, specialties and related items necessary to complete the work as shown on the drawings and specified herein.
- B. This section specifies basic materials and methods and is a part of each Division 16 Section that implies or refers to electrical raceways specified therein.
- C. The types of raceways specified in this section include the following:
  - (1) Steel electrical metallic tubing. (E.M.T.)
  - (2) Rigid galvanized steel conduit. (G.R.S.)
  - (3) Intermediate metal conduit (I.M.C.).
  - (4) Rigid aluminum conduit.
  - (5) Flexible metal conduit (aluminum or steel)
  - (6) Liquid - tight flexible metal conduit.
  - (7) Rigid nonmetallic conduit.
  - (8) Surface Metal Raceways
- D. All raceways, as listed in 1(C) above and otherwise specified herein shall be provided in compliance with latest editions of all applicable U.L., NEMA, N.E.C. and A.N.S.I. standards. All conduit, raceways and fittings shall be Underwriters Laboratories listed and labeled, or bear the listing of an agency acceptable to the local authority having jurisdiction.
- E. Conduit and raceways, as well as supporting inserts in contact with or enclosed within concrete shall comply with the latest edition of all A.C.I. standards and the equipment manufacturer's recommendations for such work.
- F. P.V.C. or other non-metallic conduit shall be rated for the maximum operating temperature that could be developed by the conductors it encloses, while in normal operation.
- G. The decision of the Engineer shall be final and binding in any case where a question or inquiry arises regarding the suitability of a particular installation or application of raceways, supports or materials, if other than outlined herein.
- H. Minimum size of conduit shall be 3/4" trade size unless otherwise noted on the drawings. All conduit and raceways shall be sized for the number of conductors contained, in accord with the latest edition of the National Electrical Code or any other applicable standards.
- I. The installer of raceway systems shall avoid the use of dissimilar metals within raceway installations that would result in galvanic-action corrosion.

##### 2. MATERIALS

###### A. STEEL ELECTRICAL METALLIC TUBING

- (1) Electrical metallic tubing, (E.M.T.) of corrosion-resistant steel construction shall be permitted for concealed installation in dry interior locations. Electrical metallic tubing shall not be installed in concrete slabs or where exposed to physical damage. Electrical metallic tubing shall be permitted for exposed work in mechanical and



## SECTION 16110

### RACEWAYS AND FITTINGS

electrical rooms and other exposed structure areas where not subjected to physical damage, as determined by the Engineer.

#### B. RIGID GALVANIZED STEEL CONDUIT

- (1) Rigid galvanized steel conduit shall be used where subject to physical damage for exposed work in mechanical spaces, within factory or other industrial work areas, for exposed fit-up work on machinery, for exposed exterior damp or wet location work, in hazardous atmospheres, in exterior underground locations where installed beneath roadways, where ells occur in underground P.V.C. conduits, or where turning out of concrete encased duct banks, and at other locations as specifically called out on the drawings.
- (2) Rigid galvanized steel conduit shall be used for all building interior power wiring or cables of over 600 Volts.

#### C. INTERMEDIATE METAL CONDUIT

- (1) Unless otherwise indicated on the drawings, intermediate metal conduit (I.M.C.) may be used in any location in place of rigid galvanized steel conduit, as permitted by codes, and as approved by the Engineer.

#### D. RIGID ALUMINUM CONDUIT

- (1) Rigid aluminum conduit, shall be permitted for installation indoors in dry locations only. Under no conditions shall it be cast into concrete slabs or pass thru construction where prolonged contact will degrade the aluminum. All ells used in rigid aluminum conduit systems shall be rigid galvanized steel.

#### E. FLEXIBLE METAL CONDUIT

- (1) Flexible conduit shall be used where permitted by NEC. It may be constructed of aluminum or steel. It shall be installed with connectors designed for the purpose. All flexible metal conduit shall be installed as a single piece. No joints shall be installed. Flexible conduit shall not be used in wet or dusty locations or where exposed to oil, water or other damaging environments. An equipment grounding conductor or bonding jumper shall be used at all flexible conduit installations.

#### F. LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- (1) Weatherproof flexible metal conduit shall be wound from a single strip of steel, neoprene covered, equivalent to "Liquatite" or "Sealtite" Type "UA". It shall be installed in such a manner that it will not tend to pull away from the connectors. Provide strain relief fittings equivalent to "Kellems" as required where subject to vibration. Flexible connections to motors in dusty areas shall be dust-tight, in areas exposed to the weather - weatherproof.

## SECTION 16110

### RACEWAYS AND FITTINGS

#### G. RIGID NON-METALLIC CONDUIT

- (1) Rigid non-metallic conduit shall be constructed of P.V.C, nominally schedule 40 weight, except where encased in concrete, where it may be "EB" type. If installation will enclose utility company provided conductors, verify exact type required and install in accord with their standards, where more stringent than this specification in normal building conditions.
- (2) Rigid non-metallic conduit may be used in exterior wet or damp locations where installed under slab or underground. It shall not be run in interior locations, except with special permission from the Engineer for use in corrosive environments, and then only if protected from physical damage. No rigid nonmetallic conduit may be installed in environmental air plenums or cast into above-grade concrete slabs. No rigid nonmetallic conduit may be installed in locations where the ambient temperature might exceed the rating of the raceway.
- (3) Where rigid non-metallic conduit is placed underground, as for feeder circuits, secondary or branch circuit runs and where ell is made upward thru a slab on grade, transition the turning ell and the riser to rigid steel conduit to a height of 6" above the concrete slab. Transition may then be made to E.M.T or other approved conduit for remainder of run.
- (4) Flexible nonmetallic conduit shall not be used, except by special permission, obtained in writing from the Engineer.
- (5) Provide equipment grounding conductors of copper, sized as required by codes, in all circuits installed in rigid nonmetallic raceways.

#### H. SURFACE METAL RACEWAY

- (1) Surface metal raceway shall be factory pre-assembled galvanized steel complete including bases, removable covers, receptacles, end plates, elbows, connectors and fittings, to exact length to match the length of the cabinets, casework, utility chases, and shelving as indicated on laboratory and furniture shop drawings, and work bench details, as applicable.
- (2) Size shall be as shown on the Drawings. The length shown on electrical drawings is diagrammatic only and is not accurate for fabrication of raceway sections. Refer to shop drawings, architectural plans, elevations, and details.
- (3) Finish shall be ANSI-61 gray enamel.
- (4) Covers shall be field removable by use of a standard screwdriver, without marring the extrusion or cover finish. Raceway with two covers must allow each cover to be removed separately without access into the compartment(s) enclosed by the other cover.
- (5) Provide a permanent, integral, grounded metallic dividing barrier to isolate the wiring compartments in the multi-outlet raceway system per drawing as applicable. Provide divider with fittings that maintain the separation of the raceway wiring compartments.

## SECTION 16110

### RACEWAYS AND FITTINGS

- (6) Provide device brackets for mounting standard single-gang or two-gang devices within the raceway system. Devices shall have the capacity of mounting flush or in conjunction with device faceplates.
- (7) Provide receptacles for the respective power systems as indicated on the drawings. Refer to Section 16143 Wiring Devices for device specifications

#### 3. RACEWAY FITTINGS

- A. Raceway fittings (or condulets) shall be of gray iron, malleable iron or heavy copper-free cast aluminum. They shall be furnished in proper configurations, avoiding excessive plugged openings. Any openings that are left shall be properly plugged. All coverplates shall be gasketed with neoprene or similar approved materials, rated for the environment.
- B. Where required, raceway fittings shall be provided in explosion-proof configurations rated for the atmosphere. Place conduit seal off fittings at each device in accord with applicable codes. Seal off fittings shall be packed with wadding, and poured with an approved non-shrink sealing compound.
- C. Where conduit transitions in a run from a cold to a warm environment, (such as at a freezer, refrigerator or exterior wall) seal-off fittings shall be placed on the warm side immediately at the boundary to prevent migration of condensation within raceway systems.
- D. Expansion fittings shall be provided at all locations where conduits or other raceways cross over expansion joints. Provide copper ground bonding jumpers across expansion fittings.
- E. Conduit bodies, junction boxes and fittings shall be dust tight and threaded for dusty areas, weatherproof for exterior locations and vapor tight for damp areas. Conduit fittings shall be as manufactured by Crouse Hinds, Appleton, Killark or approved equivalent. All surface mounted conduit fittings as with "FS", "FD", "GUB" Types etc., shall be provided with mounting hubs.
- F. Where lighting fixtures, appliances or wiring devices are to be suspended from ceiling outlet boxes, they shall be provided with 3/4" rigid conduit pendants. Outlet boxes shall be malleable iron, provided with self-aligning covers with swivel ball joint and No. 14 gauge steel locking ring. Provide safety chain between building structure and ballast housing of light fixtures for all fixtures, appliances or devices greater than 10 lbs weight. Fixtures shall be installed plumb and level.
- G. Fittings for threaded raceways shall be tapered thread with all burrs removed, reamed ends and cutting oil wiped clean.
- H. Fittings for E.M.T. conduit shall be of the set-screw type. Fittings for sizes 2" and larger shall have two setscrews each side. Conduit stops shall be formed in center of couplings. All EMT connectors and couplings shall be of formed steel construction.
- I. Indentation or die-cast fittings shall not be permitted in any raceway system.
- J. Compression type fittings shall be utilized for EMT conduit installed in damp or dusty locations, or where otherwise indicated.

