

# Mon Valley Sewage Authority



## AUBERY AVE EJECTOR STATION REPLACEMENT PROJECT

**CONTRACT DOCUMENTS & SPECIFICATIONS  
RELEASED FOR PERMITTING – SEPTEMBER 2025  
ISSUED FOR BIDDING – MAY 2026**



Prepared By:



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**MON VALLEY SEWAGE AUTHORITY  
AUBREY AVE EJECTOR STATION REPLACEMENT PROJECT**

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**SECTION 00 11 13  
ADVERTISEMENTS FOR BIDS**

**ADVERTISEMENT FOR BIDS FOR THE  
AUBREY AVE EJECTOR STATION REPLACEMENT PROJECT  
MON VALLEY SEWAGE AUTHORITY**

The Mon Valley Sewage Authority (OWNER) will receive separate and sealed bids for the Aubrey Ave Ejector Station Rehabilitation Project at the Mon Valley Sewage Authority located at 20 S Washington Street, Donora, PA 15033 until 11:00 AM local time on Monday, June 8, 2026, at which time and place said Bids will be opened and publicly read aloud. All bids must be received in a separate and sealed envelope or folder for each contract and clearly labeled "Aubrey Ave Ejector Station Replacement Project" and the respective contract number. The general description of the Work includes, but is not limited to the following:

Aubrey Ave Ejector Station Replacement Project: Work to be completed includes the installation of a prefabricated ejector station purchased by the Authority, a 5' diameter precast wet well, approximately 40 lineal feet of schedule 80 PVC suction piping, approximately 35 lineal feet of 4" diameter DIP force main piping, wet well vent piping, necessary fittings and final piping connections, miscellaneous electrical work, and restoration and appurtenances as required to complete construction.

A more complete description of the Work is provided in the Contract Documents which can be examined at the Authority offices or the offices of the Wade Trim, Inc. (ENGINEER) at the following address: Four Gateway Center, 444 Liberty Avenue, Suite 300, Pittsburgh, PA, 15222. Site inspections prior to bid can be scheduled by contacting *Sean C. Gaskill, General Manager at 724-379-4141, or email at s.gaskill@monvalleysewage.com*

Digital copies of documents for bidding purposes may be obtained at the offices of Wade Trim, Inc. between the hours of 9:00 AM and 3:00 PM local time, Monday through Friday. Bid Specifications and Plan sets will be available for distribution on Monday, May 11, 2026.

Each proposal shall be accompanied by a Bid Bond in the amount of ten percent (10%) of the total bid which will be returned upon award of the Contracts.

Any aluminum or steel products to be furnished or used for the Project under any Contract shall comply with the Pennsylvania "Trade Practices Act" (71 P.S. §773, 101, et.seq.).

## ADVERTISEMENTS FOR BIDS

The Mon Valley Sewage Authority may during the bidding period make certain changes that may alter the plans and specifications. Bidders shall receive addenda for such revisions and any such addenda will become part of the contract documents.

The Mon Valley Sewage Authority reserves the right to accept or reject any or all bids and to waive any informality in any bids should it consider same to be in its best interest.

Bids may not be withdrawn for a period of one hundred and twenty (120) days after date of receiving bids.

All inquires should be directed to Jason McBride, P.E. at 412-454-5566 (email [jmcbride@wadetrim.com](mailto:jmcbride@wadetrim.com)) and Carter Johnson at 412-454-5566 (email [cjohnson@wadetrim.com](mailto:cjohnson@wadetrim.com)).

**Steve Walko, Chairman**  
Mon Valley Sewage Authority

**SECTION 00 21 13  
INSTRUCTIONS TO BIDDERS**

**PART 1      GENERAL**

1.1 INTRODUCTION

A. This project is being bid by the Mon Valley Sewage Authority (MVSA), OWNER, whose offices are located at 20 South Washington Street, Donora, PA 15033. Completed bid documents are to be returned to this address in the form and at the time stipulated in these instructions and/or the Advertisement for Bids to the attention of **Mr. Sean C. Gaskill, General Manager. Mr. Gaskill can be reached at (724) 379-4141 to arrange for a time to visit the project site.**

B. ENGINEER for the MVSA is Wade Trim, Inc. with offices located in Four Gateway Center, 444 Liberty Avenue, Suite 300, Pittsburgh, PA 15222. All questions regarding the Contract Documents for this Project should be addressed to Jason McBride, P.E., at the address above, by phone at (412) 454-5566 or by email at [jmcbride@wadetrim.com](mailto:jmcbride@wadetrim.com), or Carter Johnson, at the address above, by phone at (412) 454-5566 or by email at [cjohnson@wadetrim.com](mailto:cjohnson@wadetrim.com). Electronic copies of the Contract Documents can be obtained from Wade Trim, Inc.

1.2 DEFINED TERMS

A. Terms used in these Instructions to Bidders have the meanings assigned to them in the General Conditions.

1.3 SCOPE OF WORK

A. The scope and location of Work are set forth in Section 01 11 00, Summary of Work.

1.4 BIDDERS QUALIFICATIONS

A. No Bid will be considered from any Bidder unless known to be skilled and regularly engaged in work of a character similar to that covered by the Contract Documents. In order to aid the OWNER in determining the responsibility of any Bidder, the Bidder, within 48 hours after being requested in writing by the OWNER to do so, shall furnish evidence, satisfactory to the OWNER, of the Bidder's experience and familiarity with Work of the character specified, and his financial ability to properly prosecute the proposed Work to completion within the specified time. The evidence requested may include, but shall not be limited to, the following:

1. The address and description of the Bidder's plant or permanent place of business.
2. The Bidder's performance records for all Work awarded to, or started by him within the past three years.
3. An itemized list of the Bidder's equipment available for use on the proposed Contract.
4. The Bidder's financial statements for the last 3 to 5 years, including

## INSTRUCTIONS TO BIDDERS

statement of ownership of equipment necessary to be used in executing Work under Contract.

5. The name and qualifications of the lead Project Manager and Support Team for this Project.
6. List of subcontractors and major equipment suppliers including company name, contact name, address, phone number, fax number and contact email address.
7. Evidence that the Bidder is authorized to do business in the state in which the project is located, in case of a corporation organized under the laws of any other state; and
8. Such additional information as will satisfy the OWNER that the Bidder is adequately prepared to fulfill the Contract.

### 1.5 EXAMINATION OF CONTRACT DOCUMENTS AND SITE

A. It is the responsibility of each Bidder before submitting a Bid, to:

1. Examine the Contract Documents thoroughly;
2. Visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work;
3. Consider federal, state and local Laws and Regulations that may affect cost, progress, performance, or furnishing of the Work;
4. Study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data; and
5. Promptly notify ENGINEER in writing of all conflicts, errors, ambiguities or discrepancies which Bidder has discovered in or between Contract Documents and such related documents.

B. Supplementary Conditions SGC-4.02 contains a listing of certain reports and information, including reports and information relating to subsurface and other latent physical conditions at the site, or otherwise, which have been relied upon by the ENGINEER in the preparation of the Contract Documents.

1. If such reports are not included as appendices to the Contract Documents, OWNER will make copies available to any Bidder requesting them. These reports are provided for reference only, and are not to be relied upon for accuracy or completeness. These reports are not Contract Documents.
2. Before submitting his Bid each Bidder will, at his own expense, make such additional investigations and tests as the Bidder may deem necessary to determine his Bid for performance of the Work in

## INSTRUCTIONS TO BIDDERS

accordance with the time, price and other terms and conditions of the Contract Documents.

- C. On request OWNER will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid. Bidder shall fill all holes and clean up and restore the site to its former conditions upon completion of such investigation and tests.
- D. The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in Section 01 1100, Summary of Work, or on the Plans, as applicable.
- E. The locations of utilities or structures as shown on the Plans are taken from sources believed to be reliable. Neither OWNER nor ENGINEER will be responsible for any omissions of or variations from, the indicated location of existing utilities or structures which may be encountered in the Work.
- F. The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article 1.04, that without exception the Bid is based upon performing and furnishing the Work required by the Contract Documents and meeting the OWNER's requirements as set forth in the Contract Documents, that BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities and discrepancies that BIDDER has discovered in Contract Documents and the resolution by ENGINEER is acceptable to BIDDER, and that the Contract Documents are sufficient in scope and detail to indicate and convey sufficient understanding of all terms and conditions for performing and furnishing the Work, and that the time stated in the Proposal is sufficient to complete the project.

### 1.6 INTERPRETATIONS ADDENDA

- A. Should any prospective bidder find discrepancies in or omissions from the Plans, Specifications or other parts of the Contract Documents, he may submit a written request to the ENGINEER for an interpretation thereof. The person submitting the request will be held responsible for its prompt delivery at least seven (7) days prior to the date for opening of Bids. Questions received less than seven (7) days prior to the date for opening of bids may not be answered. Any interpretation of inquiry will be made by Addendum duly issued to all prospective bidders via electronic email.
- B. Any change in or addition to the Contract Documents deemed necessary by the OWNER shall be made in the form of an Addendum issued to all prospective bidders who have taken out Contract Documents and all such Addenda shall become a part of the Contract Documents as though same were incorporated into same originally. Oral explanations and information do not constitute official notification and are not binding.

## INSTRUCTIONS TO BIDDERS

### 1.7 BID SECURITY

- A. Bid Security shall be made payable to OWNER, in the amount of ten (10) percent of the Bidder's maximum Bid price and in a form as indicated in the Advertisement. Bid Bonds, shall be issued on the form included in the Contract Documents by a Surety meeting the requirements of paragraph 5.01 of the General Conditions.
- B. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Contract Security, whereupon it will be returned; if the successful Bidder fails to execute and deliver the Agreement and furnish the required Contract Security within 15 days of the Notice of Award, OWNER may annul the Notice of Award and the Bid Security of that Bidder will be forfeited. The Bid Security of any Bidder whom OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earliest of the seventh day after the "Effective Date of Agreement" (which term is defined in the General Conditions) or the expiration of the hold period on the Bids. Bid Security of other Bidders will be returned within 14 days of the Bid opening, unless indicated otherwise in the Advertisement.

### 1.8 CONTRACT TIME

- A. The number of days within which, or the date by which, the Work is to be Substantially Completed, if applicable, and also completed and ready for final payment (the Contract Time) are set forth in the Proposal and will be included in the Agreement.

### 1.9 SUBSTITUTE AND "OR-EQUAL" ITEMS

- A. The Contract, if awarded, will be on the basis of materials and equipment described in the Plans or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Plans or specified in the Specifications that a substitute or an "or-equal" item of material or equipment may be furnished or used by CONTRACTOR, if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of Agreement. In addition, in no case shall ENGINEER's denial of CONTRACTOR's application give rise to any claim for additional cost, it being understood by CONTRACTOR that acceptance of substitute or an "or equal" item of material is at the sole discretion of ENGINEER. Costs associated with the acceptance of the "or equal" item shall be the responsibility of the CONTRACTOR and could include labor and material costs associated with the additional engineering review, design changes associated with installation of the "or equal" item, additional construction costs and any and all other charges associated with the "or equal" item.

## INSTRUCTIONS TO BIDDERS

### 1.10 RECEIPT AND FORM OF BID

- A. Bids shall be submitted at the time and place indicated in the Advertisement for Bids and shall be included in an opaque sealed envelope, marked with the Project title and name and address of the Bidder and accompanied by the Bid Security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face thereof. Any Bid received after the scheduled time and place indicated in the Advertisement for Bids shall be returned unopened.
1. OWNER invites bids on the Proposal and other form(s) attached hereto. Bids will be received at the time and place indicated in the Advertisement and thereupon will be publicly opened and read. An abstract of the amounts of the base bids and any major alternates will be made available after the opening of Bids.
  2. OWNER may reject any Bid on which there is an alteration of, or departure from the Proposal Form attached hereto.
  3. The complete set of Contract Documents must be used in preparing Bids: neither OWNER nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents. In order to verify the completeness of the set of Contract Documents the Bidder used in preparing his Bid, the OWNER may require the Bidder to submit the set of Contract Documents he used in preparing his Bid. Bidder shall submit his Bid on the separate Proposal form included in these Contract Documents.
  4. The Proposal shall be legibly prepared, with ink or typewriter, on the form included in these Contract Documents. Blank spaces in the proposal forms must be correctly filled in where indicated for each and every item for which a quantity is given. Proposals will be compared on basis of lump sum items, if any, and on product of the quantities of items listed at the respective unit prices bid.
  5. Erasures or other changes in the Bids must be explained or noted over the signature of the Bidder.
  6. All names must be typed or printed below the signature.
  7. The Bidder shall submit a LUMP SUM cost proposal for the Work as shown on the Drawings and explained in the Specifications. Bids shall be compared based on the total LUMP SUM price and will serve in the Award of Contracts. Payment will be made based on the approved CONTRACTOR's Schedule of Values and the actual Work completed at the time of payment request. An unbalanced Schedule of Values may be rejected by the OWNER.
  8. The Unit Prices bid shall include such amounts as the Bidder deems proper for overhead, profit, taxes, General Conditions and such other incidentals as noted in the Contract Documents.
  9. The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Proposal Form.
  10. The Legal Status of Bidder Form contained in the Contract Documents must be submitted with each Proposal and must clearly state the legal position of a Bidder. In the case of a corporation, the home address,

## INSTRUCTIONS TO BIDDERS

name and title of all officers must be given. In the case of a partnership, show names and home addresses of all partners. If an individual, so state. Any individual bid not signed by the individual must have attached, thereto, a power of attorney evidencing authority to sign.

11. Other documents to be attached to the Proposal and made a condition thereof are identified in the Proposal. The same individual signing the Proposal shall sign these other documents.

### 1.11 MODIFICATIONS AND WITHDRAWAL OF BIDS

- A. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids. 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 his Bid, that Bidder may withdraw his Bid and the Bid Security will be returned. Thereafter, at the sole option of OWNER, that Bidder will be disqualified from further Bidding on the Work to be provided under the Contract Documents.

### 1.12 VALIDITY OF BIDS

- A. Title 62 PACSA Section 394, all bids received for the project shall remain valid for a period of 120 days from the date of bid opening.

### 1.13 AWARD OF CONTRACT

- A. OWNER reserves the right to reject any and all Bids for any reason, to waive any and all informalities not involving price, time, or changes in the Work, and the right to reject all nonconforming, non-responsive, unbalanced, or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of unit price. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- B. In evaluating Bids, OWNER shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data if requested in the Bid forms. It is OWNER's intent to accept alternates (if any are accepted) in the order in which they are listed in the Bid form but OWNER may accept them in any order or combination. OWNER has the sole discretion to reject any alternate without explanation. Subject to the approval of OWNER, the Contract will be awarded to the lowest responsive and responsible Bidder. Responsibility of Bidder will be determined on basis of past performance on Work of similar character, equipment and labor available to do the Work and financial status. Contract shall be considered to have been awarded after the approval of OWNER has been duly obtained and a formal Notice of Award duly served on the successful Bidder by OWNER. Contract shall not be binding upon OWNER until the Agreement has been duly executed by the Bidder and the duly authorized officials of OWNER.

## INSTRUCTIONS TO BIDDERS

- C. If the Contract is to be awarded, OWNER will give the successful Bidder a Notice of Award within 120 days after the day of the Bid opening, unless such other time is specified in the Advertisement for Bids.

### 1.14 SIGNING OF AGREEMENT

- A. Within 15 days after OWNER gives a Notice of Award to the successful Bidder, the CONTRACTOR shall sign and deliver the specified number of counterparts of the Agreement to OWNER with all other Contract Documents attached. Within ten (10) days thereafter, OWNER will deliver two (2) fully signed counterparts to CONTRACTOR. ENGINEER will identify, date or correct those portions of the Contract Documents not fully signed, dated or executed by OWNER and CONTRACTOR and such identification, dating or correction shall be binding on all parties.

### 1.15 PENNSYLVANIA PREVAILING MINIMUM WAGE RATES

- A. Pennsylvania Prevailing Minimum Wage Rates will apply to this work and have been included with the Contract Documents or will be issued as an addendum to the Contract Documents during Bid Phase.

### 1.16 PENNSYLVANIA STEEL PRODUCTS PROCUREMENT ACT

- A. All materials and installed equipment shall comply with the Commonwealth of Pennsylvania "Steel Products Procurement Act: Act No. 3 of 1978 as amended. It is the responsibility of the CONTRACTOR and MANUFACTURER to verify compliance with the act, and to provide documentation demonstrating compliance at the request of the OWNER. Costs associated with the replacement of non-conforming materials or installed equipment will be the responsibility of the CONTRACTOR.

### 1.17 PERFORMANCE AND PAYMENT BONDS

- A. The successful BIDDER, simultaneously with the execution of the Agreement, shall furnish a Performance Bond and a Labor and Material Payment Bond, each in an amount equal to one hundred percent (100%) of the contract price. The bonds shall be secured from a surety company acceptable to the OWNER and shall be in a form acceptable to the OWNER. Example forms of the bonds the successful BIDDER will be required to furnish are included in the project bidding documents as Sections 00 61 12 and 00 61 13.

### 1.18 PENNSYLVANIA TRADE PRACTICES ACT

- A. Any aluminum or steel products to be furnished or used for the Project under any Contract shall comply with the Pennsylvania "Trade Practices Act" (71 P.S. §773, 101, et.seq.)

**INSTRUCTIONS TO BIDDERS**

**PART 2**      **PRODUCTS (NOT USED)**

**PART 3**      **EXECUTION (NOT USED)**

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 00 42 43  
BID FORM**

**PROJECT IDENTIFICATION: Aubrey Ave Ejector Station Replacement**

THIS BID IS SUBMITTED TO: Mon Valley Sewage Authority, 20 South Washington Street, Donora, PA 15033, hereinafter referred to as OWNER.

1. Enter Into Agreement

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. BIDDER Accepts

BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 120 days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within 15 days after the date of OWNER's Notice of Award.

3. BIDDER's Representations

In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

- a. BIDDER has examined and carefully studied the Bidding Documents and the following Addenda receipt of all which is hereby acknowledged:

| Addendum No. | Date of Release | Signature |
|--------------|-----------------|-----------|
| _____        | _____           | _____     |
| _____        | _____           | _____     |

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name* *signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name* *signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name* *signature*

**BID FORM**

| Addendum No. | Date of Release | Signature |
|--------------|-----------------|-----------|
| _____        | _____           | _____     |
| _____        | _____           | _____     |
| _____        | _____           | _____     |

- b. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work.
- c. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- d. BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02. of the General Conditions.

BIDDER accepts the limitations set forth in paragraph GC-4.02. of the General Conditions with respect to the reports and drawings described in paragraph SGC 4.02. of the Supplementary Conditions.

BIDDER acknowledges that such reports and drawings are not Contract Documents and may not be complete for BIDDER's purposes.

BIDDER acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated with respect to existing Underground Facilities at or contiguous to the site.

- e. BIDDER is aware of the general nature of Work to be performed by OWNER and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name* *signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name* *signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name* *signature*

- f. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- g. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

Where conflicts, errors, ambiguities or discrepancies have been discovered in or between Contract Documents and/or other related documents, and where said conflicts, etc., have not been resolved through the interpretations or clarifications by of insufficient time or otherwise, BIDDER has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost.

- h. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

4. Bid Prices.

- a. **Lump Sum Base Bid:** Installation of a prefabricated pump station, a 5' diameter precast wet well, necessary final piping connections, miscellaneous electrical work, and restoration and appurtenances as required to complete construction. The full replacement of this pump station will solve the ongoing performance issues and maintenance requirements MVSA is currently facing with the existing ejector station.

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name signature*

**BID FORM**

| <i>Specification Section</i> | <i>Item</i>                      | <i>Manufacturer</i>         |
|------------------------------|----------------------------------|-----------------------------|
| <i>Div 40</i>                | <i>Pre-Packaged Pump Station</i> | <i>Smith &amp; Loveless</i> |
|                              |                                  |                             |
|                              |                                  |                             |
|                              |                                  |                             |

BIDDER shall complete the WORK, including the above-listed items, in accordance with the Contract Documents for the **TOTAL PRICE** of:

\_\_\_\_\_ (\$ \_\_\_\_\_)  
*(use words)* *(use figures)*

5. Completion.

BIDDER agrees that the work will be substantially complete within 180 consecutive calendar days (6 months) after the date when the Contract Times commences to run as provided in paragraph 2.03 and 14.07. of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.09 and 14.10 of the General Conditions within 210 (7 months) consecutive calendar days after the date when the Contract Times commences to run.

BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.

6. Attached Documents.

The following documents are attached to and made a condition of this Bid:

- a. This Bid Form and the Required Bid Security in the form of a certified or cashiers check or bid bond in an amount not less than ten (10) percent of the bid price.
- b. Non-collusion Affidavit
- c. Legal Status of Bidder

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name* *signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name* *signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name* *signature*

7. Major Equipment Items.

In connection with major items of equipment to be furnished and installed in this Project, BIDDER expressly agrees to the following provisions:

- a. The OWNER shall furnish the prefabricated pump station. The Bid shall be inclusive of installation pricing only for this equipment.
- b. That the Bid stated above includes the furnishing and installing of major equipment furnished by the Supplier which BIDDER has selected from those suppliers listed in Section 01 1200 Major Equipment Suppliers.
- b. That the installed price of the equipment includes the cost (if any) of changes in the structure, buildings, piping, wiring, accessories, etc., necessary to accommodate the particular equipment proposed.

8. Address for Communications.

Communications concerning this Bid shall be addressed to the person and to the address of BIDDER indicated below:

Name (print): \_\_\_\_\_  
Phone No.: \_\_\_\_\_  
Address: \_\_\_\_\_

9. Defined Terms.

Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the Instructions, the General Conditions and/or the Supplementary Conditions to the General Conditions.

SUBMITTED on \_\_\_\_\_, 2026.

State CONTRACTOR License No. \_\_\_\_\_.

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ *signature* title \_\_\_\_\_

Individual \_\_\_\_\_ *printed name* \_\_\_\_\_ *signature*

Partnership \_\_\_\_\_ *name* by \_\_\_\_\_ *signature* Partner

Joint Venture \_\_\_\_\_ *name* by \_\_\_\_\_ *signature* title \_\_\_\_\_

**BID FORM**

If BIDDER is:

**An Individual**

By \_\_\_\_\_ (SEAL)  
*(Individual's name)*

doing business as \_\_\_\_\_

Business address: \_\_\_\_\_

**A Partnership**

By \_\_\_\_\_ (SEAL)  
*(Firm name)*

\_\_\_\_\_  
*(General partner)*

Business address: \_\_\_\_\_

**A Corporation**

By \_\_\_\_\_ (SEAL)  
*(Corporation name)*

\_\_\_\_\_  
*(State of incorporation)*

By \_\_\_\_\_ (SEAL)  
*(Name of person authorized to sign)*

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

(Corporate Seal)

Attest \_\_\_\_\_  
*(Secretary)*

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name signature*

Business address: \_\_\_\_\_

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

**A Joint Venture**

By \_\_\_\_\_ (Name) (SEAL)

\_\_\_\_\_  
(Address)

By \_\_\_\_\_ (Name) (SEAL)

\_\_\_\_\_  
(Address)

NOTE: Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.

NOT TO BE USED FOR BIDDING PURPOSES

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ *signature* title \_\_\_\_\_

Individual \_\_\_\_\_ *printed name* \_\_\_\_\_ *signature*

Partnership \_\_\_\_\_ *name* by \_\_\_\_\_ *signature* Partner

Joint Venture \_\_\_\_\_ *name* by \_\_\_\_\_ *signature* title \_\_\_\_\_

**BID FORM**

**INSTRUCTIONS FOR NONCOLLUSION AFFIDAVIT**

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

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name* \_\_\_\_\_  
*signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name* \_\_\_\_\_  
*signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name* \_\_\_\_\_  
*signature*

**NONCOLLUSION AFFIDAVIT**

Required by the Mon Valley Sewage Authority and authorized by the Antibid-Rigging Act, Act No. 1983-45, Section 7 (73 P.S. 1617).

BEFORE ME, a Notary Public, personally appeared the undersigned Bidder (the "Bidder"), who being duly authorized to make this Affidavit on behalf of its owners, directors, and officers and being duly sworn according to law, deposes and says that, by submission of the bid to which this Affidavit is attached, the Bidder and each person signing on behalf of the Bidder; and if a joint bid, each signer jointly and severally as Bidders, certifies as to the organization of each under penalty or perjury, that to the best of the knowledge, information and belief of the Bidder, as follows:

SECTION 1. The prices submitted in the attached bid have been calculated and are hereby submitted independently and without collusion, consultation, communication or agreement of any kind with any competitor, for the purposes of restricting competition as to any matter relative to prices, escalations or quotations, with any competitor to the Bidder.

SECTION 2. Unless otherwise required by law, the prices which have been calculated and quoted in the attached bid have not been disclosed knowingly by the Bidder prior to submission of the bid, and will not be disclosed knowingly by the Bidder after the submission and prior to the opening of the bid, either directly or indirectly to any competitor of the Bidder or to any other Bidder.

SECTION 3. No attempt has been made prior to submission of the bid or will be made subsequent to the submission of the bid by the Bidder to induce in any way any other person, association, partnership, joint venture or corporation to submit or refrain from submitting a bid for the purpose of restricting competition.

SECTION 4. That the Bidder in preparation and submission of the attached bid to the Mon Valley Sewage Authority has not engaged in any "bid-rigging" activity as the same are defined in the Antibid-Rigging Act, Act No. 1983-45, Section 2 (73 P.S. 1612).

SECTION 5. The Bidder, its affiliates, subsidiaries, officers, directors and employees, and any person signing on behalf of the Bidder, have not been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction involving conspiracy or collusion with respect to bidding on any public contract within the last three (3) years, except as are listed on the attachment, attached hereto and made a part hereof.

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name* \_\_\_\_\_  
*signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name* \_\_\_\_\_  
*signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name* \_\_\_\_\_  
*signature*

**BID FORM**

If any such person has been convicted or found liable for any such prohibited act, the same does not prohibit the Mon Valley Sewage Authority from awarding a contract to that person, but may be a ground for consideration on the question of whether the Mon Valley Sewage Authority should decline to award a contract to that person on the basis of lack of responsibility on that person.

SECTION 6. This Affidavit is made and submitted to comply with Section 7 of Act. No. 1983-45 of the Commonwealth of Pennsylvania (73 P.S. 1617) and all amendments or revisions thereto and the rules and regulations authorized thereunder, in order to permit the Mon Valley Sewage Authority to act thereunder as a governmental agency. Any misstatement in this Affidavit is, and shall be treated as, a fraudulent concealment from the Mon Valley Sewage Authority of the true facts relating to the submission of bids for this contract.

ATTEST OR WITNESS:

\_\_\_\_\_  
Bidder

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF \_\_\_\_\_

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

END OF SECTION

**BIDDER EXECUTING BID MUST COMPLETE THE FOLLOWING (EACH PAGE)**

Corporation Name \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*signature*

Individual \_\_\_\_\_  
*printed name* *signature*

Partnership \_\_\_\_\_ by \_\_\_\_\_ Partner  
*name* *signature*

Joint Venture \_\_\_\_\_ by \_\_\_\_\_ title \_\_\_\_\_  
*name* *signature*

**SECTION 00 43 13  
BID BOND FORM**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, \_\_\_\_\_

\_\_\_\_\_ as Principal, hereinafter called the Principal, and \_\_\_\_\_

\_\_\_\_\_ a corporation duly organized under the laws of the State of \_\_\_\_\_

and duly authorized to transact business in the Commonwealth of Pennsylvania, as Surety, hereinafter called the Surety, are held and firmly bound unto the MON VALLEY SEWAGE AUTHORITY as OWNER, hereinafter called the OWNER, in the sum of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_),

which is equivalent to ten (10) percent of the total bid price, for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a Bid for the **Aubrey Ave Ejector Station Replacement Project** being undertaken by the OWNER.

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

Signed and Sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

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

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

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

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

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

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

**SECTION 00 43 45  
LEGAL STATUS OF BIDDER**

This Proposal is submitted in the name of:

(Print) \_\_\_\_\_

The undersigned hereby designates below his business address to which all notices, directions or other communications may be served or mailed:

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

The undersigned hereby declares that he has legal status checked below:

- SOLE PROPRIETOR
- SOLE PROPPRIETOR DOING BUSINESS UNDER AN ASSUMED NAME
- CO-PARTNERSHIP  
The Assumed Name of the Co-Partnership is registered in the County of \_\_\_\_\_, Pennsylvania
- CORPORATION INCORPORATED UNDER THE LAWS OF THE STATE OF \_\_\_\_\_ The Corporation is
  - authorized to conduct business in the Commonwealth of Pennsylvania
  - not now authorized to conduct business in the Commonwealth of Pennsylvania
  - possess all required licenses for the work being bid
  - limited liability corporation

The name, titles, and home addresses of all persons who are officers or partners in the organization are as follows:

| NAME AND TITLE | HOME ADDRESS |
|----------------|--------------|
| _____          | _____        |
| _____          | _____        |
| _____          | _____        |

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

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

Printed Name of Signer \_\_\_\_\_

Title \_\_\_\_\_

**SECTION 00 51 00  
NOTICE OF AWARD**

To: \_\_\_\_\_

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

Attention: \_\_\_\_\_

Project: Aubrey Ave Ejector Station Replacement

Gentlemen:

Pursuant to the provisions of Article 1.11 of the Instructions to Bidders, you are hereby notified that the Board of Directors of the Mon Valley Sewage Authority (MVSA) during a scheduled and duly advertised Board Meeting held on \_\_\_\_\_, 20\_\_, directed the acceptance of your Bid for the above referenced Project in the amount of \$ \_\_\_\_\_ (words and numbers) contingent upon the timely securement and final settlement of the necessary financing for the Project and complete and timely compliance with the conditions set forth below as well as any other conditions or requirements set forth in the Documents. This project shall consist of:

Aubrey Ave Ejector Station Replacement Project: Installation of a prefabricated pump station, a 5' diameter precast wet well, necessary final piping connections, miscellaneous electrical work, and restoration and appurtenances as required to complete construction. The full replacement of this pump station will solve the ongoing performance issues and maintenance requirements MVSA is currently facing with the existing ejector station.

as delineated in your Bid submitted to the MVSA on \_\_\_\_\_, 20\_\_. Please comply with the following conditions within fifteen (15) days of the date of this Notice of Award; that is by \_\_\_\_\_, 20\_\_.

1. Deliver to the ENGINEER four (4) fully executed counterparts of the Agreement (attached) including all the Contract Documents.
2. Deliver with each executed Agreement the Contract Security (Bonds), on the form included in the Contract Documents, as specified in the General Conditions (Article 5) and Supplementary Conditions (Article SC-5).
3. Deliver with each executed Agreement the Insurance Certificates (and other evidence of insurance) as specified in General Conditions (Article 5) or the Supplementary General Conditions (Article SC-5).
4. Please do not date Agreement and Contract Security (Bonds), as these will be dated by OWNER when executed by it.

It is important to comply with these conditions and time limits as failure to comply with these conditions within the time specified will entitle OWNER to consider your Bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

**NOTICE OF AWARD**

Within ten (10) days after you comply with these conditions, OWNER will return to you one (1) fully signed counterpart of the Agreement with the Contract Documents attached.

A pre-construction meeting will be scheduled after receipt of all executed counterparts of the Agreement from each contractor. In accordance with paragraph 2.05 of the General Conditions, please submit to the ENGINEER the required schedules prior to the scheduling of a Preconstruction Meeting.

If you have any questions regarding the content of this correspondence or the Agreement, please call Mr. Jason McBride, P.E. at (412) 454-5566, or Mr. Carter Johnson, Wade Trim, Inc., at (412) 454-5566.

Mon Valley Sewage Authority  
\_\_\_\_\_  
(Owner)

By: \_\_\_\_\_  
(Authorized Signatory)

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

cc: Jason McBride, P.E., Wade Trim, Inc.

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 00500  
AGREEMENT**

**AUBREY AVE EJECTOR STATION REPLACEMENT PROJECT**

This Agreement, made and entered into this \_\_\_\_ day of \_\_\_\_ in the year 20\_\_ by and between the Mon Valley Sewage Authority, hereinafter called OWNER, and \_\_\_\_\_, hereinafter called CONTRACTOR, for the following contract:

Aubrey Ave Ejector Station Replacement Project

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

**ARTICLE 1. WORK**

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents.

The Project for which the Work under the Contract Documents may be the whole or only a part is described more fully in the Contract Specifications and on the Contract Drawings.

**ARTICLE 2. ENGINEER**

The Project has been designed by Wade Trim, Inc., Four Gateway Center, 444 Liberty Avenue, Suite 300, Pittsburgh, PA, 15222; telephone (412) 454-5566, who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents, or approved by the OWNER, in connection with completion of the Work in accordance with the Contract Documents.

**ARTICLE 3. CONTRACT TIMES**

- 3.1 The Work will be substantially completed within **180 consecutive calendar days (6 months)** after the date noted in the Notice to Proceed and completed and ready for final payment in accordance with paragraphs 14.09 and 14.10 of the General Conditions within **210 consecutive calendar days (7 months)** after the date when the Contract Times commence to run.
- 3.2 Liquidated Damages. OWNER and CONTRACTOR 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 for final completion in the Contract Documents above. They also recognize the delays, expense and difficulties involved in proving 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 **One Thousand Five-Hundred Dollars (\$1,500.00)** for each day that expires after the time specified in the Contract Documents for Final Completion until the Work is finally complete.

## AGREEMENT

### ARTICLE 4. CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraph 4.1. below:

4.1 For all Work, a Lump Sum of \$ \_\_\_\_\_  
(Use Figures)

\_\_\_\_\_  
(Words)

All specific cash allowances are included in the above price and have been computed in accordance with Article 11 of the General Conditions.

### ARTICLE 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment to ENGINEER for review and approval by the third day of the month following the month for which the application is made. ENGINEER shall submit the approved application to OWNER for review and approval at least 7 days prior to the OWNER's regularly scheduled meeting on the third Thursday of each month.

5.1 Progress Payments; Retainage. OWNER shall make monthly progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended for payment by ENGINEER, during construction as provided in paragraphs 5.1.1 and 5.1.2 below. All such payments will be measured as provided in the approved Schedule of Values.

5.1.1 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 in accordance with paragraph 14.03 of the General Conditions.

5.1.1.1 Ninety (90) percent of Work completed and materials stored (with the balance being retainage). If 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 determined that as long as the character and progress of the Work remain satisfactory to them,

Retainage will be reduced to five (5) percent of all of the Work completed to date and for subsequent future progress payments until Substantial Completion.