## SECTION 16110

### RACEWAYS AND FITTINGS

K.All conduit fittings shall be securely tightened. All threaded fittings shall engage seven full threads. Fasteners shall be properly torqued to manufacturer's recommendations.

#### 4. SUPPORTS AND HANGERS

A.Supports and hangers shall be installed in accord with all applicable codes and standards. They shall be corrosion - resistant, galvanized or furnished with an equivalent protective coating. All electrical raceways shall be hung independently from the building structure with U.L. listed and approved materials. Hangers and supports depending from the support systems of other trades work shall not be permitted, except with specific approval in writing from the Engineer. The use of tie wire for support or fastening of any raceway system is prohibited. Perforated metal tape shall not be used for raceway support.

B.No raceway shall be installed on acoustic tile ceiling tees, or in any location that will impair the functioning, access or code-required clearances for any equipment or system.

C.Supports for raceways shall be of materials compatible with the raceway, of malleable iron, spring steel, stamped steel or other approved material. Die-cast fittings are not permitted for supports.

D.The installing contractor shall provide all necessary supports and braces for raceways, in a rigid and safe installation, complying with all applicable codes.

E. Individual conduits run on building walls or equipment shall be secured by one hole galvanized malleable iron or stamped steel pipe strap or "minerallac" 2-piece straps. The straps are to be anchored by an approved means such as expansion anchors, toggle bolts, through bolts, etc. Where required by codes or other standards, provide spacers behind mounting clamps to space conduits off walls.

F. Individual conduits run on building steel shall be secured by means of clamp supports similar and equal to those manufactured by the C.C. Korn Company, Elcen Co., B-Line or approved equivalent. Provide korn clamps, bulb tee clamps, flange clamps, beam clamps, "minerallacs", etc.

G.Where feasible, vertical and/or horizontal runs of conduit shall be grouped in common hangers on "trapezes" of channel stock as manufactured by "Unistrut" or equivalent, 1-5/8" minimum depth. Utilize conduit clamps appropriate to the channel.

H.Channel strut systems for supporting electrical equipment or raceways shall be constructed of 16 gauge minimum hot dip galvanized steel with 9/16" diameter holes on 8" centers, with finish coat of paint as manufactured by Unistrut, B-Line, Kindorf, or approved equivalent.

I. The minimum diameter of round all-thread steel rods used for hangers and supports shall be 1/4", 20 threads per inch. All-thread rod shall be furnished with a corrosion-resistant finish.

J. Welding directly on conduit or fittings is not permitted.

K.Provide riser support clamps for vertical conduit runs. Riser support clamps shall be of heavy gauge steel construction. Install riser support clamps at each floor level penetration, or as otherwise required.

## SECTION 16110

### RACEWAYS AND FITTINGS

- L. Provide conduit cable support clamps for vertical conductor runs as required or indicated on plans. Clamps to be insulating wedging plug, with malleable iron support ring. Install within properly sized and anchored junction box.
- M. Spring steel clips and fittings such as those manufactured by HITT-Thomas, Caddy-Erico, or approved equivalent, with black oxide finish are permitted in any indoor dry location for concealed work, where acceptable to the local authority having jurisdiction.

#### 5. INSTALLATION

- A. This Contractor shall lay out and install all conduit systems so as to avoid any other service or systems, the proximity of which may prove injurious to the conduit, or conductors which it confines. All conduit systems, except those otherwise specifically shown to the contrary, shall be concealed in the building construction or run above ceilings. Size of all conduit shall conform to Table No. 1, Chapter 9, of the National Electrical Code, unless otherwise shown on the Contract Drawings.
- B. No conduit larger than 1" shall be installed in poured concrete slabs except with permission of the architect or engineer. All other shall be held below slab. Conduit shall be held at least 6" from flues or hot water pipes.
- C. All exposed conduit shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of cast metal fittings or symmetrical bends unless otherwise shown. All conduit shall have supports spaced not more than eight feet apart.
- D. Conduit shall be installed in such a manner so as to insure against collection of trapped condensation. All runs of conduit shall be arranged so as to be devoid of traps. Trapped conduit runs shall be provided with explosion proof drains at low points. Runs of conduit between junctions shall not have more than the equivalent of three 90° bends.
- E. Junction boxes shall be installed so that conduit runs will not exceed 85', or as shown on the Contract Drawings.
- F. Underground electric, cable TV, telephone service or other rigid steel conduit and underfloor rigid steel conduit below the concrete floor slab shall be painted with two coats of bitumastic paint, such as "Asphaltum".
- G. All underground or underfloor conduits shall be swabbed free of all moisture and debris before conductors are pulled.
- H. At least one 1 inch and three 3/4 inch conduits shall be stubbed from flush-mounted panelboards into the nearest accessible area for future use. Provide suitable closures for these stubs. Identify each stub with a suitable hang tag.
- I. Install electrical raceways in accordance with manufacturer's written instructions, applicable requirements of latest edition of the N.E.C., and NECA "Standard of Installation", complying with recognized industry practices.
- J. Coordinate with other trades, including metal and concrete deck trades, as necessary to interface installation of electrical raceways and components.

## **SECTION 16110**

### **RACEWAYS AND FITTINGS**

- K. Level and square raceway runs, and install at proper elevations and required heights. Hold tight to structure wherever possible, to maximize available space and not restrict other trades.
- L. Complete installation of electrical raceways before starting installation of cables or wires within raceways.
- M. All underground conduits shall be buried to minimum depth of 24" from the top of the concrete encasement or raceway to finished grade, unless otherwise noted on plans. Observe minimum burial requirements of local utility company where their standards or regulations apply. Conduits containing primary power conductors, (higher than 600 volts to ground) shall be 42" to top below finished grade, unless otherwise noted on plans.
- N. All raceway systems shall be mechanically continuous and connected to all electrical outlets boxes, cabinets, in accordance with manufacturer's installation sheets.
- O. All metal raceway shall be electrically continuous and bonded in accordance with the National Electrical Code for proper grounding.

#### **6. SPECIALTIES**

- A. All EMT terminations at junction boxes, panels, etc. shall be made with case hardened locknuts and appropriate fittings, with insulated throat liners. Insulating terminations shall be manufactured as a single unit. The use of split sleeve insulators is not permitted.
- B. All rigid conduit, except main and branch feeders, shall have heavy fiber insulating bushings reinforced with double locknuts. All branch and main feeders shall have insulated bushings with grounding lugs and shall be bonded to enclosures with appropriately sized copper jumpers, except at pad mounted transformers. Bonding jumpers shall be installed as required by the N.E.C. and other applicable codes.
- C. All conduit stubbed through floor during construction shall have openings protected with plastic caps approved for this purpose. Connections on both ends of all flexible conduit shall be equivalent to Thomas and Betts, Ideal, Appleton, Efcor, or approved equivalent, rated for the environment.
- D. All pulling lines left in open conduit systems shall be non-metallic, left securely tied off at each end.
- E. Where spare raceways terminate in switchboards, or motor control centers, a fish-tape barrier shall be provided.

**END OF SECTION**



## SECTION 16120

### LOW-VOLTAGE WIRES AND CABLES

#### SECTION 16120 - LOW-VOLTAGE WIRES AND CABLES

##### 1. GENERAL

- A. This section of the Specifications covers all of the electrical power, lighting, and control power (line voltage) conductors. It does not include voice/data conductors, but does include all drag wires for empty conduits.
  - (1) All conduits installed without conductors shall have a 200 lb. test nylon string installed for future use, tied off securely at each end.
- B. No more than 40% conduit fill is permitted for any conduit system, including video, intercom, data, power or other signal circuits unless specifically indicated otherwise on the plans.
- C. No more than five conductors shall be installed in conduit except for switch legs and travelers in multi-point switching arrangements.
- D. If more than three phases are installed in a single raceway, an additional equipment grounding conductor and neutral shall be installed as indicated by the number of phase conductors.

##### 2. MATERIALS

###### A. CONDUCTORS

- (1) All conductors shall be 98% conductive annealed copper unless otherwise noted, UL listed and labeled.
- (2) Lighting and receptacle branch circuits shall be not less than No. 12 copper wire or of the sizes shown on the drawings with Type THW, THHN or THWN insulation. All feeder circuits shall be Type THW or THHN of the size as shown on the Contract Drawings.
- (3) Conductors No. 10 and smaller sizes of wire shall be solid. Conductors No. 8 and larger sizes shall be stranded. No. 14 AWG drag wire shall be installed in all empty conduit and stubs for future use, as indicated. Conductors for fire alarm wiring and control wiring shall be stranded.
- (4) All wire on the project shall be new, in good condition, and shall be delivered in standard coils or reels.
- (5) The color of the wire shall be selected to conform with Section 210-5 of the latest edition of the National Electrical Code. Refer also to 16J-4, Color Coding.
- (6) All equipment grounding conductors shall have green color insulation.
- (7) Conductors used for motor connections and connections to vibrating or oscillating equipment shall be extra flexible.



## SECTION 16120

### LOW-VOLTAGE WIRES AND CABLES

- (8) Conductors for main ground from neutral bus, equipment grounding bus, building steel, grounding grid and main cold water pipe connection shall be bare copper.
- (9) All conductors shall be identified by color code and by means of labels placed on conductors in junction boxes and at terminal points with Brady, Gardner, T & B or approved equivalent labels indicating source, circuit No. or terminal No.

#### B. SPLICING DEVICES & CONNECTORS

- (1) Splicing devices for use on No. 14 to No. 10 AWG conductors shall be pressure type such as T & B "STA-KON", Burndy, Reliable or approved equivalent.
- (2) Terminating pressure applied ring type (or fork with upturned ends) terminations shall be employed on motor and equipment terminals where such terminals are provided on motor and equipment leads.
- (3) The use of split-bolt clamps will be permitted in wireways at service entrance only. Torque to 55 foot-pounds or as recommended by manufacturer.
- (4) Large connectors (lugs) shall be mechanical type, hex-head socket or crimp-on style, installed per the manufacturer's recommendations.
- (5) If aluminum feeder conductors are permitted elsewhere in these specifications, all aluminum terminations shall be made with mechanical crimp type connectors with steel pins for inserting in lugs, Burndy, or equivalent.
- (6) No aluminum conductors shall be permitted to be used for branch circuitry.
- (7) Exterior underground connections made between bare ground wires or to ground rods shall be exothermically welded, "Cadweld" or equivalent.
- (8) Splices, where necessary shall be made with hydraulically-set "Hy-press" or equivalent crimped connectors. All splices shall be insulated to the full value of the wiring insulation using a cold-shrink kit or the equivalent in built-up materials.

#### 3. INSTALLATION

- A. The pulling of all wires and cable on this project shall be performed in strict compliance with applicable sections of the National Electrical Code. No conductor entering or leaving a cabinet or box shall be deflected in such a manner as to cause excess pressure on the conductor insulation and after all insulation and insulating bushings are in place.
- B. The radius of bending of conductors shall be not less than eighteen (18) times the outside diameter of the conductor insulation.
- C. Conductors installed within environmental air plenums shall be per N.E.C., teflon-type insulation or approved equivalent.
- D. Conductors that are installed exposed shall not be routed across ceilings or ductwork. They shall be held up against building structure or against permanent support members. They shall be installed in such a manner that they do not interfere with the operation of

## SECTION 16120

### LOW-VOLTAGE WIRES AND CABLES

equipment or removal of ceiling tiles. Nylon tie-wraps shall be installed in such a manner so as to bundle conductors neatly, allowing runouts of single conductors or groups to drop down to equipment served. Install grommeting where dropping out of trays or into panels or service columns. Install sleeves with bushings where penetrating partitions. Firestop sleeves with approved material. Do not penetrate firewalls if so indicated on plans.

- E. Maximum permissible pulling tensions, as recommended by the manufacturer for any given type of cable or wire installed shall not be exceeded. Utilize special remote readout equipment as required to ensure compliance.

#### 4. COLOR CODING DISTRIBUTION VOLTAGE CONDUCTORS, 600 VOLT OR LESS

- A. Conductors to be color coded as follows:

- (1) 120/240 Volt Conductors
  - Phase A                      Black
  - Phase B (High Leg)      Orange
  - Phase C                      Blue
  - Neutral                      White
- (2) Control Wiring - Red, or as indicated.
- (3) Conductors within enclosures that may be energized when enclosure disconnect is off - yellow, or taped with ½" yellow tape every 6" of length, inside enclosure. Provide lamacoid plate warning sign on front of enclosure where this condition occurs.
- (4) D.C. Wiring -      Positive - Light Blue, Negative - Dark Blue

**END OF SECTION**



## SECTION 16135

### CABINETS, BOXES AND FITTINGS

#### SECTION 16135 – CABINETS, BOXES, AND FITTINGS

##### 1. GENERAL

- A. The specification section covers all electrical cabinets, outlet boxes and pull boxes.
- B. Continuous runs of conduit shall have pull boxes at least each eighty-five (85) feet of run, or as near as possible to that limit.

##### 2. MATERIALS & INSTALLATION

###### A. Cabinets, Outlet & Pull Boxes:

- (1) Cabinets for lighting and power, telephone, pull boxes, outlet boxes, or any other purposes specified or shown on the Contract Drawings, shall be constructed of code gauge, galvanized steel with sides formed and corner seams riveted or welded before galvanizing. Boxes assembled with sheet metal screws will not be accepted. Pull boxes shall include all boxes used to reduce the run of conduit to the required number of feet or bends, supports, taps, troughs, and similar applications and shall also be constructed as specified above. All cabinets and boxes for NEMA 1 and 1A application shall be provided with knockouts, as necessary, or shall be cut in the field by approved cutting tools which will provide a clean symmetrically cut opening. All boxes, except panels, shall be provided with code gauge fronts with 1/4 turn fasteners. Fronts for panels shall be as specified under "Panelboards".
- (2) Ceiling outlet boxes shall be galvanized steel, 4" octagonal, not less than 2-1/8" deep, with lugs or ears to secure covers, and those for use with ceiling lighting fixtures shall be fitted with 3/8" fixture studs fastened to the back of the boxes, where applicable.
- (3) Special size concealed outlet boxes for clocks, speakers, alarms, TV, etc., shall be provided by the manufacturer of the equipment.
- (4) Unless otherwise noted on the drawings or in the specifications, outlet boxes shall be installed at the following heights to centerline of box:

a)	Wall Switches	4'-0"
b)	Convenience Power Outlets	1'-6"
c)	Power Outlets (above counters)	6" above counter top
d)	Telephone/Data Outlets	1'-6"
e)	Wall-mounted Telephones	5'-0"
f)	Weatherproof Outlets	2'-0"
g)	Disconnects	5'-0" max to device centerline
h)	Fire Alarm Manual Pull Stations	4'-0"
i)	Fire Alarm Horns & Strobes	6'-8"
- (5) The location of outlets, as shown on the drawings, shall be considered as approximate only. It shall be incumbent upon this Contractor to study the general building drawings, with relation to spaces surrounding each outlet, in order to make his work fit the work of others and in order that when the fixtures are installed, they will be symmetrically located and will not interfere with any other work or

## SECTION 16135

### CABINETS, BOXES AND FITTINGS

equipment. Any change in fixture or layout shall be coordinated with and approved by the A-E before this change is made.