5.1.2 Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to ninety-seven and one-half (97-1/2) percent of the Contract Price (with the balance being retainage), less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.02 and 14.03 of the General Conditions.

- 5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraphs 14.09 and 14.10 of the General Conditions, OWNER shall pay the remainder of the Contract.

**ARTICLE 6. CONTRACTOR'S REPRESENTATIONS**

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

- 6.1 CONTRACTOR has thoroughly examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."
- 6.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.
- 6.3 CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- 6.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which, if available, have been identified in the Supplementary Conditions.

CONTRACTOR accepts the determination set forth in paragraph 4.02 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.02 of the General Conditions.

CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes.

CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated with respect to Underground Facilities at or contiguous to the site.

CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto.

CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

## **AGREEMENT**

- 6.5 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.
- 6.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 6.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies in the Contract Documents and the written resolution thereof by ENGINEER through issued addendum or addenda is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work. When said conflicts, etc., have not been resolved through interpretation or clarification by ENGINEER, because of insufficient time or otherwise, CONTRACTOR has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost; and said greater cost is included in the Contract Price.

## **ARTICLE 7. CONTRACT DOCUMENTS**

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 7.1 This Agreement.
- 7.2 Performance, Payment, and other Bonds and insurance certificates.
- 7.3 Notice of Award
- 7.4 Notice to Proceed.
- 7.5 General Conditions.
- 7.6 Supplementary Conditions.
- 7.7 Specifications bearing the title Aubrey Ave Ejector Station Replacement Project and consisting of the divisions and sections, as listed in table of contents thereof.
- 7.8 Drawings consisting of a cover sheet and drawing sheets with each sheet bearing the following general title: Aubrey Ave Ejector Station Replacement Project.
- 7.9 Addenda issued prior to bid and listed in the CONTRACTOR'S Bid Form.
- 7.10 CONTRACTOR's Bid.
- 7.11 Required documentation submitted by CONTRACTOR prior to Notice of Award.
- 7.12 Maintenance Bonds.

- 7.13 Final Record Documents and Close-out Documents.
- 7.14 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached thereto:

All written amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.05 of the General Conditions.

There are no Contract Documents other than those listed above in this Article. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.05 of the General Conditions.

**ARTICLE 8. MISCELLANEOUS**

- 8.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 8.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically, but without limitation, moneys that may become due and moneys that are 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.
- 8.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- 8.4 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.
- 8.5 Litigation: In the event of any dispute between the Owner and the Contractor which is not amicably resolved and which results in litigation, the parties agree that the Court of Common Pleas of Washington County, Pennsylvania, is the sole legal forum and shall have exclusive and sole jurisdiction and venue over such litigation.



**AGREEMENT**

Attest \_\_\_\_\_ (Corporate SEAL)

**A Joint Venture**

\_\_\_\_\_  
*Name of Joint Venture*

by \_\_\_\_\_ (SEAL)  
*Name*

by \_\_\_\_\_ (SEAL)  
*Name*

Address for giving Notice: \_\_\_\_\_  
\_\_\_\_\_

Phone No.: \_\_\_\_\_

Attest \_\_\_\_\_

NOTE: If CONTRACTOR is a corporation, attach evidence of authority to sign.

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 00 55 00  
NOTICE TO PROCEED**

To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_, 2026

Attention: \_\_\_\_\_

Project: **Aubrey Ave Ejector Station Replacement**

Gentlemen:

Please note that the Contract Time under the above Contract will commence to run on \_\_\_\_\_, 20\_\_. Within ten (10) days of this date you are to start performing the Work. The dates of Substantial Completion and Final Completion are set forth in the Agreement; they are \_\_\_\_\_, **20\_\_**, and \_\_\_\_\_, **20\_\_**, **respectively**.

In accordance with paragraph 2.05 of the General Conditions, please submit to ENGINEER a Schedule of Values, a detailed Construction Schedule (CPM) for the entire Project and in sufficient detail to identify individual tasks (equipment installation, specific subcontractors, milestones, etc.) and the relationship between tasks.

Also, in accordance with paragraph 2.05 of the General Conditions, please request a Preconstruction Meeting from ENGINEER prior to delivery of any materials or start of any construction. A minimum of ten (10) full working days notice is required to set up the Preconstruction Meeting. Also, please notify ENGINEER three (3) full working days in advance of any staking requirements or other activity on the Project.

Work at the site must be started by \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Mon Valley Sewage Authority  
(Owner)

By: \_\_\_\_\_  
(Authorized Signature)

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

cc: Jason McBride, P.E., Wade Trim, Inc.

**SECTION 00 61 12  
PERFORMANCE BOND**

Bond No. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, That we, \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business in the Commonwealth of Pennsylvania, hereinafter called the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business in the Commonwealth of Pennsylvania, as Surety, hereinafter called "Surety," are held and firmly bound unto \_\_\_\_\_, as Obligee, and hereinafter called "Obligee," in the just and full sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_), lawful money of the United States of America, to be paid to the said Obligee, to which payment well and truly to be made, we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that, WHEREAS, the above Principal has entered into a contract with the said Obligee, dated the \_\_\_\_ day of \_\_\_\_\_, 20\_\_ for \_\_\_\_\_

\_\_\_\_\_ which contract is herein referred to and made a part hereof as fully and to the same extent as if the same were entirely written herein, and

WHEREAS, it was one of the conditions of the award of the said Obligee, pursuant to which said contract was entered into, that these presents should be executed.

AND THE SAID SURETY, for value received, hereby stipulates and agrees that no change, extension of time, or any other forbearance, alteration or addition to the terms of the contract or to the Work to be performed thereunder or the Contract Documents accompanying the same shall in anywise affect its obligations on this Bond, and it does hereby waive notice of any such change, extension of time, or any other forbearance, alteration or addition to the terms of the contract or to the Work or to the Contract Documents.

NOW, THEREFORE, if the above Principal shall in all respects comply with the terms and conditions of said contract, and his (their or its) obligations thereunder, including the Contract Documents therein referred to and made a part thereof, and such alterations as may be made in such contract or Contract Documents, as herein or therein provided for, then this obligation shall be void; otherwise, this Bond and obligation shall be and remain in full force and effect.

**PERFORMANCE BOND**

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_.

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
Witness for CONTRACTOR

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

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

By \_\_\_\_\_

\_\_\_\_\_  
Witness for Surety

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

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

By \_\_\_\_\_

\_\_\_\_\_  
Attorney-In-Fact (Seal)

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address of Surety

\_\_\_\_\_  
City Zip Code

\_\_\_\_\_  
City ZipCode

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
Telephone

**SECTION 00 61 13  
LABOR AND MATERIAL PAYMENT BOND**

Bond No. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, That we, \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business in the Commonwealth of Pennsylvania, hereinafter called the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business in the Commonwealth of Pennsylvania, as Surety, hereinafter called "Surety," are held and firmly bound unto \_\_\_\_\_, as Obligee, and hereinafter called "Obligee," in the just and full sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_), lawful money of the United States of America, to be paid to the said Obligee, to which payment well and truly to be made, we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that, WHEREAS, the above Principal has entered into a contract with the said Obligee, dated the \_\_\_\_ day of \_\_\_\_\_, 20\_\_ for

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ which contract is herein referred to and made a part hereof as fully and to the same extent as if the same were entirely written herein, and

WHEREAS, it was one of the conditions of the award of the said Obligee, pursuant to which said contract was entered into, that these presents should be executed.

AND WHEREAS, this Bond is given in compliance with and subject to the provisions of the Public Works Contractor's Bond Law of 1967 (8 P.S. 193; 1967 P.L. 869, No 385), as amended, including all notices, time limitation provisions and other requirements set forth therein, which are incorporated herein by reference.

AND THE SAID SURETY, for value received, hereby stipulates and agrees that no change, extension of time, or any other forbearance, alteration or addition to the terms of the contract or to the Work to be performed thereunder or the Contract Documents accompanying the same shall in anywise affect its obligations on this Bond, and it does hereby waive notice of any such change, extension of time, or any other forbearance, alteration or addition to the terms of the contract or to the Work or to the Contract Documents.

NOW, THEREFORE, the condition of this obligation is such that if all claimants as defined in Public

**LABOR AND MATERIAL PAYMENT BOND**

Works Contractor's Bond Law of 1967 (8 P.S. 193; 1967 P.L. 869, No 385), as amended, are timely paid for all labor and material used or reasonably required for use in the performance of the contract, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_.

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
Witness for CONTRACTOR

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

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

By \_\_\_\_\_

\_\_\_\_\_  
Witness for Surety

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

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

By \_\_\_\_\_

\_\_\_\_\_  
Attorney-In-Fact (Seal)

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address of Surety

\_\_\_\_\_  
City Zip Code

\_\_\_\_\_  
City ZipCode

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
Telephone

**SECTION 00 63 25  
SUBSTITUTION REQUEST FORM**

SPECIFICATION SECTION # \_\_\_\_\_

ARTICLE # \_\_\_\_\_

SPECIFIED PRODUCT \_\_\_\_\_

PROPOSED SUBSTITUTION \_\_\_\_\_

- A. Does specified product exceed, in any respect proposed substitution?  Y  N
- B. Does substitution affect dimensions shown on Plans?  Y  N
- C. Does substitution affect other trades more than original product?  Y  N
- D. Does warranty differ from that specified?  Y  N
- E. Does substitution affect cost to OWNER?  Y  N
- F. Does substitution result in any license fee or royalty?  Y  N

If you indicated "Yes" to any of the items above, attach thorough explanation on your Company letterhead, as follows:

1. Explain any differences between proposed substitution and specified product.
2. Summarize experience with product and manufacturer in Project area.
3. Attach complete technical data and literature.

The undersigned states that the function, appearance, and quality of the proposed substitution is equivalent or superior to the specified item, and that all information above and attached is true and correct.

Submitted by: \_\_\_\_\_ Date Submitted: \_\_\_\_\_

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

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

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

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

**For use by ENGINEER**

| ENGINEER'S RESPONSE   | RESPONSE REQUIRED OF CONTRACTOR   |
|---|-----------------------------------|
| No Exceptions Taken <input type="checkbox"/>  | None <input type="checkbox"/>     |
| Note Markings <input type="checkbox"/>  | Confirm <input type="checkbox"/>  |
| Comments Attached <input type="checkbox"/>  | Resubmit <input type="checkbox"/> |
| Rejected <input type="checkbox"/>   |                                   |
| <p>Engineer's review is for general conformance with the design concept and contract documents. Markings or comments should not be construed as relieving the contractor from compliance with the project plans and specifications, nor departures therefrom. The contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing his work in a safe manner.</p> |                                   |
| <p>By _____ Date _____</p>  |                                   |



**SECTION 00 65 16  
CERTIFICATE OF SUBSTANTIAL COMPLETION**

Project: Aubrey Ave Ejector Station Replacement

OWNER: Mon Valley Sewage Authority

CONTRACTOR: \_\_\_\_\_

Contract Date: \_\_\_\_\_ Project No.: \_\_\_\_\_

Date of Issuance: \_\_\_\_\_

Project or Designated Portion Shall Include: \_\_\_\_\_

The Work performed under this Contract has been reviewed and found to be Substantially Complete. The date of Substantial Completion of the Project or portion thereof designated above is hereby established as \_\_\_\_\_ which is also the date of commencement of applicable warranties required by the Contract Documents except as stated below.

**DEFINITION OF DATE OF SUBSTANTIAL COMPLETION**

The date of Substantial Completion of the Work or designated portion thereof, is the date certified by ENGINEER when construction is sufficiently complete, in accordance with the Contract Documents, so OWNER can occupy or utilize the Work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by ENGINEER is attached hereto. The failure to include any items on such list does not alter the responsibility of CONTRACTOR to complete all Work in accordance with the Contract Documents. The date of commencement of warranties for items on the attached list will be the date of final payment unless otherwise agreed to in writing.

The responsibilities of OWNER and CONTRACTOR for security, maintenance, heat, utilities, damage to the Work and insurance shall be as follows:

OWNER shall have 45 days after receipt of this certificate during which he may make written objection to ENGINEER and CONTRACTOR as to any provisions of the certificate or attached list. Such objection may be cause for this Certificate of Substantial Completion to be null and void.

\_\_\_\_\_  
*Engineer*                                      *Authorized Representative*                                      *Date*

**SECTION 00 65 20  
SWORN STATEMENT**

COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF WESTMORELAND

\_\_\_\_\_ being duly sworn, deposes and says:

That \_\_\_\_\_ is the (CONTRACTOR)  
(Subcontractor) for an improvement to the following described real property situated in Washington  
County, Pennsylvania described as follows: \_\_\_\_\_

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

*(Insert Legal Description of Property)*

That the following is a statement of each Subcontractor and Supplier and laborer, for which the payment of wages or fringe benefits and withholdings is due but unpaid, with whom the (CONTRACTOR) (Subcontractor) has (contracted) (subcontracted) for performance under the contract with the OWNER or lessee thereof, and that the amounts due to the persons as of the date hereof are correctly and fully set forth opposite their names, as follows:

| Name of Subcontractor, Supplier, or Laborer | Type of Improvement Furnished | Total Contract Price | Amount Already Paid | Amount Currently Owing | Balance to Complete (optional) | Amount of Laborer Wages Due but Unpaid | Amount of Laborer Fringe Benefits and Withholdings Due But Unpaid |
|---|-------------------------------|----------------------|---------------------|------------------------|--------------------------------|--|---|
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
|   |                               |                      |                     |                        |                                |  |   |
| TOTALS:                                     |                               |                      |                     |                        |                                |  |   |

*(Some columns are not applicable to all persons listed)*

(Continued)

That the CONTRACTOR has not procured material from, or subcontracted with, any person other than those set forth on the reverse side and owes no money for the improvement other than the sums set forth on the reverse side.

Deponent further says that he or she makes the foregoing statement as the (CONTRACTOR) (Subcontractor) or as \_\_\_\_\_ of the (CONTRACTOR) (Subcontractor) for the purpose of representing to the OWNER or lessee of the described on the reverse side premises and his or her agents that the property described on the reverse side is free from claims of construction liens, or the possibility of construction liens, except as specifically set forth on the reverse side and except for claims of construction liens by laborers which may be provided pursuant to the Commonwealth of Pennsylvania HB 1637 of 2005 (Act 52), an amendment to the Mechanics Lien Law of 1963 (P.L. 1175, No 497).

WARNING TO OWNER: AN OWNER OR LESSEE OF THE PROPERTY DESCRIBED ON THE REVERSE SIDE MAY NOT RELY ON THIS SWORN STATEMENT TO AVOID THE CLAIM OF A SUBCONTRACTOR, SUPPLIER, OR LABORER WHO HAS PROVIDED A NOTICE OF FURNISHING OR A LABORER WHO MAY PROVIDE A NOTICE OF FURNISHING PURSUANT TO PENNSYLVANIA HB 1637 OF 2005, AS AMMENDED, TO THE DESIGNEE OR TO THE OWNER OR LESSEE IF THE DESIGNEE IS NOT NAMED OR HAS DIED.

\_\_\_\_\_  
(Deponent)

WARNING TO DEPONENT: A PERSON, WHO WITH INTENT TO DEFRAUD, GIVES A FALSE SWORN STATEMENT IS SUBJECT TO CRIMINAL PENALTIES AS PROVIDED IN PENNSYLVANIA HB 1637 OF 2005, AS AMMENDED.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_ County, Pennsylvania

My Commission Expires \_\_\_\_\_

INSTRUCTIONS

1. A Sworn Statement in the preceding form must be provided before any CONTRACTOR or Subcontractor can file a Complaint, Cross-Claim, or Counter-Claim to enforce a construction lien.
2. An OWNER or lessee may withhold payment to a CONTRACTOR or Subcontractor who has not provided a Sworn Statement. An OWNER or lessee may withhold from a CONTRACTOR or Subcontractor who has provided a Sworn Statement the amount sufficient to pay all sums shown on the statement as owing Subcontractors, Suppliers, and laborers, or the amount shown to be due to lien claimants who have provided Notices of Furnishing pursuant to Pennsylvania Act 52, Mechanics Lien Law, as amended.
3. An OWNER or lessee may rely on a Sworn Statement to avoid a lien claim unless the lien claimant has provided the OWNER or lessee with a Notice of Furnishing pursuant to Pennsylvania Act 52, Mechanics Lien Law, as amended.
4. If the contract provides for payments by the OWNER to the general contractor, if any, in the normal course of construction, but the OWNER elects to pay lien claimants directly, the first time the OWNER elects to make payment directly to a lien claimant he or she shall provide at least 5 business days' notice to the general contractor of the intention to make direct payment. Subsequent direct disbursements to lien claimants need not be preceded by the 5-day notice provided in this section unless the OWNER first returns to the practice of paying all sums to the general contractor.

**SECTION 00 72 00  
GENERAL CONDITIONS**

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**Article 1 Definitions**

**1.01 Defined Terms**

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

**Addenda** -- Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Contract Documents.

**Agreement** -- The written Agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

**Application and Certificate for Payment** -- The form included in the Contract Documents which is to be used by CONTRACTOR in requesting progress or final payment and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

**Asbestos** -- Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

**Bid** -- The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

**Bidding Requirements** -- The Advertisement for Bids, Instructions to Bidders, Supplemental Instructions to Bidders, Bid, Legal Status of Bidder, Bid Bond, and any other documents identified in the Bid Form, to be submitted with the Bid.