- (6) All outlets, pull boxes, junction boxes, cabinets, etc..., shall be sized per the current edition of the National Electrical Code.
  - (7) All GFCI power outlet boxes, located next to a lavatory in a restroom, are to be installed, to the middle of the box, at 8" above the lavatory countertop. The installation of a GFCI outlet box below a lavatory/sink will not be allowed.
- B. Cabinets, outlet boxes (FTGS) and junction or pull boxes (FTGS) shall be threaded for rigid-threaded conduit, dust-tight vapor-tight or weatherproof as required for areas other than for NEMA 1 or 1A application. These shall be as manufactured by Crouse-Hinds, Appleton, Pyle-National, Killark, or approved.
- (1) NEMA 1 or 1A cabinets, outlet boxes or pull or junction boxes shall be as manufactured by Appleton, Steel City, T & B, or approved equivalent.
  - (2) Outlet boxes for switches, receptacles, telephone, etc., concealed in walls shall be galvanized steel, 2" X 4" X 1-1/2" with plaster cover for one (1) or two (2) devices, as required. Where outlet boxes are installed in walls of glazed tile, brick, concrete block, or other masonry which will not be covered with plaster or in walls covered by wood wainscot or paneling, deep sectional masonry boxes shall be used and they shall be completely covered with the plates or lighting fixtures. This Contractor shall cooperate with the brick layers, block layers and carpenters to insure that the outlet boxes are installed straight and snugly in the walls. Receptacles shall be set vertically in walls.
  - (3) Outlet boxes mounted in glazed tile, brick, concrete block or other types of masonry walls shall be mounted above or below the mortar joint. Do Not Split The Mortar Joint.
  - (4) Boxes for more than two (2) devices shall be for number of devices required and shall be one piece. No ganging of single switch boxes will be allowed.
  - (5) Outlets for use on this project shall have only the holes necessary to accommodate the conduit at the point of insulation and shall be rigidly secure in position. Boxes with knockout removed and openings not used shall be replaced.
  - (6) Openings for conduit entrance in cabinets and boxes shall be prefabricated, punched, drilled and/or reamed. The use of a cutting torch for this purpose is prohibited.

END OF SECTION

## SECTION 16143

### WIRING DEVICES

#### SECTION 16143 - WIRING DEVICES

##### 1. GENERAL

- A. This section of the specifications covers all wiring devices and cover plates, standard, weatherproof and dust-tight.
- B. Wiring devices, listed by manufacturer and catalogue numbers are to establish the type required. Equal devices of other manufacturers, such as Leviton, Hubbell, Bryant, P & S, G.E., or Eagle Electric Manufacturing Company for standard use, or approved equivalent devices for NEMA 1 or 1A area use, in other areas, as manufactured by Pyle-National, Killark or Appleton, will be considered. Insofar as possible, standard application or special application devices shall be by one manufacturer.

##### 2. MATERIALS

- A. Table for General facility wall switches and power outlet devices:

TYPE	RATING	CONFIGURATION	COLOR	VENDOR CAT#
Receptacle – Duplex (Commercial Grade)	125V, 20A	NEMA 5-20R		Hubbell CR5362 GE 5362 Leviton 5362
Receptacle – G.F.I. Duplex (Commercial Grade)	125V, 20A	NEMA 5-20R		Hubbell GF 5352 GE GF 5342 Leviton 6898
Receptacle – Single (Commercial Grade)	125V, 20A	NEMA 5-20R		Hubbell 5361
Receptacle – Duplex, Safety Type (with tamper resistant screws)	125V, 20A	NEMA 5-20R		Hubbell HBL-8300-SG
Receptacle – Duplex, Isolated Ground with Orange Legend Plate	125V, 20A	NEMA 5-20R	Orange	Hubbell IG-5362 GE 5362-IG Leviton 5362-IG
Receptacle – Single	250V, 20A	NEMA 10-20R	Black	Hubbell 6810 GE 4124 Leviton 5032
Receptacle – Single	250V, 30A	NEMA 6-30R	Black	Hubbell 6810 GE 4124 Leviton 5032
Receptacle – Single	250V, 50A	NEMA 6-50R	Black	Hubbell 6810 GE 4124 Leviton 5032
Wall Switch Occupancy Sensor – Dual Technology, Single Relay	120/277V, 20A	SPST & 3-Way		Hubbell LHMTS1-G GE WDT-10-SR-G-D Leviton OSSMT-
Wall Switch Occupancy Sensor – Infrared Technology, Single Relay	120/277V, 20A	SPST & 3-Way		Hubbell LHIRS1-G GE WIR-10-SR-G-D Leviton ODS10-ID

## SECTION 16143

### WIRING DEVICES

Light Switch – Single Pole	120/277V, 20A	SPST		Hubbell 1221 GE 5951 Leviton 5951
Light Switch – 3 Way	120/277V, 20A	3-Way		Hubbell 1223 GE 5953 Leviton 5953
Light Switch – 4 Way	120/277V, 20A	4-Way		Hubbell 1224 GE 5954 Leviton 5954
Light Switch – Single Pole, Keyed	120/277V, 20A	SPST	N/A	Hubbell 1221L GE 5951L Leviton 5951L
Light Switch – 3-Way, Keyed	120/277V, 20A	3-Way	N/A	Hubbell 1223 L GE 5953L Leviton 5953L
Light Switch – 4-Way, Keyed	120/277V, 20A	4-Way	N/A	Hubbell 1224L GE 5954L Leviton 5954L

- Table Notes:
- 1) Switch, keyed to each, is to be furnished with one Hubbell #1209 key. Turn over to Owner at close of project and obtain receipt for verification that keys have been delivered.
  - 2) Provide matching cap (plug) for all receptacles rated 30 amperes, or greater, as required for equipment.
  - 3) All receptacles shall be back, or side, wired, clamping type

**B. Small Motor Control Switches:**

- (1) Fused toggle switch controlling small motor loads as indicated shall consist of an assembly, 2-gang with 30A, 120-277 volt motor-rated snap switch (Hubbell 3031-A) and fusetrone box-mounted dual-element plugfuse as manufactured by Bussman Company or equivalent. To be used for control and disconnecting means of all single phase, 120 volt, 1/3 HP and smaller motors, unless otherwise noted on plans.
- (2) For 2-pole, 30A, 120-208-230 volt, 1/3 HP and less motor, provide an assembly to consist of Hubbell 3032-A switch and two "Fusetrone" units. Size fuses at motor nameplate rating + 25%.

### 3. COLOR

- A. Color of devices shall be as selected by the architect. Samples (devices, plates or both) may be required to be submitted with other architectural color items by the General Contractor. The Electrical Contractor shall coordinate any such submission required with the General Contractor.
- B. Where surface finishes next to the devices vary in color or shade throughout the project

## SECTION 16143

### WIRING DEVICES

#### 4. PLATES AND COVERS

- A. Unless otherwise specified or noted, all wiring device plates and covers shall be smooth thermoplastic, Hubbell "P" Series or equivalent. Color shall match device.
- B. Cover plates shall be of one manufacture insofar as possible.
- C. Weatherproof plates for G.F.C.I. receptacles shall be cast aluminum, self-closing, gasketed, suitable for standard box mounting, U.L. listed for wet location use, cover closed. Vertical mounting - Hubbell WP26, horizontal mounting - Hubbell CWP26H (die-cast zinc)
- D. Weatherproof switch plates for toggle-handle switches shall be clear silicone rubber, for standard outlet boxes. Hubbell 1795 or equivalent.
- E. Cover plates for telephone wall outlets shall be required to fit telephone supplier's modular jack.

#### 5. INSTALLATION

- A. All wiring devices in dusty areas, exposed to weather and moisture shall be installed in Type "FS" conduit fittings having mounting hubs.
- B. Devices that have been installed before painting shall be masked. No plates or covers shall be installed until all finishing and cleaning has been completed.
- C. Provide G.F.C.I. duplex feed-thru style receptacles where indicated or required by the National Electrical Code, whether specifically called out or not. When a G.F.C.I. receptacle is on a circuit with other non-G.F.C.I. receptacles, it shall always be placed at the homerun point of the circuit and shall be wired to ground-fault interrupt the downstream outlets on that circuit unless specifically indicated to the contrary. Provide a "G.F.C.I. protected" label on each downstream outlet.
- D. All receptacles shall be installed with ground prong at top position.
- E. All outlets not provided with wiring devices shall be closed with a blank plate matching other plates in the area.

END OF SECTION





**DIVISION 16**  
**CIRCUIT AND MOTOR DISCONNECTS**

**SECTION 16170 - CIRCUIT AND MOTOR DISCONNECTS**

**1PART - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Requirements of the following Division 16 Sections apply to this section:
  - 1. Basic Electrical Requirements
  - 2. Fuses

**1.2 SUMMARY**

- A. This Section includes circuit and motor disconnects.

**1.3 SUBMITTALS**

- A. Product data for each type of product specified.
- B. Maintenance data for circuit and motor disconnects, for inclusion in Operation and Maintenance Manual specified in Division 1 and Division 16 Section "Basic Electrical Requirements."

**1.4 QUALITY ASSURANCE**

- A. Electrical Component Standards: Provide components complying with NFPA 70 "National Electrical Code" and which are listed and labeled by UL. Comply with UL Standard 98 and NEMA Standard KS 1.

**2PART - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
  - 1. General Electric Co.
  - 2. Square D Company
  - 3. Appleton
  - 4. Crouse-Hinds Co.
  - 5. Cutler-Hammer Inc.
  - 6. Westinghouse Electric Corp.

**DIVISION 16**  
**CIRCUIT AND MOTOR DISCONNECTS**

**2.2 CIRCUIT AND MOTOR DISCONNECT SWITCHES**

- A. General: Provide circuit and motor disconnect switches in types, sizes, duties, features ratings, and enclosures as indicated. Provide NEMA 1 enclosure except for outdoor switches, and other indicated locations provide NEMA 3R enclosures with raintight hubs. For motor and motor starter disconnects, provide units with horsepower ratings suitable to the loads.
- B. Fusible Switches: General duty switches, with fuses of classes and current ratings indicated. Where current limiting fuses are indicated, provide switches with non-interchangeable feature suitable only for current limiting type fuses.

**3PART - EXECUTION**

**3.1 INSTALLATION OF CIRCUIT AND MOTOR DISCONNECTS**

- A. General: Provide circuit and motor disconnect switches as indicated and where required by the above Code. Comply with switch manufacturers' printed installation instructions.

**3.2 FIELD QUALITY CONTROL**

- A. Testing: Subsequent to completion of installation of electrical disconnect switches, energize circuits and demonstrate capability and compliance with requirements. Except as otherwise indicated, do not test switches by operating them under load. However, demonstrate switch operation through six opening/closing cycles with circuit unloaded. Open each switch enclosure for inspection of interior, mechanical and electrical connections, fuse installation, and for verification of type and rating of fuses installed. Correct deficiencies then retest to demonstrate compliance. Remove and replace defective units with new units and retest.

**END OF SECTION 16170**

## SECTION 16195

### IDENTIFICATIONS

#### SECTION 16195 - IDENTIFICATIONS

##### 1. GENERAL

- A. Equipment, disconnect switches, motor starters, pushbutton stations, special device plates, and similar materials shall be clearly marked as to their function and use. Markings shall be applied neatly and conspicuously to the front of each item of equipment with ½" black lamacoid plate (or equivalent) with white letters 1/4" high.
- B. Each Electrical Contractor shall provide clearly legible typewritten directories in each electrical panel indicating the area, item of equipment, etc. controlled by each switch, breaker, fuse, etc. These directories are to be inserted into plastic card holders in each panel.
- C. New branch circuit panelboards shall be provided with a black lamacoid plastic plate with ½" white letters for panel designation and 1/4" white letters showing voltage and feeder information. Branch circuit switches shall be designated as to function. Panelboard and switchgear labels shall indicate the source they are fed from, and the circuit number at that source. Clearly indicate the exact label legend to be furnished with each panelboard and switchgear on the shop drawings for each item of equipment prior to submission of shop drawings.
- D. Lamacoid plates shall be located at center of top of trim for branch circuit panels, switch gear, and centered at side for branch circuit switches. Fasten with self-tapping stainless steel screws or other approved method.
- E. Definitions:
  - (1) Lamacoid - a general term used to describe 2-ply and 3-ply plastic name tags, legend plates, valve tags etc. It is a very cost effective material, and comes in a variety of colors and textures easily mounted with adhesive backing.

END OF SECTION



## SECTION 16452

### GROUNDING

#### SECTION 16452 – GROUNDING

##### 1. GENERAL

- A. All metallic conduit, wireways, supports, cabinets and equipment shall be grounded in accordance with the latest issue of the National Electrical Code and as shown on the Contract Drawings.
- B. The size of the grounding conductor for service equipment shall be not less than that given in Article No. 250-94 of the National Electrical Code, and as shown on the Contract Drawings.
- C. Grounding bus and non-current carrying metallic part of all equipment and conduits shall be securely grounded by connection to common ground.
- D. The service entrance main ground bus shall be connected to the main cold metallic underground water pipe within 3 feet of where it enters the building, and ahead of the main cut-off valve, with a #2/0 AWG bare copper grounding conductor. This metallic water pipe shall serve as the main grounding electrode for the service. In addition to the metallic water pipe, a supplemental grounding electrode consisting of (2) new ground rods shall also be connected to the main ground bus with #6 AWG bare copper grounding conductors. A properly sized bonding jumper shall also be provided to the frame of any steel structure utilized in the construction.

##### 2. MATERIALS

- A. Ground wires and cables shall be of the AWG sizes shown on the Contract Drawings. All ground wires and cables shall be copper.
- B. All grounding fittings shall be heavy cast bronze or copper of the mechanical type except for interconnection of grounding grid to cable, columns and ground-rods, which shall be welded type as manufactured by Cadweld, Burndy Co., Therm-O-Weld, or approved equivalent. Other bonding clamps or fittings shall be as manufactured by O.A. Co., Penn-Union, T & B, Burndy, or approved equivalent.
- C. Ground rods shall be 5/8" minimum diameter, eight feet long, copperweld steel. All ground electrode systems shall be installed in accord with manufacturer's recommendations, U.L. listings, and National Electrical Safety Codes.

##### 3. INSTALLATION

- A. All grounding conductors shall be protected from mechanical injury and shall be rigidly supported. If ground conductors are run through conduit, they shall be securely bonded to such conduit at the entrance and exit. All connection of equipment shall be made with an approved type of solderless connection and same shall be bolted or clamped to equipment or conduit.
- B. All equipment grounding conductors to receptacles, electric heaters, furnace and other equipment not exceeding No. 10 AWG in size shall be green colored Type "TW".
- C. Equipment ground connections to GFI circuit breakers shall be carried and bonded to each outlet on the circuit(s) separate equipment grounding conductor with green color insulation and copper wire.

## SECTION 16452

### GROUNDING

- D. Bonding terminals and connectors for grounding shall be of the thermal welded type, or mechanical type as required.
- E. All circuits shall have a separate grounding conductor.
- F. All isolated ground circuits shall have a normal grounding conductor (green colored insulation) to ground metal boxes and panels in addition to the isolated grounding conductor serving the circuit.
- G. Grounding connections shall **never** be made to fire protection, natural gas, flammable gas or liquid fuel piping, except where specifically indicated on the plans.
- H. Where dielectric fittings are utilized in piping systems, the piping system shall **not** be utilized as a ground path. Bonding jumpers shall not be utilized to bridge over such fittings. Piping systems shall **not** be utilized as ground paths except where specifically required by codes in the case of water piping.