**Bonds** -- Bid, Performance and Payment bonds and other instruments of security.

**Change Order** -- A written order to the CONTRACTOR signed by the OWNER and the ENGINEER, issued after execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Price or the Contract Time. The Contract Price and Contract Time

## GENERAL CONDITIONS

may be changed only by Change Order. A Change Order signed by the CONTRACTOR indicates his agreement therewith, including the adjustment in the Contract Price or Contract Time.

**Construction Change Requisition** -- A written directive issued by the ENGINEER which clarifies or interprets the Contract Documents or requests a change in the Work and may initiate a Work Order and/or Change Order. In no circumstances shall a Construction Change Requisition be construed as an order to proceed with the Work.

**Contract Documents** -- The Bidding Requirements, Agreement, Performance and other Bonds, Notice of Award, Notice to Proceed, Contract Forms, Conditions of the Contract, Specifications, Plans, Addenda, Documentation submitted by CONTRACTOR prior to Notice of Award and any Written Amendments, including Change Orders, Work Orders or Construction Change Requisitions duly delivered after execution of Agreement.

**Contract Price** -- The monies or other considerations payable by OWNER to CONTRACTOR for completion of acceptable Work in accordance with the Contract Documents as stated in the Agreement.

**Contract Time** -- The number of days or the date stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.11.

**CONTRACTOR** -- The person, firm or corporation with whom OWNER has entered into the Agreement.

**Day** -- A calendar day of 24 hours measured from midnight to the next midnight.

**Defective** -- An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment.

**Drawings** -- That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other Contractor submittals are not Drawings as so defined.

**Effective Date of Agreement** -- The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

**ENGINEER** -- The person, firm, or corporation identified in the Supplemental Instructions to Bidders.

**Field Order** -- A written order issued by ENGINEER which clarifies or interprets the Contract Documents or orders minor changes in the Work in accordance with paragraphs 9.04 and 9.05 but which does not involve a change in the Contract Price or the Contract Time.

**General Requirements** -- Specification Sections in Division 1 of the Specifications.

## GENERAL CONDITIONS

**Laws and Regulations; Laws or Regulations** -- Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

**Milestone** -- A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of the Work.

**Notice of Award** -- The written notice by OWNER to the apparent successful Bidder stating that, upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

**Notice to Proceed** -- A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform his obligation under the Contract Documents.

**OWNER** -- The public body or authority, public agency as defined by Act 254 of PA 1980 (MCLA 125.1651 et seq.), corporation, limited liability company, association, partnership, or individual with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided and as identified in the Supplemental Instructions to Bidders.

**Partial Utilization** -- Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

**Plans** -- The Drawings which show the extent, character and Scope of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by the ENGINEER or OWNER.

**Project** -- The total construction of which the Work to be provided under the Contract Documents may be the whole or a part as indicated elsewhere in the Contract Documents.

**Project Manual** -- The volume assembled for the Project which includes: Part I - Bidding Requirements, Part II - Contract Forms, Part III - Conditions of the Contract and Part IV - Specifications.

**Proposal** -- The offer or Bid of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

**Radioactive Material** -- Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 as amended.

**Resident Project Representative** -- The authorized representative of ENGINEER who may be assigned to the site or any part thereof.

**Samples** -- Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

**Shop Drawings** -- All drawings, diagrams, illustrations, schedules and other data or information required by the Contract Documents which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

## GENERAL CONDITIONS

**Specifications** -- The Contract Documents which consist of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

**Subcontractor** -- An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

**Substantial Completion** -- The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by his definitive Certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it was intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.11. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

**Supplemental General Conditions** -- The part of the Contract Documents which amends or supplements these General Conditions.

**Supplier** -- A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct contract with CONTRACTOR, or with any Subcontractor, or with OWNER, to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

**Underground Facilities** -- All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

**Unit Price Work** -- Work to be paid for on the basis of unit prices.

**Work** -- The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing, or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

**Work Order** -- A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.03 or to emergencies under paragraph 6.18. A Work Order will not change the Contract Price or Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Order will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.01.

**Written Amendment** -- (a) A written amendment of the Contract Documents signed by OWNER and CONTRACTOR (b) a Change Order, or (c) a Field Order. A Written Amendment may only be issued after the effective date of the Agreement and normally deals with non-engineering or non-technical rather than strictly construction related aspects of the Contract Documents.

## GENERAL CONDITIONS

### 1.02 Terminology

The following words, terms, or phrases are not defined but, when used in the Contract Documents, have the following meaning:

Whenever in the Contract Documents the terms “as ordered,” “as directed,” “as required,” “as allowed,” “as approved” or terms of like effect or import are used, or the adjectives “reasonable,” “suitable,” “acceptable,” “proper” or “satisfactory” or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the technical requirements of and information in the Contract Documents and conformance with the design concept of the completed 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 shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

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.

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.

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.

When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

Unless stated otherwise in the Contract Documents, words or phrases which 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 Insurance

When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds and Insurance Certificates and other evidence of Insurance requested as CONTRACTOR may be required to furnish in accordance with Article 5.

### 2.02 Copies of Documents

OWNER shall furnish to CONTRACTOR up to five (5) copies of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction. Electronic copies on disc may also be provided to the CONTRACTOR in lieu of hard copies of the drawings.

## **GENERAL CONDITIONS**

### **2.03 Commencement of Contract Time; Notice to Proceed**

Time is of the essence in the performance of the Work. The Contract Time will commence to run on the 30th day after the effective date of the Agreement, 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 thirty days after the effective date of the Agreement. In no event will the Contract Time commence to run later than the thirtieth day after the effective date of the Agreement. All time limits stated in the Contract Documents are of the essence of the Agreement.

### **2.04 Starting the Project**

CONTRACTOR shall start to perform the Work within ten (10) days of when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run. CONTRACTOR shall notify ENGINEER at least three (3) working days in advance of the time he intends to start Work.

### **2.05 Preconstruction Meeting**

Prior to the delivery of materials or the start of any construction, CONTRACTOR shall request a Preconstruction Meeting from ENGINEER. A minimum of three (3) full working days' notice shall be required.

Prior to the scheduling of the Preconstruction Meeting, CONTRACTOR shall submit to ENGINEER for review:

- A. A preliminary progress schedule indicating the starting and completion dates of the various stages of the Work, including any Milestones specified in the Contract Documents;
- B. A preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;
- C. An estimated monthly payment schedule, and a preliminary schedule of values for all of the Work.
- D. Contractors written Safety Plan for this Project

The Preconstruction Meeting will be held for review and acceptance of the schedules, to establish procedures for handling Shop Drawings and other submittals, for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

## **Article 3 Contract Documents Intent and Reuse**

### **3.01 Intent**

Contract Documents comprise the entire Contract between OWNER and CONTRACTOR concerning the Work and supersede all prior representations and/or negotiations. They may be altered only by a Written Amendment.

Contract Documents are complementary; what is called for by one is as binding as if called for by all. Contract Documents will be governed by the Laws and Regulations of the place of the Project.

**3.02 Reference to Standards and Specifications of Technical Societies**

Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, or Laws or Regulations in effect at the time of opening of Bids or, on the effective date of the Agreement if there were no Bids, except as may be otherwise specifically stated in the Contract Documents.

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. Any Work, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result shall be furnished and performed whether or not it is specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifications and interpretations shall be issued by ENGINEER as provided in paragraph 9.04.

No provision of any standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, ENGINEER or any of ENGINEER's Consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.10 or any other provision of the Contract Documents.

**3.03 Reporting and Resolving Discrepancies**

Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby.

If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once, and, CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as authorized by paragraph 6.18). However, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement issued by one of the methods indicated in paragraph 3.05, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and;

- (i) the provisions of any standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

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- (ii) 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 Order of Precedence

In resolving conflicts, errors or discrepancies between Plans and Specifications:

- (i) Figured dimensions shall govern over scaled dimensions;
- (ii) Plans shall govern over Specifications; and

### 3.05 Amending and Supplementing Contract Documents

The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

- (i) Formal Written Amendment,
- (ii) Change Order (pursuant to paragraph 10.03), or
- (iii) Work Order (pursuant to paragraph 10.01)

In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

- (i) Field Order (pursuant to paragraph 9.05),
- (ii) ENGINEER's review of a Shop Drawing or Sample (pursuant to paragraph 6.21), or
- (iii) ENGINEER's Written interpretation or clarification (pursuant to paragraph 9.04).

### 3.06 Reuse of Documents

Neither CONTRACTOR nor any Subcontractor, manufacturer, fabricator, Supplier, distributor, or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER

- (i) shall have or acquire any title to or ownership rights in any of the Plans, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, and
- (ii) they shall not reuse any of such Plans, Specification, other documents or copies on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

### 3.07 Electronic Data

Copies of data furnished by OWNER or ENGINEER to CONTRACTOR or CONTRACTOR to OWNER or ENGINEER that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

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Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

### **Article 4 Availability of Lands; Subsurface & Physical Conditions; Reference Points**

#### **4.01 Availability of Lands**

OWNER shall furnish, as indicated in the Contract Documents and not later than the established Work Starting Date, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. OWNER shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment unless otherwise provided in the Contract Documents.

#### **4.02 Physical Conditions -- Investigations and Reports**

Reference is made to the Supplemental General Conditions for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon in preparation of the Contract Documents. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents.

The locations of utilities or other physical conditions relating to existing surface or subsurface structures at or contiguous to the site as shown on the Plans are taken from drawings from sources believed to be reliable. Neither the OWNER nor the ENGINEER will be responsible for any omissions of, or variations from, the indicated location of existing utilities which may be encountered in the Work.

- (i) CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Except for such reliance on such "technical data", CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to: 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
- (ii) other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

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- (iii) any CONTRACTOR interpretation of or conclusion drawn from any “technical data” or any such data, interpretations, opinions or information.

The cost of all the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for:

- (i) Reviewing and checking all such information and data,
- (ii) Locating all Underground Facilities during construction,
- (iii) Coordination of the Work with the owners of such Underground Facilities, and
- (iv) Safety and protection of all such Underground Facilities as provided in paragraph 6.15 and repairing any damage thereto resulting from the Work.

### 4.03 Unforeseen Physical Conditions

If CONTRACTOR discovers one or both of the following physical conditions of surface or subsurface at the Project or improvement site, before disturbing the physical condition, the CONTRACTOR shall promptly notify OWNER and ENGINEER of the physical condition in writing:

- (i) A subsurface or a latent physical condition at the site differing materially from those indicated in the Contract Documents, or
- (ii) An unknown physical condition at the site of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for the improvement project.

Upon receiving notice thereof, OWNER, through ENGINEER, shall promptly investigate the physical condition. If OWNER, through ENGINEER, determines that the physical conditions do materially differ and will cause an increase or decrease in cost or additional time needed to perform the contract, such determination shall be made in writing and an equitable adjustment shall be made and the Contract Documents modified in writing accordingly. CONTRACTOR shall not be entitled to claim for additional costs or time because of a physical condition unless CONTRACTOR has complied with the notice requirements of this provision. CONTRACTOR shall not be entitled to claim an adjustment under the Contract Documents after CONTRACTOR has received final payment under the contract.

### 4.04 Reference Points

OWNER shall provide engineering surveys for construction to establish property corners, monuments, benchmarks and similar reference points which in his judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for the preservation of established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. Reference points destroyed by negligence of CONTRACTOR will be replaced by OWNER at the expense of CONTRACTOR. Construction Staking will be furnished by OWNER as provided in Division 01 of the Specifications.

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### 4.05 Asbestos, PCB's, Petroleum, Hazardous Waste or Radioactive Material

OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Plans or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.

Upon discovering any such material, CONTRACTOR shall immediately:

- (i) Stop all Work in connection with such hazardous condition and in any area affected thereby (except in emergency as required by paragraph 6.18), and
- (ii) Notify OWNER and ENGINEER (and 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 hazardous condition or take corrective action, if any.

CONTRACTOR shall not be required to resume Work in connection with such hazardous condition or in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice:

- (i) Specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or
- (ii) Specifying any special conditions under which such Work may be resumed safely.

If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Terms as a result of such Work stoppage or such special conditions under which Work is agreed by CONTRACTOR to be resumed, either party may make a claim therefor as provided in paragraph 10.05.

If after receipt of such special 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 such portion of the Work that is in connection with such hazardous condition or in such affected area to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Time as a result of deleting such portion of the Work, then either party may make a claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents, other consultants and subcontractors of each and any of them from and against all claims, costs, losses, damages and expenses arising out of or resulting from such hazardous condition per this paragraph 4.05, provided that:

- (i) 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, and

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- (ii) Nothing in this subparagraph 4.05 shall obligate OWNER to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

The provisions of paragraph 4.03 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site.

## Article 5 Bonds and Insurance

### 5.01 Performance and Other Bonds

CONTRACTOR shall furnish performance and payment Bonds, on the form included in the Contract Documents, 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 Documents. These Bonds shall remain in effect at least until one (1) year after the date when final payment becomes due, except as otherwise provided by Laws and Regulations or as specified in the Bond. CONTRACTOR shall also furnish such other Bonds as are required by the Supplemental General Conditions.

All Bonds shall be in the forms prescribed by the Contract Documents and be executed by such Sureties as:

- (i) are licensed to conduct business in the state where the Project is located, and
- (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the U.S. Department of Treasury, Financial Management Service, Surety Bond Branch.

All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

If the Surety on any Bond furnished by CONTRACTOR is declared as bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of clauses (i) and (ii) of paragraph 5.01, CONTRACTOR shall within five (5) days thereafter substitute another Bond and Surety, both of which shall be acceptable to OWNER.

### 5.02 Licensed Insurers and Sureties

All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required.

### 5.03 Insurance

CONTRACTOR shall purchase and maintain during the term of the project such insurance as will protect him, OWNER(s) and ENGINEER(s) from claims arising out of the Work described in this Contract and performed by CONTRACTOR, Subcontractor(s) or Sub-subcontractor(s) consisting of:

- A. Workers' Compensation Insurance including Employer's Liability to cover employee injuries or disease compensable under the Workers' Compensation Statutes of the states in which Work is conducted under this Contract; disability benefit laws, if any; or

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Federal compensation acts such as U.S. Longshoremen or Harbor Workers', Maritime Employment, or Railroad Compensation Act(s), if applicable. Self-insurance plans approved by the regulatory authorities in the state in which Work on this Project is performed are acceptable.

- B. An occurrence form Commercial General Liability policy to cover bodily injury to persons other than employees and for damage to tangible property, including loss of use thereof, plus appropriate endorsements to protect OWNER, and ENGINEER against claims, demands, and lawsuits from employees of the CONTRACTOR and Subcontractors, including the following exposures:
- (a) All premises and operations.
  - (b) Explosion, collapse and underground damage.
  - (c) CONTRACTOR's Protective coverage for independent contractors or Subcontractors employed by him.
  - (d) Broad form blanket, contractual liability for the obligation assumed in the Indemnification or Hold Harmless agreement found in the General Conditions or Supplementary General Conditions of this Contract.
  - (e) The usual Personal Injury Liability endorsement with no exclusions pertaining to employment.
  - (f) Products and Completed Operations coverage. This coverage shall extend through the Contract guarantee period.
  - (g) Broad form property damage.
  - (h) Cross liability endorsement.
- C. A Comprehensive Automobile Liability policy to cover bodily injury and property damage arising out of the ownership, maintenance or use of any motor vehicle, including owned, non-owned and hired vehicles. Comprehensive General Liability and the Comprehensive Auto Liability shall be written by the same insurance carrier, though not necessarily in one policy.
- D. CONTRACTOR shall purchase for OWNER an OWNER's Protective Liability policy to protect OWNER, ENGINEER, their consultants, agents, employees and such public corporations in whose jurisdiction the Work is located for their liability for Work performed by CONTRACTOR, the Subcontractor(s) or the Sub-subcontractor(s) under this Contract.
- E. When a limit of liability is identified in the Supplemental General Conditions, CONTRACTOR shall purchase a Builder's Risk-Installation Floater in a form acceptable to OWNER covering property of the Project for the full cost of replacement as of the time of any loss which shall include, as named insureds,
- (a) CONTRACTOR,
  - (b) all Subcontractors,
  - (c) all Sub-subcontractors,

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- (d) OWNER and ENGINEER(s) or Architect(s), as their respective interests may prove to be at the time of loss,

covering insurable property which is the subject of this Contract, whether in place, stored at the job site, stored elsewhere, or in transit at the risk of the insured(s).

Coverage shall be effected on an "All Risk" form including, but not limited to, the perils of fire, wind, vandalism, collapse, theft, flood and earthquake, with removal of passive design error exclusion. Except as may otherwise be required by OWNER, CONTRACTOR may arrange for such deductibles as he deems to be within his ability to self-assume, but he will be held solely responsible for the amount of such deductible and for any co-insurance penalties. Any insured loss shall be adjusted with OWNER and CONTRACTOR and paid to OWNER and CONTRACTOR as Trustee for the other insureds.

F. Umbrella or Excess Liability:

1. CONTRACTOR is granted the option of arranging coverage under a single policy for the full limit required or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability policy equal to the total limit(s) requested. Umbrella or Excess policy wording shall be at least as broad as the primary or underlying policy(ies) and shall apply both to CONTRACTOR's General Liability and to his Automobile Liability Insurance and shall be written on an occurrence basis.

G. Railroad Protective Liability:

1. Where any of the Work is within a railroad right-of-way or where a limit of liability is identified in the Supplemental General Conditions, CONTRACTOR will provide coverage in the name of each railroad company having jurisdiction over rights-of-way across which Work under the Contract is to be performed. The form of policy and the limits of liability shall be determined by the railroad company(ies) involved. See the Supplemental General Conditions for limits and coverage requested.