END OF SECTION

## SECTION 16470

### ELECTRICAL DISTRIBUTION

#### SECTION 16470 – ELECTRICAL DISTRIBUTION EQUIPMENT

##### 1. MAIN SERVICE PANELBOARD

- A. Panelboard assembly shall be enclosed in a steel cabinet. The rigidity and gauge of steel to be as specified in UL Standard 50 for cabinets. The size of wiring gutters shall be in accordance with UL Standard 67. Cabinets to be equipped with latch and tumbler-type lock on door of trim. Doors over 48" long shall be equipped with three-point latch and vault lock. All locks shall be keyed alike. End walls shall be removable. Fronts shall be of code gauge steel, with gray baked enamel finish electrodeposited over cleaned, phosphatized steel.
- B. The panelboard interior assembly shall be dead front with panelboard front removed. Main lugs or main breakers shall have barriers on five sides. The barrier in front of the main lugs shall be hinged to a fixed part of the interior. The end of the bus structure opposite the mains shall have barriers. Bus structure shall be full height of panel.
- C. Panelboard bus structure and main lugs or main breaker shall have current ratings as shown on the panelboard schedule. Such ratings shall be established by heat rise tests with maximum hot spot temperature on any connector or bus bar not to exceed 50 C. rise above ambient. Heat rise tests shall be conducted in accordance with Underwriters Laboratories Standard UL 67. The use of conductor dimensions will not be accepted in lieu of actual heat tests.
- D. Circuit breakers shall be equipped with individually insulated, braced and protected connectors. The front faces of all circuit breakers shall be flush with each other. Large, permanent, individual circuit numbers shall be affixed to each breaker in a uniform position. Tripped indication shall be clearly shown by the breaker handle taking a position between "ON" and "OFF." Provisions for additional breakers shall be such that no additional connectors will be required to add breakers. The Main Panelboard shall be capable of accepting 225 amp 3 pole branch breakers as a minimum unless otherwise noted.
- E. Each panelboard, as a complete unit, shall have a short circuit current rating equal to or greater than the integrated equipment rating shown on schedules on the plans or as determined by verification with local utility company. This rating shall be established by testing with the overcurrent devices mounted in the panelboard. The short circuit tests on the overcurrent devices and on the panelboard structure shall be made simultaneously by connecting the fault to each overcurrent device with the panelboard connected to its rated voltage source. Method of testing shall be per Underwriters Laboratories Standard UL 67. The source shall be capable of supplying the specified panelboard short circuit current or greater. Testing of panelboard overcurrent devices for short circuit rating only while individually mounted is not acceptable. Also, testing of the bus structure by applying a fixed fault to the bus structure alone is not acceptable. Panelboards shall be marked with their maximum short circuit current rating at the supply voltage and shall be UL listed.
- F. The service disconnecting device(s) shall be a molded case, thermal magnetic circuit breaker installed totally front accessible and front connectable.
- G. Distribution panelboards shall be Square "D", G.E., I.T.E./Siemens, or approved equivalent.



## SECTION 16470

### ELECTRICAL DISTRIBUTION

#### 2. BRANCH PANELBOARDS

- A. This section covers new lighting and power panelboards (refer to schedule and notes on Contract Drawings, of the Contract Drawings).
- B. All panelboards shall be of the circuit breaker type, and shall be of one manufacturer.
- C. Branch panelboards shall be as indicated on the drawings and as specified herein. The lighting/general power panelboards/loadcenters shall be of the dead-front, quick-make, quick-break, plug-in circuit breaker type, with trip indicating and trip free handles. All circuits shall be clearly and properly numbered and shall be provided with thermal magnetic protection. The panelboards shall be enclosed in code gauge, galvanized steel cabinets with smooth finished hinged doors without visible external fasteners and heavy chrome locks. Locks shall all be keyed alike. Each door shall have a directory card inside, covered with a plastic shield, filled in with black india ink or typewritten with circuit numbers and description indicated.
- D. Branch panelboards/loadcenters shall be surface or flush mounted as indicated on the Contract Drawings.
- E. Circuit breakers shall be of 10,000 A.I.C. RMS symmetrical rating unless otherwise indicated on the Contract Drawings.
- F. All main bus and connections thereto in branch panelboards shall be aluminum. All bus bars shall extend full length of panelboards.
- G. All circuit breakers used to switch lights shall be SWD rated.
- H. All HVAC equipment shall be protected by "HACR" rated breakers as required.
- I. Isolated ground panelboards/loadcenters shall be supplied with a separate isolated ground bus.
- J. Panels shall be Square "D", G.E., Siemens, or approved equivalent.

#### 3. INSTALLATION INSTRUCTIONS

- A. Panelboards/loadcenters with circuit breakers installed before the building has been finished and cleaned shall be masked.
- B. All dust and debris shall be removed from the panels before it is energized and placed in service.
- C. All panelboard fronts shall be omitted until final punch list inspection is made. Directories for each panelboard shall be completed and available for review by the A/E at that time.

#### 4. SAFETY SWITCHES

- A. Provide general duty safety switches as a final disconnect means as required by NEC and as indicated on the Contract Drawings.

## SECTION 16470

### ELECTRICAL DISTRIBUTION

- B. All safety switches shall be NEMA Type 1 or NEMA 3R and General Duty Type GD and UL listed.
- C. All safety switches shall have switch blades that are fully visible in the "OFF" (open) position with the door open.
- D. All current carrying parts shall be plated by an electrolytic process to resist corrosion and to promote cooling.
- E. Switch mechanism shall be quick-make, quick-break, load rated, such that during normal operation of the switch, the operation of the contacts shall not be capable of being restrained by the operating handle after the closing and opening action of the contacts has started. The handle and mechanism shall be an integral part of the box (not cover) with facilities for pad locking in the open or closed position with up to three (3) padlocks. NEMA 3R switch doors shall be interlocked with switch handle so that the door can only be opened when the switch is in the "OFF" (open) position.
- F. Switches shall be as manufactured by Square D., G.E., Seimen's or approved equivalent.

#### 5. FUSES

- A. Upon completion of the building, the Contractor shall provide the owner with spare fuses as shown below. All fuses shall be BUSSMANN or Reliance Economy.
- B. 10% (minimum of 3) of each type and rating of installed fuses shall be supplied as spares.
- C. No fuses shall be installed in the equipment until the installation is complete, including tests and inspections required prior to being energized. All fuses shall be of the same manufacturer to insure retention of selective coordination, as designed.
- D. Circuits 0 to 600 amperes shall be protected by current limiting BUSSMANN LOW-PEAK Dual Element Fuses, LPN-RK (250 volts) or LPS-RK (600 volts). All dual element fuses shall have separate overload and short circuit elements. Fuse shall incorporate a spring activated thermal overload element having a 284 degree F melting point alloy and shall be independent of the short-circuit clearing chamber. The fuse shall hold 500% of rated current for a minimum of 10 seconds and be listed by Underwriters Laboratories, Inc. with an interrupting rating of 200,000 amperes r.m.s. symmetrical. The fuses shall be UL Class RK1.
- E. Motor Circuits - All individual motor circuits rated 480 amperes or less shall be protected by BUSSMANN LOW PEAK DUAL-ELEMENT FUSES LPN-RK (250 volts) or LPS-RK (600 volts). The fuses for 1.15 service factor motors shall be installed in rating approximately 125% of motor full load current except where high ambient temperatures prevail, or where the motor drives a heavy revolving part which cannot be brought up to full speed quickly, such as large fans. Under such conditions the fuse should be 150% to 200% of the Type KRP-C HI-CAP Time Delay Fuses of the rating shown on the drawings. 1.0 service factor motors shall be protected by BUSSMANN LOW-PEAK Dual-Element Fuses LPN-RK (250 volts) or LPS-RK (600 volts) installed in rating approximately 115% of the motor full load current except as noted above. The fuses shall be UL Class RK1 or L.

## SECTION 16470

### ELECTRICAL DISTRIBUTION

#### 6. CONTACTORS

##### A. General

- (1) Contactors shall be continuously rated at the specified amperes per pole for all types of ballast and tungsten lighting, resistance and motor load. Contactors shall have totally enclosed, double-break silver-cadmium-oxide power contacts. Auxiliary arcing contacts will not be acceptable. Contact inspection and replacement shall be possible without disturbing line or load wiring. Contactors shall have straight-through wiring with all terminals clearly marked. Contactors shall have a gasketed NEMA Type 1 (NEMA 12 for electrically-held) enclosure, unless otherwise noted or required.
- (2) Contactors shall be approved per UL 508 and/or CSA, and be designed in accordance with NEMA Standards. They shall be industrial-duty rated for applications to 600 volts maximum. I.E.C.-style contactors are not acceptable.
- (3) Contactors shall have provisions for factory or field addition of:
  - (1) Four N.O. or N.C. auxiliary contacts rated 6 amperes continuous at 600 volts.
  - (2) Single or double circuit, N.O. or N.C., 30 or 60 ampere 600 volt power-pole adder.
- (4) Control-circuit fuse holder, one or two fuses.
- (5) 0.2-60 second adjustable interval timer attachment, if so indicated on plans.
- (6) Transient-suppression module for coil control circuit. Coil control to be 120 volts. Provide circuit or step-down transformer.

- B. Lighting contactors shall be Square D Class 8903 or equivalent by G.E., I.T.E./Siemens, or Allen-Bradley.