### 5.04 Limits of Liability

The required limits of liability for insurance coverages required in paragraphs 5.03 shall be not less than those specified in the Supplemental General Conditions.

### 5.05 Notice of Cancellation or Intent Not to Renew

Policies will be endorsed to provide that at least 30 days written notice shall be given to OWNER and to ENGINEER of cancellation, intent not to renew, or material modification of the coverage.

### 5.06 Evidence of Coverage

Prior to commencement of the Work, CONTRACTOR shall furnish to OWNER and ENGINEER, Certificates of Insurance in force on the OWNER's Form of Certificate provided in the Contract Documents. Other forms of Certificate are acceptable only if:

- (i) they include all of the items prescribed in OWNER's Form of Certificate, including agreement to cancellation provisions outlined in paragraph 5.05 above and
- (ii) they have approval of OWNER and ENGINEER.

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Prior to the commencement of the Work, CONTRACTOR shall furnish to OWNER complete "originally signed" copies of OWNER's Protective Liability Policy. The number of copies shall be the same as the number of counterparts of the Agreement. OWNER reserves the right to request complete copies of other policies if deemed necessary to ascertain details of coverage not provided by the certificates. Such policy copies shall be "Originally Signed Copies," and so designated.

### 5.07 Qualification of Insurers

A. In order to determine financial strength and reputation of insurance carriers, all companies providing the coverages required shall be licensed or approved by the Insurance Bureau of the state in which the Project is located and shall have a financial rating not lower than XI and a policyholder's service rating no lower than B+ as listed in A.M. Best's Key Rating Guide, current edition. Companies with ratings lower than B+:XI will be acceptable only upon written consent of OWNER.

### 5.08 Damage Claims - Acknowledgment and Reports

CONTRACTOR shall furnish to OWNER an acknowledgment receipt from the insurance carrier for each damage claim against the Project. The receipt shall include the insurance carrier's assigned claim number.

Upon request, CONTRACTOR or his insurance carrier shall also furnish to OWNER a status report on all damage claims. This report shall include inspections made, the disposition of claims, and what action has been taken towards settlement of each claim.

Failure of CONTRACTOR to comply with this paragraph may result in the amount of such damage claims being withheld from CONTRACTOR's monthly pay estimate. Such withholding shall be reimbursed in the monthly pay estimate following compliance with this paragraph.

### 5.09 Cost of Insurance

The unit cost of the insurance herein specified will not be a specific bid item, but the cost of such insurance will be included by CONTRACTOR in the various unit prices or lump sum price bid.

### 5.10 Waiver of Rights

OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 5.03 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplemental General Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies 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 of the insureds or additional insureds thereunder.

OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work; and in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplemental General Conditions to be listed as insureds or additional insureds under such policies for loss and damages so caused.

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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 as trustee or otherwise payable under any policy so issued.

### **5.11 Receipt and Application of Insurance Proceeds**

Any insured loss under the policies of insurance required by paragraph 5.03.E will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause. If no other special agreement is reached the damaged Work shall be repaired or replaced, the monies so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

OWNER as fiduciary shall have power to adjust and settle any loss under the policies required by paragraph 5.03.E with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers.

## **Article 6 CONTRACTOR's Responsibilities**

### **6.01 Supervision and Superintendence**

CONTRACTOR shall supervise 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. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

CONTRACTOR shall keep on the Work at all times during its progress a competent superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. Any superintendent or foreman who neglects to have Work done in accordance with the Plans and Specifications shall be removed from the Project. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

### **6.02 Labor and Working Hours**

CONTRACTOR shall provide competent, suitably qualified personnel in their various duties. CONTRACTOR shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons, the Work, property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours (7:00 a.m. to 4:00 p.m.), and CONTRACTOR will not permit the performance of Work on Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

### **6.03 Services, Materials and Equipment**

Unless otherwise specified in Section 01 1100, Summary of Work, CONTRACTOR shall furnish and assume full responsibility for all services, materials, equipment, labor, transportation,

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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 furnishing, performance, testing, start-up and completion of the Work.

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Contract Documents 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 kind and quality of materials and equipment to be incorporated in the Work. CONTRACTOR shall not use material in the Work until the necessary sampling and testing has been performed. All materials which do not meet the requirements of the Specifications at the time they are to be used will be rejected, and unless otherwise permitted by ENGINEER, shall be plainly marked and removed immediately from the Work.

All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.

### 6.04 Substitutes and “Or-Equals”

Whenever an item of materials or equipment is specified or described in the Contract Documents for installation in the Work by using the name of a proprietary item or the name of a particular manufacturer, fabricator, supplier or distributor, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words indicating that no like, equivalent or “or-equal” item or no substitution is permitted, other items of material or equipment or materials or equipment of other manufacturers, fabricators, suppliers or distributors may be accepted by ENGINEER under the following circumstances:

- A. “Or-Equal”: If in ENGINEER’s sole discretion 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, it may be considered by ENGINEER as an “or-equal” item, in which case review and approval of the proposed item may, in ENGINEER’s sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.
- B. Substitute Items: If in ENGINEER’s sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an “or-equal” item under paragraph 6.04.A, it will be considered a proposed substitute item.

CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by ENGINEER will include the following, as supplemented in the General Requirements, and as Engineer may decide is appropriate under the circumstances. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

If CONTRACTOR wishes to furnish or use a substitute item of material or equipment CONTRACTOR shall make written application to ENGINEER on the Substitution Request Form provided for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use and capable of performing the same function as that specified. The application will state the

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extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the proposed substitute for use in the Work will require a change in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute, and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.

All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service shall be indicated. The application shall also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute.

All data to be provided by CONTRACTOR in support of any proposed "or-equal" or substitute item will be at CONTRACTOR's expense. ENGINEER will be the sole judge of acceptability, and no "or-equal" or substitute shall be ordered, installed or utilized without ENGINEER's prior written acceptance. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute.

ENGINEER will record time required by ENGINEER and ENGINEER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating any proposed substitute and in making any changes in the Contract Documents.

### 6.05 Concerning Subcontractors

CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organizations, including those who are to furnish the principal items of materials or equipment, whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall furnish ENGINEER a complete list of any Subcontractor, Supplier or other person or organization furnishing principal items of material or equipment within four (4) days of request.

Failure to object to any Subcontractor, Supplier, other person or organization by OWNER or ENGINEER shall not constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

If OWNER or ENGINEER after due investigation has reasonable objection to any Subcontractor, Supplier, other person or organization proposed by CONTRACTOR after the Notice of Award, CONTRACTOR shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, other person or organization against whom CONTRACTOR has reasonable objection. CONTRACTOR shall not award Work to Subcontractor(s), in excess of 50% of the Contract Price, without prior written approval of the OWNER.

CONTRACTOR shall be fully responsible for all acts and omissions of his Subcontractors, Suppliers and of persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for

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CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any Subcontractor, Supplier or other person or organization. OWNER or ENGINEER may furnish to any Subcontractor, Supplier or other person or organization, to the extent practicable, evidence of amounts paid to CONTRACTOR on account of specific Work done.

CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the ENGINEER through CONTRACTOR.

If the amount of the subcontract or the nature of the Work to be performed thereunder warrants, OWNER may require the Subcontractor to furnish, for the benefit of CONTRACTOR, Bonds in an amount proportioned to the amount of his subcontract, and for the same purpose and under the same specifications as those of the general contract. The Surety on the general contract shall not be eligible to furnish such Subcontract Bonds.

All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as and additional insured on the property insurance provided in paragraph 5.03.E, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same. CONTRACTOR shall file a true copy of such agreement with the OWNER.

### 6.06 Patent Fees and Royalties

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 Contract Documents.

To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, costs, losses, damages and expenses arising out of or resulting from 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, and shall defend all such claims in connection with any alleged infringement of such rights.

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### 6.07 Permits and Licenses

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, permit, review, and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work.

### 6.08 Laws and Regulations

CONTRACTOR shall give all notices and comply with all laws, ordinances, rules, and regulations applicable to furnishing and performance of the Work. Neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws, ordinances, rules, and Regulations.

If CONTRACTOR performs any Work that is contrary to such laws, ordinances, rules and regulations, CONTRACTOR shall bear all claims, costs, losses, damages and expenses caused by, arising out of, or resulting therefrom. However, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Plans are in accordance with such laws, ordinances, rules, and regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

**Compliance with Environmental Laws:** The successful bidders (CONTRACTOR) must comply with all applicable Federal and Pennsylvania laws, rules and regulations dealing with the prevention of environmental pollution and the preservation of natural resources. Each bidder must thoroughly acquaint himself/herself with and comply with all the terms and provisions of any such statutes and rules and regulations promulgated pursuant to such statutes. All costs of compliance with such statutes, rules and regulations shall be considered incidental to the work are to be performed by each contractor and no separate or additional payment shall be made for such compliance.

**Trade Practices Act:** Any aluminum or steel products to be furnished or used for the Project under any Contract must comply with the Pennsylvania "Trade Practices Act" (71 P.S. §773.101, et. seq.).

**Pennsylvania Steel Products Procurement Act:** If any steel products are to be utilized or supplied in the performance of any contract only "Steel Products", as that term is defined in the "Pennsylvania Steel Products Procurement Act", 73 P.S. §1881, et. seq., shall be used or supplied in the performance of the contract or any subcontracts thereunder. Contractors, vendors and suppliers shall make themselves familiar with the provisions of this Act as it relates to this Project. Certifications from each Contractor of compliance with the Act must be submitted with each Application for Payment or at time of processing the product or equipment submittals (shop drawings).

**Pennsylvania Prevailing Minimum Wage Rates:** The current Pennsylvania Prevailing Minimum Wage Rates will apply to all contracts. The wage rates have been included in Specification Section 00 7346- Wage Determination Schedule. Contractors will be required to submit monthly reports to the Engineer for review. Failure to submit the reports in a timely manner will result in delay or denial of approval and payment of the Contractor's monthly payment request. Contractors are required to submit any and all documentation required by the provisions of the contract documents and required by the provisions of the Pennsylvania Prevailing Wage Act and the rules and regulations promulgated by the Pennsylvania Department of Labor and Industry relative to that Act and its provisions.

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### 6.09 Taxes

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

### 6.10 Use of Premises

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area or to the owner or occupant thereof or of any adjacent land or areas resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with any such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR's continuing obligations under paragraph 6.24 shall be applicable to any claim hereunder.

### 6.11 Removal of Debris and Cleaning

During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the Work. CONTRACTOR shall restore to their original condition all property not designated for alteration by the Contract Documents. If the CONTRACTOR shall fail to keep the above noted areas cleaned of dust or debris resulting from his operations, he shall be so notified in writing by the ENGINEER. If within 24 hours after receipt of such notice the CONTRACTOR shall fail to clean such areas satisfactorily, the OWNER may have such other agency as he shall designate, perform the work and all costs of such cleaning shall be paid for by the CONTRACTOR.

### 6.12 Loading 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 property to stresses or pressures that will endanger it.

### 6.13 Protection of Utilities

When it is possible for construction operations to endanger any public or private utility, conduit, or structure, the CONTRACTOR shall notify the utility owner of this possibility, and safeguard and support such utilities, conduits, or structures. Where it is the policy of any utility owner to make its own repairs to damaged conduit or other structures, the CONTRACTOR shall cooperate to the fullest extent with the utility, and he shall see that his operations interfere as little as possible with these operations, and the CONTRACTOR shall assume the cost of any charge against the OWNER therefor. In cases where existing sewers, drains, gas, electric, telephone, cable TV and water service connections are encountered, the CONTRACTOR shall perform his operations in such a manner that service will be uninterrupted, and the cost thereof shall be at the CONTRACTOR's expense, unless otherwise provided.

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### **6.14 Record Documents**

CONTRACTOR shall maintain in a safe place at the site one (1) record copy of all Specifications, Plans, Addenda, Written Amendments, Change Orders, Work Orders, Construction Change Requisitions, and Field Orders, in good order and annotated to show all changes made during construction. These record documents together with all Samples and all Shop Drawings shall be available to ENGINEER for examination and shall be delivered to ENGINEER for OWNER upon completion of the Work.

### **6.15 Safety and Protection**

CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. 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 Work site or who may be affected by the Work.
- (2) all the Work and materials or 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, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them.

CONTRACTOR shall restore, at his own expense, any public or private property damaged or injured in consequence of any act or omission on his part, or on the part of his employees or agents, to a condition equal or better than that existing before such injury or damage was done. If CONTRACTOR neglects to restore or make good such damages or injury OWNER may upon 48 hours' notice, proceed to restore or make good such damage or injury and to order the cost thereof deducted from any monies that are due or may become due CONTRACTOR for this Work. CONTRACTOR's duties and responsibilities for the safety and protection of the Work 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 14.11 that the Work is Acceptable.

### **6.16 Safety Representative**

CONTRACTOR shall be responsible to designate for itself and its employees, and its subcontractors 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.

### **6.17 Hazard Communication Program**

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 applicable Laws or Regulations.

**6.18 Emergencies**

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, 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. 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 Order or Change Order will be issued to document the consequences of such action.

**6.19 Shop Drawings and Samples**

CONTRACTOR shall submit Shop Drawings required by the Contract Documents to ENGINEER for review, in accordance with an accepted schedule. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The 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 materials and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.21.

CONTRACTOR shall also submit all samples required by the Contract Documents to ENGINEER for review in accordance with an accepted schedule. Each Sample will be identified clearly 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 6.21. The number of each sample to be submitted will be as specified in the Specifications.

**6.20 Submittal Procedures**

Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

- (i) all field measurements, quantities, dimension, specified performance criteria, installation requirements, manufacturer's recommendations, material, catalog numbers and similar information with respect thereto,
- (ii) all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and
- (iii) all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to review and approval of that submittal.

At the time of each submission, CONTRACTOR shall in writing call ENGINEER's attention to any deviations that the Shop Drawings or samples may have from the requirements of the

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Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to ENGINEER for review and approval of each such variation.

### **6.21 ENGINEER's Review**

ENGINEER will review Shop Drawings and Samples in accordance with the schedule of Shop Drawing and Sample submittals accepted by ENGINEER as required by paragraph 2.05. ENGINEER's review shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, sequences, techniques or procedures of construction or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate review of the assembly in which the item functions.

CONTRACTOR shall make any corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and resubmit new samples for review. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

CONTRACTOR's stamp of approval on any Shop Drawing or sample shall constitute a representation to OWNER and ENGINEER that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, manufacturer's recommendations, materials, catalog numbers, and similar data or assumes full responsibility for doing so, and that CONTRACTOR has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

ENGINEER's review of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variations from the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to such variation at the time of submission and ENGINEER has given written concurrence to the specific variation, nor shall any concurrence by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings. ENGINEER's review shall not relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.20.

Where a Shop Drawing or sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by ENGINEER per paragraph 2.05, no related Work shall be commenced until the submittal has been reviewed by the ENGINEER.

### **6.22 Continuing the Work**

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, except as CONTRACTOR and OWNER may otherwise agree in writing.

### **6.23 CONTRACTOR's General Warranty and Guarantee**

CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER's Consultants that all work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee excludes defects or damage caused by:

## GENERAL CONDITIONS

- (i) abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or their employees, agents, or representatives, or any person or entity for whom CONTRACTOR is responsible; or
- (ii) normal wear and tear under normal usage.

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:

- (i) observations by ENGINEER;
- (ii) recommendation of any progress or final payment by ENGINEER;
- (iii) the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;
- (iv) use or occupancy of any part of the Work by OWNER;
- (v) any acceptance by OWNER or failure to do so;
- (vi) any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER per paragraph 14.11;
- (vii) any inspection, test or approval by others; or
- (viii) any correction of defective Work by OWNER.

### 6.24 Indemnification

CONTRACTOR shall indemnify, defend, and save harmless the OWNER, and the ENGINEER, their consultants, agents, officers, directors and employees (the "Indemnified Parties"), from and against all claims, costs, losses, damages and expenses by reason of any liability asserted or imposed upon any one or more of the Indemnified Parties for damages because of bodily injury, including death at any time resulting therefrom, sustained by any person or persons, or on account of damage to property, including loss of use thereof, arising out of or in consequence of the performance of this Work, whether such injuries to persons or damage to property are due, or claimed to be due, to the negligence of CONTRACTOR, his Subcontractors, or any one or more of the Indemnified Parties, except this indemnification shall not extend to any Indemnified Party if such injury or damage shall be occasioned by the sole negligence of such Indemnified Party.

In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.24 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 person or organization under worker's compensation acts, disability benefit acts, or other employee benefit acts.

All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the

## **GENERAL CONDITIONS**

Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

### **Article 7 Work by Others**

#### **7.01 Related Work at Site**

OWNER may perform additional Work related to the Project by himself, or have additional Work performed by a utility owner, or let other direct contracts therefor which shall contain General Conditions similar to these.

If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor or utility owner, CONTRACTOR shall inspect and promptly report to ENGINEER in writing any latent or apparent defects or deficiencies in such work that render it unsuitable for such proper execution and results. CONTRACTOR's failure to so report shall constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in the other work.

CONTRACTOR shall afford each contractor who is party to such a direct contract, and each utility owner, (and OWNER, if OWNER is performing the additional work with OWNER's employees), proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected.

If the performance of additional work by other contractors or utility owner or OWNER was not noted in the Contract Documents, written notice thereof shall be given to CONTRACTOR prior to starting any such additional work. If CONTRACTOR believes that the performance of such additional work by OWNER or others involves additional expense to CONTRACTOR or requires an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in paragraph 10.05. Claims for delay or inconveniences due to operations of such other parties for work noted in the Contract Documents will not be allowed.

### **Article 8 OWNER's Responsibilities**

#### **8.01 Communication to CONTRACTOR**

Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

#### **8.02 Replacement of ENGINEER**

In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

#### **8.03 Furnishing Data**

OWNER shall furnish the data required of OWNER under the Contract Documents promptly.

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### 8.04 Pay When Due

OWNER shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.04 and 14.11.

### 8.05 Lands and Easements; Reports and Tests

OWNER's duties in respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.04. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of investigations and tests of subsurface and latent physical conditions at the site.

### 8.06 Insurance

OWNER's responsibilities in respect of purchasing and maintaining insurance are set forth below:

- (1) The OWNER shall assume responsibility for such boiler and machinery insurance as may be required or considered to be necessary by the OWNER in the course of construction, testing or after completion.
- (2) The OWNER shall assume responsibility for such insurance as will protect the OWNER against any loss of use of the OWNER's property due to those perils insured pursuant to paragraph 8.06(1).

### 8.07 Change Orders

In connection with OWNER's rights to request changes in the Work in accordance with Article 10, OWNER (especially in certain instances as provided in paragraph 10.03) is obligated to execute Change Orders.

### 8.08 Inspections, Tests, and Approvals

OWNER'S responsibility in respect to certain inspections, tests and approvals is set forth in paragraph 13.03.

### 8.09 Limitation on OWNER's Responsibility

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 furnishing or performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

### 8.10 Undisclosed Hazardous Materials

OWNER's responsibility in respect of undisclosed Asbestos, PCB's, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.05.

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### Article 9 ENGINEER's Status During Construction

#### 9.01 OWNER's Representative

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 shall be as set forth in the Contract Documents.

#### 9.02 Visits to Site

ENGINEER may make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine solely for the benefit of the OWNER, in general, if the Work is proceeding in accordance with the Contract Documents. It will not be the responsibility of the ENGINEER to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work.

#### 9.03 Resident Project Representative

If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more continuous observation of the Work. A Resident Project Representative will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding his actions. Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be only with ENGINEER and CONTRACTOR, and dealings with Subcontractors shall only be through or with the full knowledge of CONTRACTOR. The Resident Project Representative's duties and responsibilities include:

(1) Schedules

Review the progress schedule, schedule of Shop Drawing submissions and schedule of values prepared by CONTRACTOR.

(2) Conferences

Arrange a schedule of progress meetings and other job conferences as required in consultation with ENGINEER and notify those expected to attend in advance.

(3) Liaison

Serve as ENGINEER's liaison with CONTRACTOR, working principally through CONTRACTOR's superintendent and assist him in understanding the intent of the technical aspects of the Contract Documents. Assist ENGINEER in serving as OWNER's liaison with CONTRACTOR when CONTRACTOR's operations affect OWNER's on-site operations.

(4) Shop Drawings and Samples

Advise ENGINEER and CONTRACTOR or its superintendent immediately of the commencement of any Work requiring a Shop Drawing or Sample submission if the submission was identified on the schedule and has not been reviewed by ENGINEER.

(5) Review of Work, Rejection of Defective Work, Inspections, and Tests:

- a. Conduct on-site observations of the Work and report to ENGINEER whenever he believes that technical aspects of any executed Work is unsatisfactory, faulty

## GENERAL CONDITIONS

or defective or does not meet the requirements of any inspections, tests or approval required to be made or has been damaged prior to final payment; and advise ENGINEER when he believes that any partially completed portion of the Work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

- b. Observe, record and report to ENGINEER appropriate details relative to test procedures and startups.
- c. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the outcome of these inspections and report to ENGINEER.

### (6) Modifications

Consider CONTRACTOR's suggestions for modifications in Plans or Specifications and report them with recommendations to ENGINEER.

### (7) Reports

Prepare periodic reports as required of progress of the Work and CONTRACTOR's compliance with the approved progress schedule and schedule of Shop Drawing submissions.

### (8) Completion

Verify that all items on final list of items requiring completion or correction have been completed or corrected and make recommendations to ENGINEER concerning acceptance.

### (9) Exceptions

Resident Project Representative:

- a. Shall not authorize any deviation from the Contract Documents or approve any substitute materials or equipment.
- b. Shall not approve or accept any portion of the completed Work.
- c. Shall not undertake any of the responsibilities of CONTRACTOR, Subcontractors or CONTRACTOR's superintendent, or expedite the Work.
- d. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.
- e. Shall not advise on or issue directions as to safety precautions and programs in connection with the Work.
- f. Shall not advise on or issue directions regarding CONTRACTOR's failure to comply with Laws and Regulations applicable to the furnishing or performance of the Work.

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### **9.04 Clarifications and Interpretations**

ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

### **9.05 Authorized Variations in Work - Field Order**

ENGINEER may authorize minor adjustments in the Work to avoid obstructions or interferences which do not involve an adjustment in the Contract Price or the Contract Time, and which are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and shall be binding on OWNER, and also on CONTRACTOR who shall perform the change promptly. If OWNER or CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a claim may be made therefore as provided in Paragraph 10.05.

### **9.06 Rejecting Defective Work**

ENGINEER will have authority to disapprove or reject completed portions of the Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed or completed.

### **9.07 Shop Drawings, Change Orders, and Payments**

ENGINEER's responsibility for Shop Drawings and samples are set forth in paragraphs 6.19 through 6.21 inclusive.

ENGINEER's responsibilities as to Change Orders are set forth in Articles 10, 11, and 12.

ENGINEER's responsibilities in respect of Applications for Payment are set forth in Article 14.

### **9.08 Determinations for Unit Price Work**

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 Paragraph 10.05.

### **9.09 Decisions on Disagreements, Claims**

ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work performed thereunder. Claims, disputes and other matters relating to the acceptability of the Work, or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work, shall be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph.

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ENGINEER will, with reasonable promptness, render a written decision on the issue referred. If OWNER or CONTRACTOR believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. Date of ENGINEER's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.

ENGINEER's written decision on the issue referred will be final and binding on OWNER and CONTRACTOR, subject to the provisions of Paragraph 10.05.

In this capacity ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. Provisions of paragraph 9.10 will govern ENGINEER's liability to CONTRACTOR under this paragraph.

### 9.10 Limitations on Engineer's Responsibilities

Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any manufacturer, fabricator, Supplier, distributor, or any other person or to any surety for or employee or agent of any of them.

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 furnishing or performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents. These limitations on authority and responsibility shall also apply to ENGINEER's Consultant's, Resident Project Representative and assistants.

ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractors, Suppliers, or of the agents or employees of any CONTRACTOR, Subcontractor, Supplier or of any other persons at the site or otherwise performing any of the Work.

ENGINEER will not be responsible to CONTRACTOR, Subcontractors, or Suppliers, or to their agents or employees for injuries, damages, claims, losses, or expenses (including attorney's fees) of whatsoever kind resulting from or caused by any act or omission of ENGINEER in preparation for, arising from, relating to or concerning the Project. Such acts or omissions include, but are not limited to, ENGINEER's negligence, tortuous conduct, errors, omissions, strict liability, breach of contract, or breach of warranty. ENGINEER makes no representations to CONTRACTOR, Subcontractors, Suppliers, or their agents or employees regarding or respecting any work performed by ENGINEER in preparation for, arising from, relating to or concerning the Project. Neither CONTRACTOR, its agents or employees, nor any Subcontractors or Suppliers or their agents or employees, are intended beneficiaries of ENGINEER's agreement with OWNER, nor are such parties intended beneficiaries of ENGINEER's duties or responsibilities arising therefrom.

ENGINEER disclaims all duties to CONTRACTOR, Subcontractors, Suppliers or their agents or employees arising from, relating to or concerning ENGINEER's involvement in the Project. OWNER and CONTRACTOR further agree to notify CONTRACTOR's, Subcontractors or Suppliers of this disclaimer of ENGINEER's liability and require them to abide by this disclaimer.

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### **Article 10 Changes in the Work; Claims**

#### **10.01 Authorized Changes in the Work**

Without invalidating the Agreement and without notice to any surety, OWNER may at any time or from time to time, order additions, deletions or revisions in the Work. These additions, deletions or revisions will be authorized by a Written Amendment, Change Order, or a Work Order. Upon receipt of any such document, CONTRACTOR shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Time that should be allowed as a result of a Work Order, a claim may be made as provided in paragraph 10.05.

#### **10.02 Unauthorized Changes in the Work**

Additional Work performed without authorization will not entitle CONTRACTOR to an increase in the Contract Price or an extension of the Contract Time, except in the case of an emergency as provided in paragraph 6.18 and except for uncovering Work as provided in paragraph 13.04.

#### **10.03 Execution of Change Orders**

Changes in the Work which are required by OWNER, or emergencies, or because of uncovering Work found not to be defective, or as provided in paragraphs 10.01, 11.02, 11.03, 13.08, or 13.09, or because of any other claim for a change in the Contract Time or the Contract Price which are agreed to by the parties shall be accomplished by means of a Change Order recommended by the ENGINEER and duly executed by the OWNER and CONTRACTOR.

#### **10.04 Notification to Surety**

If notice of any change affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it shall be CONTRACTOR's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. CONTRACTOR shall furnish proof of such adjustment to OWNER.

#### **10.05 Claims**

The rendering of a decision by ENGINEER with respect to any claim, dispute or other matter, except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.13, will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or at law in respect of any such claim, dispute or other matter. Any claim, dispute, or other matter by CONTRACTOR shall additionally be subject to the provisions set forth in paragraph 9.10.

Written notice of each such claim, dispute and other matter shall be delivered by the claimant to ENGINEER and the other party to the Agreement within 15 days of the occurrence of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with written supporting data will be submitted to ENGINEER and the other party within 45 days of such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data. A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02. Each Claim shall be accompanied by claimant's written statement

## GENERAL CONDITIONS

that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

ENGINEER will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,
2. approve the Claim, or
3. notify the parties that the ENGINEER is unable to resolve the Claim if, in the ENGINEER's sole discretion, it would be inappropriate for the ENGINEER to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

In the event that ENGINEER does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

ENGINEER's action under Paragraph 10.05 will be final and binding upon OWNER and CONTRACTOR.

No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this paragraph 10.05.

### Article 11 Cost of the Work; Allowances; Unit Price Work

#### 11.01 Cost of the Work

The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.01.B:

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. 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' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith.
3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids

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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 accepted.

4. Costs of special consultants including, but not limited to, engineers, architects, testing laboratories, surveyors, lawyers 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 workmen, 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. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

The rental rate established for each piece of CONTRACTOR owned equipment, including appurtenances and attachments to equipment, used will be determined by use of the Rental Rate Blue Book for Construction Equipment, Volume 1, 2, or 3, as applicable; the edition which is current at the time the Work was started will apply. The established rental rate will be equal to the "Monthly" rate divided by 176; modified by the rate adjustment factor and the applicable map adjustment factor, plus the "Estimated Operating Costs per Hour."

For equipment not listed in the Rental Rate Blue Book, Volume 1, 2, or 3, the rental rate will be determined by using the rate listed for a similar piece of equipment or by proportioning a rate listed so that the capacity, size, horsepower, and age are properly considered.

For equipment for which there are no comparables in the Rental Rate Blue Book, Volume 1, 2, or 3, the monthly rate shall be reasonable, but not more than 5 percent of the current list price, or invoice, of the equipment. The base hourly rate shall then be determined by dividing the monthly rate by 176 to which sum 20 percent will be added. The 20 percent includes adjustments and operating costs.

- (c) Sales, consumer use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by any governmental authority.
- (d) 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.
- (e) Losses and damages (and related expenses) to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the

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performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.03), provided such losses and damages have resulted from causes other than the negligence, other tortuous conduct or breach of contract of CONTRACTOR, any Subcontractor, Supplier 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. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 12.01.A.2.

- (f) The cost of utilities, fuel, and sanitary facilities at the site.
- (g) Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage, and similar petty cash items in connection with the Work.
- (h) Cost of premiums for additional bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.03.

B. The term Cost of the Work shall not include any of the following:

1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals, 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 his principal or a branch office for general administration of the Work.
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. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same except for additional Bonds and insurance required because of changes in the Work.
5. 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.
6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.01.A.

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- C. When the value of any Work covered by a Change Order or when a Claim for an 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 12.01.A.
- D. Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, 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.

### 11.02 Cash Allowances

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 done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER. CONTRACTOR agrees that:

1. The 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 costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any of the foregoing will be valid.

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.

### 11.03 Unit Price Work

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 Bid Form.

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. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.

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.

OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

Where the quantity of a major item of Work that is covered by a unit price differs by more than 25% from the quantity of such Work indicated in the Contract Documents, an adjustment in unit price shall be considered and if appropriate, a Change Order will be issued. A major item of Work is defined as any item whose total cost, determined by multiplying the original bid quantity and the Contract Unit Price, is equal to or greater than 5 percent of the original total Contract Price.

**Article 12 Change of Contract Price; Change of the Contract Times**

**12.01 Change of Contract Price**

The Contract Price may only be changed by a Change Order. Any claim for an adjustment in the Contract Price shall be based on written notice by the party making the claim, to the ENGINEER and the other party to the Agreement in accordance with the provisions of paragraph 10.05. Where a Change Order diminishes the quantity of Work to be done, this shall not constitute a basis for a claim for damages or anticipated profits on the Work that may be dispensed with.

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

- (1) Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved subject to the provisions of paragraph 11.01.B.
- (2) By a supplemental schedule of prices contained in the CONTRACTOR's original bid and incorporated in the Contract.
- (3) By mutual acceptance of a lump sum or unit price proposal from the CONTRACTOR.
- (4) If none of the above methods is agreed upon, the value shall be determined on the basis of the Cost of the Work and a percentage for overhead and profit. Cost of the Work shall be determined as provided in paragraphs 11.01.A and 11.01.B. The CONTRACTOR's fee shall be determined as provided in paragraph 12.01.A.

**12.01 CONTRACTOR's Fee**

The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

- (1) A mutually acceptable fixed fee; or if none can be agreed upon,
- (2) a fee based on the following percentages of the various portions of the Cost of the Work:
  - (a) for costs incurred under paragraphs 11.01.A.2 and 11.01.A.1, the CONTRACTOR's Fee shall be 15%;
  - (b) for costs incurred under paragraph 11.01.A.3, the CONTRACTOR's Fee shall be five (5) percent; and if a Subcontract is on the basis of the Cost of the Work plus a fee, the maximum allowable to all Subcontractor(s) in total as a fee for overhead and profit shall be 15%; and,
  - (c) no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B.
  - (d) 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 plus a deduction in CONTRACTOR's Fee by an amount equal to ten (10) percent of the net decrease; and,

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- (e) 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 12.01.A.2.a through 12.01.A.2.d, inclusive.

### 12.02 Change of Contract Time

The Contract Time may only be changed by a Change Order. Any claim for an adjustment in the Contract Time shall be based on written notice submitted by the claimant and delivered to the ENGINEER and the other party to the Agreement in accordance with the provisions of paragraph 10.05.

Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

### 12.03 Delays

Where the CONTRACTOR is prevented from completing any part of the Work within the Contract Time due to delay beyond the control of CONTRACTOR, the Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.01. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing work as contemplated by Article 7, or to fires, floods, epidemics, abnormal weather conditions, or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

Where CONTRACTOR is prevented from completing any part of the Work within the Contract Time due to any delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Time in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

OWNER, ENGINEER and the related entities of each of them shall not be liable to CONTRACTOR for any claims, costs, losses, damages or expenses sustained by CONTRACTOR on or in connection with any other project or anticipated project.

CONTRACTOR shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of CONTRACTOR.

All time limits stated in the Contract Documents are of the essence of the Agreement.

## Article 13 Tests and Inspection; Correction, Removal or Acceptance of Defective Work

### 13.01 Notice of Defects

- A. Prompt notice of all defective work of which OWNER or ENGINEER have actual knowledge shall be given to CONTRACTOR. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

### 13.02 Access to Work

OWNER, ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspection and testing. CONTRACTOR shall

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provide proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

### 13.03 Tests and Inspections

CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

If any Law and Regulation, code, or order of any public body having jurisdiction requires any Work or part thereof to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval.

CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's or ENGINEER's acceptance of a manufacturer, fabricator, Supplier or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

The cost of all other inspections, tests and approvals required by the Contract Documents shall be paid by OWNER unless otherwise specified.

All inspections, tests or approvals other than those required by law, ordinance, rule, regulation, code or order of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR or by ENGINEER if so specified.

Cost of materials to be used in inspection and transportation costs shall be paid for by the CONTRACTOR.

Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from his obligations to perform the Work in accordance with the Contract Documents.

### 13.04 Uncovering Work

If any Work that is to be tested, inspected or approved is covered without written concurrence of ENGINEER, or contrary to the written request of ENGINEER, it shall, if requested by ENGINEER, be uncovered for ENGINEER's observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely written notice of his intention to cover such Work and ENGINEER has not acted with reasonable promptness in response to such notice.