END OF SECTION

## SECTION 16515

### LIGHTING FIXTURES

#### SECTION 16515 – LIGHTING FIXTURES (INTERIOR & EXTERIOR)

##### 1. GENERAL

- A. Furnish and install all lighting fixtures, as herein specified, complete with lamps and accessories for safe and effective operation. All fixtures shall be installed and left in an operable condition with no broken or damaged parts.
- B. All items furnished shall comply with the latest standards applicable such as U.L., NEMA, etc., and shall bear labels accordingly. All fixtures shall be the color specified or as selected by the Architect and fixtures shall have all scratches and damage marks finished and painted.
- C. Eight (8) copies of light fixture factory shop drawings and cuts, showing fixture dimensions, photometric data, and installation information shall be submitted to the Engineer for written approval 30 days after bid date.
- D. Alternate fixtures may be substituted for types specified by name or catalog number. Proposed substitutions must be submitted to the Engineer ten working days prior to bid date for written approval to bid. This written approval will only be issued in addendum form.
- E. Where emergency battery packs are provided with fixtures (if any), they shall be connected to an unswitched power line and wired in accord with the manufacturer's recommendations.
- F. All reflecting surfaces, glass or plastic lenses, ballast housings, parabolic louvers, downlighting Alzak cones and specular reflectors shall be handled with care during installation or lamping to avoid fingerprints or dirt deposits. It is preferred that louvers be shipped and installed with clear plastic bags to protect louvers. At close of project, and after construction air filters are changed, remove bags. Any louver or cone showing dirt or fingerprints shall be cleaned with solvent recommended by the manufacturer to a like-new condition, or replaced as necessary in order to turn over to the Owner new fixtures at beneficial occupancy.
- G. Refer to architectural details as applicable for recessed soffit fluorescent fixtures or wherever fixture installations depend upon work of other trades. Coordinate all installations with other trades. Verify dimensions of spaces for fixtures, and if necessary, adjust lengths to assure proper fit and illumination of diffuser and/or area below.
- H. Locate pendant, surface mounted or chain-hung industrial fixtures in mechanical rooms and similar spaces to avoid ductwork and piping. Locate around and between equipment to maximize the available light. Request a layout from the Engineer if uncertain about an installation.

##### 2. WARRANTY

- A. For non-LED lighting fixtures and components, provide a complete warranty for parts and labor for a minimum of one year from the date of Substantial Completion.
- B. For LED fixtures, lamps, drivers, and components, provide a complete warranty for parts and labor for a minimum of five years from the date of Substantial Completion.

##### 3. VOLTAGE

- A. All lighting fixtures shall be rated 120 volts, or 240 volts, single phase as noted on the Lighting Fixture Schedule(s) located on the Electrical Plans.

## SECTION 16515

### LIGHTING FIXTURES

#### 4. BALLASTS AND DRIVERS

- A. Except where indicated otherwise, fluorescent fixtures with multiple T8 or T5 lamps shall have two ballasts or a two-step (50%-100%) dimming ballast to accommodate dual switching. Fluorescent fixtures with multiple compact fluorescent lamps may have one ballast.
- B. Fluorescent ballasts shall be of the electronic, programmed rapid- start, series-circuited, and completely solid-state. Ballasts shall be rated for the specific lamps they are supplying, shall have a maximum crest factor of 1.6, a maximum current total harmonic distortion of 10 percent, a minimum starting temperature of 0 degrees F, and a sound rating of "A". Ballasts for T8 and T5 lamps shall be Osram/Sylvania Quicktronic Professional, Advance Optanium, or Universal Accustart only. Ballasts for compact fluorescent lamps shall be the fixture manufacturer's standard electronic type.
- C. Fluorescent dimming ballasts shall be electronic, comply with the other requirements for electronic ballasts, be capable of smoothly and consistently dimming the lamps from full output to 10 percent or less output, and maintain a cathode voltage between 3 to 4 volts. A low voltage slide switch that is compatible with the ballast shall control light level. Osram/Sylvania Quicktronic, Lightolier, or Lutron only.
- D. LED drivers shall be electronic-type, labeled as compliant with radio frequency interference (RFI) requirements of FCC Title 47 Part 15, and comply with NEMA SSL 1 "Electronic Drivers for LED Devices, Arrays, or Systems". LED drivers shall have a sound rating of "A", have a minimum efficiency of 85%, and be rated for a THD of less than 20 percent at all input voltages.
- E. Dimmable LED drivers shall be 0-10V type. Dimmable LED drivers shall be capable of dimming without LED strobing or flicker across their full dimming range.
- F. H.I.D. ballasts shall conform to their applicable ANSI codes. H.I.D. ballasts for use indoors in finished areas shall be of the quietest type available or shall be mounted remote from the fixtures.
- G. Ballasts and drivers shall be rated for the ambient temperatures in which they are located. Outdoor fixtures shall be equipped with ballasts or drivers rated for reliable starting to -20 degrees F. Indoor fixtures located in areas with direct sunlight or above normal ambient temperatures shall have ballasts or drivers rated at 65 degrees C minimum.
- H. Individually fused ballasts and drivers shall have their fuses accessible from outside of the fixture chassis.
- I. Induction lamp drivers shall be electronic and comply with radio frequency interference (RFI) requirements of FCC Title 47 Part 15 and be rated for a total harmonic distortion (THD) of less than 20 percent at all input voltages.

#### 5. LAMPS

- A. Except where T5 or T5HO lamps are shown in the Fixture Schedule, tubular fluorescent lamps shall be T8, straight tube, rapid- start, multi-phosphor type with a medium bi-pin base, average rated life of 24,000 hours minimum, 3,000 initial lumens, and 2,820 mean lumens. Fluorescent lamps shall have a correlated color temperature of 3500 degrees K and a CRI of 85 minimum. Lamps shall be designed to pass the Federal TCLP test in effect at the time of manufacture. U-tube lamps shall not be used. GE Ecolux, Osram/Sylvania Ecologic, or Philips Alto only.

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- B. Compact fluorescent lamps shall be 4 pin, 13 watt minimum with a color temperature of 3500 degrees K, a CRI of 80 minimum, end-of- life protection, and suitable for use with electronic ballasts. Self-ballasted compact fluorescent lamps are not acceptable except for retrofitting existing incandescent fixtures. Osram/Sylvania, GE, or Philips only.
- C. Induction lamps shall have a color temperature of 3500 degrees K and a CRI of 80 minimum.
- D. LED lamps shall have a color temperature of 3500 degrees K, a CRI of 80 minimum, and a lumen maintenance L70 rating of 50,000 hours minimum.
- E. Retrofit LED lamps shall comply with NEMA SSL 4 "SSL Retrofit Lamps: Suggested Minimum Performance Requirements".
- F. High intensity discharge (H.I.D.) lamps shall conform to their applicable ANSI codes.
- G. Incandescent lamps shall be rated 120 volts and shall have a life of 2,000 hours minimum. Standard "A" Type lamps shall be inside frosted.

#### 6. LIGHT FIXTURES

- A. Provide lighting fixtures in accordance with the Lighting Fixture Schedule(s) as shown on the contract drawings.
- B. Light fixtures shall be as listed or of equivalent manufacturer. All alternate fixtures must be approved by the Engineer and meet all specifications as listed in the fixture schedule.
- C. LED fixtures shall be modular and allow for separate replacement of LED lamps and drivers. User serviceable LED lamps and drivers shall be replaceable from the room side.
- D. Dimmable LED fixtures shall have either a 0-10 volt, 3-wire dimming driver, or a two-step (50%-100%) line voltage, two switch controlled dimming driver, as shown on the drawings.

#### 7. INSTALLATION REQUIREMENTS

- A. Support recessed troffers independently of the ceiling grid system by using two safety wires minimum on diagonally opposite corners of the fixtures. Support recessed downlights by using safety wires or by rigidly attaching the fixtures to the building structure or ceiling grid system. Removable T-bar clips shall not be used to attach fixtures to the ceiling grid system.
- B. Install fixtures level, with no gaps between adjacent fixtures or between fixtures and surrounding surfaces. Lenses, reflectors, and trims of fixtures shall be properly and uniformly aligned.
- C. Where fixtures are shown with dual switches, control all inner lamps with one switch and all outer lamps with the other switch. Where dimming or occupancy sensor-controlled fixtures are shown, control the fixtures in accordance with the appropriate wiring diagram or manufacturer's instructions.
- D. Connect night light fixtures and emergency lighting fixtures to the hot (unswitched) side of lighting circuits.