If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment. Except as otherwise specified in paragraph 13.04, the cost of Work shall be paid for as follows:

- (i) If it is found that such Work is defective, CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing, and of satisfactory reconstruction, (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals) and an appropriate deductive Change Order shall be issued. If the parties are unable to agree as to the amount or extent of any change in

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Contract Price or Contract Time, OWNER may make a claim as provided in paragraph 10.05

- (ii) If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction. If the parties are unable to agree as to the amount or extent of any change in Contract Price or Contract Time, CONTRACTOR may make a claim as provided in paragraph 10.05.

### 13.05 Owner May Stop the Work

If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, 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, Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

### 13.06 Correction or Removal of Defective Work

If required by ENGINEER, CONTRACTOR shall promptly either correct all defective Work, whether or not fabricated, installed or completed, or if the Work has been rejected by ENGINEER, remove it from the site and replace it with non-defective Work. CONTRACTOR shall pay all claims, costs, losses, damages and expenses caused by or resulting from such correction or removal (including, but not limited to all costs of repair or replacement of work of others).

### 13.07 Two Year Guarantee Period

If within two (2) years after the date of Substantial Completion (or such longer period of time as may be prescribed by Laws or Regulations or 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, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions:

- (i) repair defective land or areas; or
- (ii) correct such defective Work, or,
- (iii) if the defective Work has been rejected by OWNER, remove it from the site and replace it with Work that is not defective, and
- (iv) satisfactorily correct or repair or remove and replace any damage to other Work or the work of others or other land or areas resulting therefrom.

If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses, damages and expenses caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement or work of others) shall be paid by CONTRACTOR.

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Repair or replacements made under the guarantee shall bear an additional one (1) year guarantee dated from the acceptance of repair or replacement.

### 13.08 Acceptance of Defective Work

If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER'S recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all claims, costs, losses, damages and expenses attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness). In such case, if acceptance occurs prior to ENGINEER'S recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate reduction in the Contract Price. If the acceptance occurs after such recommendation, an appropriate amount shall be paid by CONTRACTOR to OWNER.

### 13.09 Owner May Correct Defective Work

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 in accordance with paragraph 13.06, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents (including any requirements of the progress schedule), OWNER may, after 48 hours' written notice to CONTRACTOR and his Surety without prejudice to any other remedy he may have, correct and remedy any such deficiency.

In exercising his rights under this article OWNER shall proceed expeditiously. To the extent necessary to complete corrective and 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, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site 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 such access to the site as may be necessary to enable OWNER to exercise his rights under this paragraph.

All claims, costs, losses, damages and expenses incurred or sustained by OWNER in exercising such rights shall be charged against CONTRACTOR and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate reduction in the Contract Price. Such claims, costs, losses, damages and expenses 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.

CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights hereunder.

## Article 14 Payments to CONTRACTOR and Completion

### 14.01 Schedules

At least ten (10) days prior to submitting the first Application for a progress payment, CONTRACTOR shall submit to ENGINEER a final schedule of Shop Drawing submission and where applicable a schedule of values of the Work. These schedules shall be satisfactory in form and substance to ENGINEER.

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The schedule of values shall include quantities and unit prices aggregating the Contract Price, and shall subdivide the Work into component parts. Each unit cost so established shall include its proportionate share of the CONTRACTOR's general operating charges such as profit, overhead, supervision, insurance, bond premiums, interest, equipment cost, depreciation and rental, contingencies, expendable tools, equipment and supplies. The total cost of the items and quantities the CONTRACTOR lists in the schedule of values shall equal the total Contract Price established in the Bid.

The schedule of values shall include a complete set of detailed work sheets on bid take off and bid summary covering estimated general conditions expense (field overhead), general overhead, profit mark ups and revisions leading to the final bid amount.

When the schedule of values is approved by the ENGINEER, it shall become part of the Agreement and shall be used as the basis for CONTRACTOR progress payments, and to establish unit prices at which extra work may be authorized or deducted from the original Agreement.

Progress Payments based upon Unit Price Work will be based upon the number of units completed.

### 14.02 Application for Progress Payment

At least ten (10) days before each progress payment falls due (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment, Contractor's Declaration, Payment Schedule, and updated Progress Schedules indicating the anticipated completion dates of the various stages of the Work and estimated payments during the next three (3) months. The Contractor's Application for Payment and Contractor's Declaration shall be filled out on the forms provided in the Contract Documents 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 and also as ENGINEER may reasonably require. The Payment Schedule shall be on the form provided in the Contract Documents or in a format acceptable to the ENGINEER. On the second and all subsequent payments, partial waivers of lien and a sworn statement shall also be required for all Work completed and paid for on previous certificates.

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 such data, satisfactory to OWNER, as will establish OWNER's title to the material and equipment and protect OWNER's interest therein, including applicable insurance. A receipted vendor's invoice showing the quantities of materials and the amounts paid will be required.

Retainage with respect to progress payments will be in accordance with paragraph 14.03, and it will be retained until after completion of the entire Work and its final acceptance. When the amount to be retained is reduced to less than ten (10) percent, the CONTRACTOR shall file with the OWNER the written consent of the Surety to such reduction and shall furnish an affidavit that all his indebtedness by reason of the Contract has been paid.

### 14.03 Retainage

The OWNER shall retain a portion of the amount due the Contractor to insure the proper performance of the Contract except that the sum withheld by the OWNER from the Contractor shall not exceed 10% of the amount due the Contractor until 50% of the Contract

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is completed. When the contract is 50% completed, one-half of the amounts retained by the OWNER shall be returned to the Contractor. However, before any payment is made the ENGINEER must approve the application for payment in accord with the provisions of the Contract Documents. The sum withheld by the OWNER from the Contractor after the Contract is 50% completed shall not exceed 5% of the value of completed work based on monthly progress payment requests.

In the event a dispute arises between the Owner and any prime contractor, which dispute is based upon increased costs claimed by one prime contractor occasioned by delays or other actions of another prime contractor, additional retainage in the sum of one and one-half times the amount of any possible liability may be withheld until such time as a final resolution is agreed to by all parties directly or indirectly involved unless the contractor causing the additional claim furnishes a bond satisfactory to the Owner to indemnify the Owner against the claim. All money retained by the Owner may be withheld from the contractor until substantial completion of the contract.

To be eligible for any Progress Payment the Contractor must be making satisfactory progress, and there must be no specific cause for greater withholding.

Upon Substantial Completion the Retainage shall be determine as provided in Article 5 of the Agreement.

### 14.04 Review of Applications for Progress Payment

ENGINEER will, within ten (10) days after receipt of each Contractor's Application for Payment, Contractor's Declaration and Payment Schedule, either indicate in writing a recommendation of payment and present an Engineer's Certificate for Payment to the OWNER, or may 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.

ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's review of the Contractor's Application for Payment and Certificate for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief;

- (i) the Work has progressed to the point indicated;
- (ii) the quality of the Work is in accordance with the Contract Documents subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in the recommendation; and
- (iii) that CONTRACTOR is entitled to payment of the amount recommended.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that:

- (i) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or

## GENERAL CONDITIONS

- (ii) that 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.

Neither ENGINEER's review of CONTRACTOR's Work for the purpose of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER:

- (i) to supervise, direct or control the Work, or
- (ii) for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
- (iii) for the failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of Work, or
- (iv) for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents or
- (v) to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or
- (vi) to determine that title to any Work, materials, or equipment has passed to OWNER free and clear of liens.

A. ENGINEER may refuse to recommend the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations as stated above to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

- (1) the Work is defective, or completed Work has been damaged requiring correction or replacement;
- (2) the Contract Price has been reduced because of Change Orders
- (3) OWNER has been required to correct defective Work or complete the Work in accordance with paragraph 13.09;
- (4) ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.

### 14.05 Payment Becomes Due

Thirty (30) days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.05.A) become due, (or only if OWNER is a public agency, within 15 days after OWNER receives the funds which are to be provided by a department or agency of the federal or state government, whichever is later) and when due will be paid by OWNER to CONTRACTOR.

A. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

## GENERAL CONDITIONS

- (a) claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;
- (b) 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;
- (c) there are other items entitling OWNER to a set-off against the amount recommended; or
- (d) OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.04.A.1 through 14.04.A.3.

If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER will give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action 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, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

If it is subsequently determined that OWNER's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.05.

### 14.06 Contractor's Warranty of Title

CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").

### 14.07 Substantial Completion

When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall, in writing to OWNER and ENGINEER, certify that the entire Work is substantially complete and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, 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 his reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a list of items to be completed or corrected before final payment.

OWNER shall have 45 days after receipt of the certificate during which he may make written objection to ENGINEER and CONTRACTOR as to any provisions of the certificate or attached list. Such objection will be cause for the certificate of Substantial Completion to be null and void.

As a part of delivery of the certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance.

## GENERAL CONDITIONS

OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the list of items to be completed.

### 14.08 Partial Utilization

Use by OWNER of completed portions of the Work may be accomplished prior to Substantial Completion of all the Work subject to the following:

- (1) OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any part of the Work which OWNER believes to be substantially complete and which may be so used without significant interference with construction of the other parts of the Work. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion.
  - (a) If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving his reasons therefor.
  - (b) If ENGINEER considers that part of the Work to be substantially complete, ENGINEER will execute and deliver to OWNER and CONTRACTOR a certificate to that effect, fixing the date of Substantial Completion for that part of the Work, attaching thereto a punch list of items to be completed or corrected before final payment.

Prior to issuing a certificate of Substantial Completion for that part of the Work, ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities and insurance for that part of the Work, which shall become binding upon OWNER and CONTRACTOR at the time of issuing the definitive certificate of Substantial Completion for that part of the Work unless OWNER and CONTRACTOR shall have otherwise agreed in writing and so informed ENGINEER.

OWNER shall have the right to exclude CONTRACTOR from any part of the Work which ENGINEER has so certified to be substantially complete, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the punch list.

In lieu of the issuance of a certificate of Substantial Completion as to part of the Work, OWNER may take over operation of a facility constituting part of the Work whether or not it is Substantially Complete if such facility is functionally and separately usable; provided that prior to any such takeover, OWNER and CONTRACTOR have agreed as to the division of responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.

### 14.09 Final Inspection

Upon written notice from CONTRACTOR that the Work is complete, ENGINEER will 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 is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

**14.10 Final Application for Payment**

After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked up record documents and other documents--all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable, subject to the provisions of paragraph 14.13, CONTRACTOR may make application for final payment following the procedure for progress payments.

The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents and such other data and schedules as ENGINEER may reasonably require, consent of surety, if any, to final payment, together with complete and legally effective releases or waivers, satisfactory to OWNER, of all Liens arising out of or filed in connection with the Work.

In lieu of the releases or waivers of Lien, and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or his property might in any way be responsible, have been paid or otherwise satisfied.

If any Subcontractor, manufacturer, fabricator, supplier or distributor fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

**14.11 Final Payment and Acceptance**

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--all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR has fulfilled all of his obligations under the Contract Documents, ENGINEER will, within ten (10) days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. At that time ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.13.

Otherwise, ENGINEER will return the Application 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.

If the Application and accompanying documentation are appropriate as to form and substance, OWNER shall, within 45 days after receipt thereof pay CONTRACTOR the amount recommended by ENGINEER. If the OWNER rejects the Application, he shall do so in writing stating the appropriate sections of the Contract Documents upon which the rejection is based. The CONTRACTOR may take the necessary remedial actions and resubmit the Application.

**14.12 Final Completion Delayed**

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make

## GENERAL CONDITIONS

payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

### 14.13 Waiver of Claims

The making and acceptance of final payment shall constitute:

- (1) a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.09 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it shall not constitute a waiver by OWNER of any rights in respect of CONTRACTOR's continuing obligations under the Contract Documents; and
- (2) a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

### 14.14 Late Payments

All monies not paid when due hereunder, except monies involving Federal and/or State Loans or Grants or other sources which are delinquent because of no fault of the OWNER, shall bear interest at the maximum rate allowed by law at the place of the Project.

## Article 15 Suspension of Work and Termination

### 15.01 OWNER May Suspend Work

OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period as he may deem necessary by notice in writing to CONTRACTOR and ENGINEER. If it should become necessary to stop work for an indefinite period, the CONTRACTOR shall store all materials in such manner that they will not become an obstruction, nor become damaged in any way, and he shall take every precaution to prevent damage or deterioration of the Work performed; provide suitable drainage by opening ditches and drains, and erect temporary structures where necessary. CONTRACTOR may request an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefor as provided in paragraph 10.05.

### 15.02 OWNER May Terminate for Cause

Upon the occurrence of any one or more of the following events:

- (1) if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating;
- (2) If a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereinafter in effect at the time of filing, or if a petition is filed seeking any

## GENERAL CONDITIONS

such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

- (3) if CONTRACTOR makes a general assignment for the benefit of creditors;
- (4) if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR's creditors;
- (5) if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;
- (6) if CONTRACTOR persistently fails 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 established under paragraph 2.05 as revised from time to time);
- (7) if CONTRACTOR disregards Laws and Regulations of any public body having jurisdiction;
- (8) if CONTRACTOR disregards the authority of ENGINEER; or,
- (9) if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if there be one) seven (7) days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment, and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), 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 finish the Work as OWNER may deem expedient.

In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, damages and expenses sustained by OWNER arising out of or resulting from completing the Work such excess will be paid to CONTRACTOR. If such claims, costs, losses, damages and expenses exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, damages and expenses incurred by OWNER will be reviewed as to reasonableness by ENGINEER and when so approved, incorporated in a Change Order, but when exercising any rights or remedies under this paragraph, OWNER shall not be required to obtain the lowest price for the Work Performed.

Where CONTRACTOR's services have been so terminated by OWNER, the termination shall not affect any rights or remedies of OWNER against CONTRACTOR or its Surety then existing or which may thereafter accrue. Any retention or payment of monies due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

## **GENERAL CONDITIONS**

### **15.03 Termination for Convenience**

Upon seven (7) days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items):

- (2) for 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;
- (3) for 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
- (4) for all claims, costs, losses, damages and expenses incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and
- (5) for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

### **15.04 CONTRACTOR May Stop Work or Terminate**

If ENGINEER has failed to act on an Application for Payment or OWNER has failed to pay CONTRACTOR any sum finally determined to be due in accordance with the time limits specified in paragraph 14.04, CONTRACTOR may upon seven (7) days notice to OWNER and ENGINEER, stop the Work until payment of all amounts then due.

If through no act or fault of CONTRACTOR, the Work is suspended for a period of more than 90 days by OWNER or under an order of court or other public authority, then CONTRACTOR may, upon seven (7) days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.03.

The provisions of this paragraph shall not relieve CONTRACTOR of his obligations under paragraph 6.22 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

## **Article 16 Miscellaneous**

### **16.01 Giving Notice**

Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at, or sent by registered or certified mail postage prepaid to, the last business address known to the giver of the notice.

## GENERAL CONDITIONS

### 16.02 Computation of Time

When any period of time is referred to in the Contract Documents by days, it shall 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 shall be omitted from the computation.

### 16.03 Dispute Resolution

In the event of any dispute between the Owner and the Contractor which is not amicably resolved and which results in litigation, the parties agree that the Court of Common Pleas of Washington County, Pennsylvania, is the sole legal forum and shall have exclusive and sole jurisdiction and venue over such litigation.

### 16.04 General

Should OWNER or CONTRACTOR suffer injury or damage to his person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 16.03 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

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 shall not 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 Law or Regulation, by special warranty or guarantee or by other provisions of the Contract Documents. The provisions of this paragraph shall 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.

All representations, warranties and guarantees made in the Contract Documents shall survive final payment and termination or completion of this Agreement.

### 16.05 Professional Fees and Court Costs Included

Whenever reference is made to "claims, costs, losses, damages and expenses," it shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs.

### 16.06 Nondiscrimination of Employment

The CONTRACTOR shall covenant not to discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect to his hire, tenure, terms, conditions or privileges of employment, or any matter directly, or indirectly related to employment, because of his race, color, sex, age, religion, national origin or ancestry, height, weight, or marital status, or any other classification protected by law, and to require a similar covenant on the part of any Subcontractor employed in the performance of the Contract.

### 16.07 Post Completion Date Engineering and Inspection Costs

All engineering and inspection costs incurred after the specified completion date shall be paid by the CONTRACTOR to the OWNER prior to final payment authorization. However, the CONTRACTOR shall not be charged with any post completion date engineering and inspection

## GENERAL CONDITIONS

costs when the delay in completion of the Work is due to the following and the CONTRACTOR has promptly given written notice of such delay to the OWNER or ENGINEER;

- (1) to any preference, priority or allocation order duly issued by the OWNER;
- (2) to unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another contractor in the performance of a Contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and,
- (3) to any delays of subcontractors occasioned by any of the causes specified in Items 1 and 2 of this Article.

Charges after the specified completion date shall be made at such times and in such amounts as the ENGINEER shall invoice the OWNER, provided, however said charges shall be in accordance with the ENGINEER's current rate schedule at the time the costs are incurred. The engineering and inspection costs so incurred shall be deducted from the CONTRACTOR's progress payments.

END OF SECTION

**SECTION 00 73 00  
SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions amend or supplement Section 00 72 00, General Conditions, as indicated below. All provisions which are not amended or supplemented by this section remain in full force and effect. The terms used in these Supplementary Conditions have the meanings assigned to them in the General Conditions.

**SGC-2.02      Copies of Documents**

Amend the first sentence of paragraph 2.02 by adding "Electronic copies of the Contract Documents, in pdf format, will be provided to the CONTRACTOR upon written request to the ENGINEER.