## **DIVISION 16 LIGHTING FIXTURES**

- E. Provide an individual feed with ground conductor from a junction box to each lighting fixture. Lighting fixtures shall not be daisy-chained.
- F. Drops to recessed fixtures may be flexible metallic conduit, or manufactured wiring systems may be used where accessible. Fixtures shall be provided with sufficient length to permit removal and lowering of the fixtures 12" below the ceiling.
- G. Provide green grounding conductors back to the panel ground for lighting circuits. Raceways shall not be used as grounding conductors.
- H. Fixtures shall have their exterior labels removed and shall be thoroughly cleaned. Burned out lamps shall be replaced.
- I. Locate emergency lighting remote battery packs and remote test/monitor modules identically so their status indicating lights are visible to the public and they form a straight line when viewed from the end of the corridor or room. Where a suspended ceiling exists, center the status indicating lights in adjacent ceiling tiles.
- J. Mount sealed beam emergency lighting units where shown and aim their lamps to light the egress path as uniformly as possible.
- K. When emergency lighting fixtures contain audible alarms, disable the alarms in accordance with manufacturer's instructions.

### **8. INSTALLATION REQUIREMENTS**

- A. A visual inspection shall be performed to verify cleanliness and alignment of the fixtures. Misalignment and light leaks shall be corrected, and rattles due to ventilation system vibration shall be eliminated.
- B. Perform an operational test to verify that all fixtures illuminate properly, dimming systems dim properly (i.e. no flicker), and lighting zones are switched according to the drawings.

END OF SECTION

**SECTION 16520**  
**LIGHTING CONTROL DEVICES**

**SECTION 16520 - LIGHTING CONTROL DEVICES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following lighting control devices:
  - 1. Time switches.
  - 2. Outdoor photoelectric switches.
  - 3. Indoor occupancy sensors.
  - 4. Lighting contactors.
- B. See Division 16, Section 16143, "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

**1.2 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.
- C. Operation and maintenance data.

**1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

**PART 2 - PRODUCTS**

**2.1 TIME SWITCHES**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Leviton Mfg. Company Inc.
  - 2. Tork; NSi Industries, LLC
  - 3. Lithonia Lighting; Acuity Lighting Group, Inc.
  - 4. Square D; Schneider Electric.
- B. Electronic Time Switches: Electronic, solid-state, programmable units with alphanumeric display; complying with UL 917.



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### LIGHTING CONTROL DEVICES

1. Contact Rating: 30-A inductive or resistive, 240-V ac.
2. Programs: 12 channels; each channel shall be individually programmable with 8 on-off set points on a 24-hour schedule.
3. Circuitry: Allow connection of a photoelectric relay as substitute for on-off function of a program.
4. Astronomic Time: All channels.
5. Battery Backup: For schedules and time clock.

#### 2.2 INDOOR OCCUPANCY SENSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Hubbell Lighting.
  2. Leviton Mfg. Company Inc.
  3. Lithonia Lighting; Acuity Lighting Group, Inc.
- B. General Description: Wall- or ceiling-mounting, solid-state units with a separate relay unit.
1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
  2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
  3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
  4. Mounting:
    - a. Sensor: Suitable for mounting in any position on a standard outlet box.
    - b. Relay: Externally mounted through a 1/2-inch (13-mm) knockout in a standard electrical enclosure.
    - c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
  5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
  6. Bypass Switch: Override the on function in case of sensor failure with On-Off-Auto Switches.
  7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lx); keep lighting off when selected lighting level is present.
- C. PIR Type: Ceiling mounting; detect occupancy by sensing a combination of heat and movement in area of coverage.
1. Detector Sensitivity: Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm).
  2. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
  3. Detection Coverage (Corridor): Detect occupancy within 90 feet (27.4 m) when mounted on a 10-foot- (3-m-) high ceiling.

## SECTION 16520

### LIGHTING CONTROL DEVICES

- D. On-Off-Auto Switches: Maintained contact, single pole, double throw, "center off" switch:
  - a. 15 amp: Bryant Electric Co.'s 4822  
Hubbell Inc.'s 1381  
Leviton Mfg. Co. Inc.'s 1281  
Pass & Seymour Inc.'s 1221.
  - b. 20 Amp: Bryant Electric Co.'s 4922  
General Electric Co.'s GE5957-1  
Hubbell Inc.'s 1385  
Leviton Mfg. Co. Inc.'s 1285  
Pass & Seymour Inc.'s 1225.

#### 2.3 LIGHTING CONTACTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Allen-Bradley/Rockwell Automation.
  - 2. Eaton Electrical Inc.; Cutler-Hammer Products.
  - 3. Hubbell Lighting.
  - 4. Lithonia Lighting; Acuity Lighting Group, Inc.
  - 5. Square D; Schneider Electric.
- B. Description: Electrically operated and mechanically held, combination type with non-fused disconnect, complying with NEMA ICS 2 and UL 508.
  - 1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
  - 2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
  - 3. Enclosure: Comply with NEMA 250.
  - 4. Provide with control and pilot devices as indicated on Drawings, matching the NEMA type specified for the enclosure.

#### 2.4 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 16, Section 16120, "Low-Voltage Wires and Cables".
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Division 16, Section 16120, "Low-Voltage Wires and Cables".
- C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 14 AWG. Comply with requirements in Division 16, Section 16120, "Low-Voltage Wires and Cables".

## SECTION 16520

### LIGHTING CONTROL DEVICES

#### PART 3 - EXECUTION

##### 3.1 SENSOR INSTALLATION

- A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
- B. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

##### 3.2 CONTACTOR INSTALLATION

- A. Mount electrically held lighting contactors with elastomeric isolator pads, to eliminate structure-borne vibration, unless contactors are installed in an enclosure with factory-installed vibration isolators.

##### 3.3 WIRING INSTALLATION

- A. Wiring Method: Comply with Section 16120 "Low-Voltage Wires and Cables." Minimum conduit size shall be 3/4 inch (19 mm).
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and non power-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

##### 3.4 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 16, Section 16195, "Identification for Electrical Systems."
  - 1. Identify controlled circuits in lighting contactors.
  - 2. Identify circuits or luminaries controlled by photoelectric and occupancy sensors at each sensor.
- B. Label time switches and contactors with a unique designation.

##### 3.5 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
  - 1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
  - 2. Operational Test: Verify operation of each lighting control device, and adjust time delays.

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**LIGHTING CONTROL DEVICES**

- B. Lighting control devices that fail tests and inspections are defective work.

END OF SECTION



## SECTION 16740

### TELECOM/DATA RACEWAYS

#### SECTION 16740 – TELECOM/DATA RACEWAYS

##### 1. GENERAL

- A. Each Electrical Contractor's attention is directed to Section 16010 – Basic Electrical Requirements and all other contract documents as they may apply to his work.

##### 2. SCOPE OF THE WORK

- A. The Electrical Contractor shall provide the necessary labor, materials and services to provide telephone raceways as indicated on the plans and specified herein. This work shall include, but is not necessarily limited to:
  - (1) A single-gang box and a 1" conduit routed, from each telecom/data outlet box location, to an accessible location above a drop-ceiling.
  - (2) All necessary conduit, boxes, pedestals, etc., as required by the local Telephone company.
  - (3) Making arrangements with the local Telephone company for all incoming service work to be performed by them and payment of all charges made by them. The contractor shall insure that work to be performed by this company is scheduled and accomplished on a timely basis so as not to delay any other parts of the construction.

##### 3. INSTALLATION

- A. No more than the equivalent of two 90 degree sweeps will be allowed in a run, including offsets. All 90 degree bends are to be long sweep bends.
- B. A pull wire shall be installed and tied off in each empty conduit. Pull wires used outside of facilities shall be stainless steel or copper, #12 AWG. Pull wires used inside facilities shall be nylon.
- C. All communications conduits shall be a minimum of 12" from power conduits or cables. All communications conduits shall also be a minimum of 24" from steam pipes and condensation lines if crossing perpendicular.
- D. All necessary precautions shall be taken by the contractor during construction to prevent the lodging of dirt, plaster, or trash in all conduit, tubing, fittings, and boxes.
- E. All conduit, tubing, and raceways shall be installed in such a manner to insure against collection of trapped condensation. Raceway runs shall be arranged to be void of traps.
- F. Provide nylon pull-strings and blank faceplates for all empty telephone/data outlet boxes and building security system boxes.

END OF SECTION