**SGC-4.01      Availability of Lands**

Add a new paragraph 4.01 which is to read as follows:

Easement lines shown on the Contract Drawings are approximate and were provided to establish a basis for bidding. Upon receiving the final easement descriptions, CONTRACTOR shall compare them to the lines shown on the Contract Drawings. If CONTRACTOR considers the final easements provided to differ materially from the representations on the Contract Drawings, CONTRACTOR shall within five (5) calendar days and before proceeding with the Work, notify ENGINEER in writing of any extra costs or time of performance associated with the differing easement line locations and the claim shall be administered in accordance with the Conditions of the Contract.

**SGC-4.02      Physical Conditions - Investigations and Reports**

The following are drawings and reports of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the site of the Work that are available for viewing at the site:

- 1.      *Original ejector station record drawings***

**SGC-5.03.D**

**Additional Insured**

Add the following language at the end of Article 5.03.D. of the General Conditions:

The name insured on the OWNER's and CONTRACTOR's Protective Policy shall be:

Mon Valley Sewage Authority

Additional named insured on the General Liability, Workers Compensation and Automotive Policies and the OWNER's and CONTRACTOR's Protective Policy shall include:

Wade Trim, Inc.  
Commonwealth of Pennsylvania

## SUPPLEMENTARY CONDITIONS

### SGC-5.04 Insurance Limits of Liability

The required limits of liability for insurance coverages requested in Section 5.03 shall be not less than the following:

#### SGC-5.04.A Worker's Compensation

|                                   |            |
|-----------------------------------|------------|
| Coverage A – Compensation         | Statutory  |
| Coverage B – Employer's Liability |            |
| Each Accident                     | \$ 100,000 |
| Disease – Policy Limit            | \$ 100,000 |
| Disease – Each Employee           | \$ 100,000 |

#### SGC-5.04.B Comprehensive General Liability

|                                  |             |
|----------------------------------|-------------|
| General Aggregate                | \$2,000,000 |
| Products – Com/Ops Aggregate     | \$1,000,000 |
| Personal and Advertising Injury  | \$ 500,000  |
| Each Occurrence                  | \$ 500,000  |
| Fire Damage (any one fire)       | \$ 100,000  |
| Medical Expense (any one person) | \$ 10,000   |

#### SGC-5.04.C Comprehensive Automobile Liability

|  |             |
|--|-------------|
| Bodily Injury (each person)              | \$ 500,000  |
| Property Damage or combined single limit | \$1,000,000 |

#### SGC-5.04.D OWNER's Protective – Coverage shall be Occurrence Form

|                   |             |
|-------------------|-------------|
| General Aggregate | \$2,000,000 |
| Each Occurrence   | \$1,000,000 |

#### SGC-5.04.E Builder's Risk-Installation Floater

Cost to Replace at Time of Loss

#### SGC-5.04.F Umbrella or Excess Liability

\$2,000,000

### SGC-6.07 Permit and Licenses

Add a new paragraph immediately after paragraph one which is to read as follows:

In those instances where a certificate of occupancy must be obtained before the Work under this Contract can be occupied and placed into service by OWNER, it shall be the responsibility of CONTRACTOR to arrange, coordinate, and pay any costs of obtaining said certificate.

### SGC-6.14 Record Documents

At the end of 6.14 add the following language:

The CONTRACTOR shall submit to the OWNER's representative and the ENGINEER on a monthly basis, copies of redline drawings completed for that month. The CONTRACTOR's payment request for that month may not be considered if said redline drawings are not produced or considered adequate for the work completed in that month. CONTRACTOR to make one, final reproducible copy of said record drawings and deliver to ENGINEER for OWNER prior to issuance of the final contract payment.

## SUPPLEMENTARY CONDITIONS

### SGC-13.03 Tests and Inspections

Add a new paragraph immediately after paragraph one, which is to read as follows:

CONTRACTOR shall submit the name of the independent testing laboratory CONTRACTOR intends to use for the Project to ENGINEER for approval. ENGINEER will not withhold approval except for cause.

### SGC-16.07 Liquidated Damages

Add a new Section 16.07 titled "Liquidated Damages" which shall read as follows:

If CONTRACTOR shall fail to substantially complete the work within the contract time, or extension of time granted by OWNER, then CONTRACTOR will pay to the OWNER the amount of liquidated damages as specified in the Agreement for each calendar day that CONTRACTOR shall be in default after the time stipulated in the Contract Documents. The liquidated damages charged shall be deducted from CONTRACTOR's progress payments.

CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in substantial completion of the Work is due to the following and CONTRACTOR has given written notice of such delay within seven (7) calendar days of the event to OWNER and ENGINEER:

1. To any preference, priority or allocation order duly issued by OWNER
2. To unforeseeable causes beyond the control and without the fault or negligence of CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of OWNER, acts of another CONTRACTOR in the performance of a Contract with OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and abnormal and unforeseeable weather; and
3. To any delays of Subcontractors occasioned by any of the causes specified in Items 1 and 2.

END OF SECTION

**SECTION 00 73 46**  
**WAGE DETERMINATION SCHEDULE**

**Part 1 General**

**1.01 General**

- A. Rates of wages and fringe benefits to be paid to each class of construction employees by CONTRACTOR, subcontractors, and their subcontractors and all employees employed by the CONTRACTOR, shall not be less than the wage and fringe benefit rates per the Pennsylvania Department of Labor and Industry Services schedule of occupational classification and wage and fringe benefit for the locality in which the work is to be performed.
1. The term "Contractor" shall include all general contractors, prime Contractors, project manager, or trade Contractors, and all of their Contractors or subcontractors and persons in privity of contract with them.
- B. CONTRACTOR shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates as prescribed in the contract and the address and telephone number of the Pennsylvania Department of Labor and Industry's office responsible for enforcement, and shall keep an accurate record showing the name and occupation of the actual wage and benefits paid to each construction mechanic employed in connection with said contract. This record shall be available for reasonable inspection by the Bureau of Labor Law Compliance and the Pennsylvania Department of Labor and Industry.
- C. In case there is an omission of any trade from the list of wage and fringe benefit rates to be paid to each class of mechanic by CONTRACTOR, it shall be understood that the trades omitted shall also be paid not less than the wage and fringe benefit rates prevailing in the locality in which the work is to be performed.
- D. A finding by the Bureau of Labor Law Compliance that CONTRACTOR or subcontractor is in violation of the requirements of the contract shall be final.
- E. CONTRACTOR may obtain Prevailing Wage Rates for the county in which the project is located by contacting the Pennsylvania Department of Labor and Industry at (717) 787-5279, or by visiting [www.dli.state.pa.us/landi/li\\_apps/requestPW.asp](http://www.dli.state.pa.us/landi/li_apps/requestPW.asp).

**Part 2 Products (Not Used)**

**Part 3 Execution (Not Used)**

END OF SECTION

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

|                            |   |
|----------------------------|---|
| Project Name:              | Aubrey Avenue Ejector Station Replacement   |
| General Description:       | Installation of a prefabricated ejector station, a 5' diameter precast wet well, necessary final piping connections, miscellaneous electrical work, and restoration and appurtenances as required to complete construction. |
| Project Locality           | City of Monessen  |
| Awarding Agency:           | Mon Valley Sewage Authority   |
| Contract Award Date:       | 6/8/2026  |
| Serial Number:             | 26-04635  |
| Project Classification:    | Building/Heavy/Highway  |
| Determination Date:        | 5/11/2026   |
| Assigned Field Office:     | Pittsburgh  |
| Field Office Phone Number: | (412)565-5300   |
| Toll Free Phone Number:    | (877)504-8354   |
| Project County:            | Westmoreland County   |

NOT TO BE USED FOR BIDDING PURPOSES

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

| <b>Project: 26-04635 - Building</b>  | <b>Effective Date</b> | <b>Expiration Date</b> | <b>Hourly Rate</b> | <b>Fringe Benefits</b> | <b>Total</b> |
|--|-----------------------|------------------------|--------------------|------------------------|--------------|
| Asbestos & Insulation Workers  | 8/1/2024              |                        | \$43.40            | \$29.51                | \$72.91      |
| Asbestos & Insulation Workers  | 8/1/2025              |                        | \$45.10            | \$30.31                | \$75.41      |
| Boilermakers   | 6/1/2016              |                        | \$40.90            | \$27.61                | \$68.51      |
| Bricklayer   | 6/1/2025              |                        | \$41.05            | \$25.86                | \$66.91      |
| Bricklayer   | 12/1/2025             |                        | \$41.55            | \$26.36                | \$67.91      |
| Bricklayer   | 6/1/2026              |                        | \$42.20            | \$26.71                | \$68.91      |
| Carpenters - Piledriver/Welder   | 1/1/2025              |                        | \$43.38            | \$22.72                | \$66.10      |
| Carpenters - Piledriver/Welder   | 1/1/2026              |                        | \$44.63            | \$23.47                | \$68.10      |
| Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers | 6/1/2024              |                        | \$41.49            | \$19.93                | \$61.42      |
| Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers | 6/1/2025              |                        | \$43.34            | \$19.93                | \$63.27      |
| Cement Mason/Concrete Finisher   | 6/1/2019              |                        | \$31.27            | \$19.39                | \$50.66      |
| Cement Masons  | 6/1/2025              |                        | \$35.52            | \$25.64                | \$61.16      |
| Drywall Finisher   | 1/1/2025              |                        | \$34.01            | \$24.63                | \$58.64      |
| Drywall Finisher   | 6/1/2025              |                        | \$35.16            | \$25.98                | \$61.14      |
| Electricians & Telecommunications Installation Technician                        | 12/27/2024            |                        | \$50.86            | \$32.69                | \$83.55      |
| Electricians & Telecommunications Installation Technician                        | 12/26/2025            |                        | \$53.11            | \$33.72                | \$86.83      |
| Elevator Constructor   | 1/1/2025              |                        | \$61.07            | \$40.05                | \$101.12     |
| Elevator Constructor   | 1/1/2026              |                        | \$63.71            | \$40.89                | \$104.60     |
| Glazier  | 9/1/2024              |                        | \$37.06            | \$31.89                | \$68.95      |
| Glazier  | 9/1/2025              |                        | \$38.70            | \$33.75                | \$72.45      |
| Iron Workers   | 6/1/2024              |                        | \$39.89            | \$36.47                | \$76.36      |
| Iron Workers   | 6/1/2025              |                        | \$41.50            | \$37.36                | \$78.86      |
| Laborers (Class 01 - See notes)  | 1/1/2025              |                        | \$27.32            | \$19.96                | \$47.28      |
| Laborers (Class 01 - See notes)  | 1/1/2026              |                        | \$27.82            | \$20.46                | \$48.28      |
| Laborers (Class 02 - See notes)  | 1/1/2025              |                        | \$27.47            | \$19.96                | \$47.43      |
| Laborers (Class 02 - See notes)  | 1/1/2026              |                        | \$27.97            | \$20.46                | \$48.43      |
| Laborers (Class 03 - See notes)  | 1/1/2025              |                        | \$30.47            | \$19.96                | \$50.43      |
| Laborers (Class 03 - See notes)  | 1/1/2026              |                        | \$30.97            | \$20.46                | \$51.43      |
| Landscape Laborer (Skilled)  | 1/1/2025              |                        | \$25.79            | \$18.78                | \$44.57      |
| Landscape Laborer (Skilled)  | 1/1/2026              |                        | \$26.79            | \$19.03                | \$45.82      |
| Landscape Laborer (Tractor Operator)   | 1/1/2025              |                        | \$26.09            | \$18.78                | \$44.87      |
| Landscape Laborer (Tractor Operator)   | 1/1/2026              |                        | \$27.09            | \$19.03                | \$46.12      |
| Landscape Laborer  | 1/1/2025              |                        | \$25.37            | \$18.78                | \$44.15      |
| Landscape Laborer  | 1/1/2026              |                        | \$26.37            | \$19.03                | \$45.40      |
| Millwright   | 6/1/2020              |                        | \$41.68            | \$20.32                | \$62.00      |
| Operators (Class 01 - see notes)   | 6/1/2025              |                        | \$42.72            | \$24.79                | \$67.51      |
| Operators (Class 01 - see notes)   | 6/1/2026              |                        | \$43.74            | \$25.29                | \$69.03      |
| Operators (Class 02 -see notes)  | 6/1/2025              |                        | \$36.67            | \$24.79                | \$61.46      |
| Operators (Class 02 -see notes)  | 6/1/2026              |                        | \$37.67            | \$25.29                | \$62.96      |
| Operators (Class 03 - See notes)   | 6/1/2025              |                        | \$33.88            | \$24.79                | \$58.67      |
| Operators (Class 03 - See notes)   | 6/1/2026              |                        | \$34.88            | \$25.29                | \$60.17      |
| Painters Class 6 (see notes)   | 6/1/2024              |                        | \$32.14            | \$24.93                | \$57.07      |

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

| <b>Project: 26-04635 - Building</b>           | <b>Effective Date</b> | <b>Expiration Date</b> | <b>Hourly Rate</b> | <b>Fringe Benefits</b> | <b>Total</b> |
|---|-----------------------|------------------------|--------------------|------------------------|--------------|
| Painters Class 6 (see notes)                  | 6/1/2025              |                        | \$34.16            | \$25.81                | \$59.97      |
| Pile Driver Divers (Building, Heavy, Highway) | 1/1/2025              |                        | \$62.82            | \$22.72                | \$85.54      |
| Pile Driver Divers (Building, Heavy, Highway) | 1/1/2026              |                        | \$64.70            | \$23.47                | \$88.17      |
| Piledrivers                                   | 1/1/2025              |                        | \$41.88            | \$22.72                | \$64.60      |
| Piledrivers                                   | 1/1/2026              |                        | \$43.13            | \$23.47                | \$66.60      |
| Plasterers                                    | 6/1/2024              |                        | \$33.14            | \$21.04                | \$54.18      |
| Plumbers and Steamfitters                     | 6/1/2025              |                        | \$41.47            | \$27.71                | \$69.18      |
| Plumbers and Steamfitters                     | 6/1/2026              |                        | \$42.92            | \$28.45                | \$71.37      |
| Pointers, Caulkers, Cleaners                  | 6/1/2025              |                        | \$40.66            | \$21.99                | \$62.65      |
| Pointers, Caulkers, Cleaners                  | 12/1/2025             |                        | \$41.50            | \$22.50                | \$64.00      |
| Pointers, Caulkers, Cleaners                  | 6/1/2026              |                        | \$42.20            | \$22.80                | \$65.00      |
| Roofers                                       | 6/1/2025              |                        | \$39.91            | \$20.76                | \$60.67      |
| Roofers                                       | 12/1/2025             |                        | \$41.21            | \$21.46                | \$62.67      |
| Roofers                                       | 6/1/2026              |                        | \$42.00            | \$23.17                | \$65.17      |
| Sheet Metal Workers                           | 7/1/2024              |                        | \$43.00            | \$33.96                | \$76.96      |
| Sheet Metal Workers                           | 7/1/2025              |                        | \$45.00            | \$35.16                | \$80.16      |
| Sign Makers and Hangars                       | 7/15/2024             |                        | \$32.32            | \$25.82                | \$58.14      |
| Sign Makers and Hangars                       | 7/15/2025             |                        | \$33.48            | \$26.41                | \$59.89      |
| Sprinklerfitters                              | 4/1/2024              |                        | \$46.45            | \$28.62                | \$75.07      |
| Sprinklerfitters                              | 4/1/2025              |                        | \$49.75            | \$29.21                | \$78.96      |
| Sprinklerfitters                              | 4/1/2026              |                        | \$52.82            | \$30.56                | \$83.38      |
| Steamfitters                                  | 6/1/2024              |                        | \$48.15            | \$29.57                | \$77.72      |
| Steamfitters                                  | 6/1/2025              |                        | \$50.20            | \$31.02                | \$81.22      |
| Stone Masons                                  | 12/1/2022             |                        | \$38.56            | \$23.61                | \$62.17      |
| Terrazzo Finisher                             | 6/1/2025              |                        | \$41.73            | \$19.03                | \$60.76      |
| Terrazzo Finisher                             | 12/1/2025             |                        | \$42.75            | \$19.51                | \$62.26      |
| Terrazzo Finisher                             | 6/1/2026              |                        | \$43.82            | \$19.94                | \$63.76      |
| Terrazzo Mechanics                            | 6/1/2025              |                        | \$41.13            | \$21.28                | \$62.41      |
| Terrazzo Mechanics                            | 12/1/2025             |                        | \$42.15            | \$21.76                | \$63.91      |
| Terrazzo Mechanics                            | 6/1/2026              |                        | \$43.22            | \$22.19                | \$65.41      |
| Tile Finisher                                 | 6/1/2025              |                        | \$33.24            | \$18.36                | \$51.60      |
| Tile Finisher                                 | 12/1/2025             |                        | \$33.99            | \$18.71                | \$52.70      |
| Tile Finisher                                 | 6/1/2026              |                        | \$34.82            | \$18.98                | \$53.80      |
| Tile Setter                                   | 6/1/2025              |                        | \$40.15            | \$22.80                | \$62.95      |
| Tile Setter                                   | 12/1/2025             |                        | \$40.80            | \$23.25                | \$64.05      |
| Tile Setter                                   | 6/1/2026              |                        | \$41.66            | \$23.49                | \$65.15      |
| Truckdriver class 1(see notes)                | 1/1/2025              |                        | \$36.43            | \$23.21                | \$59.64      |
| Truckdriver class 1(see notes)                | 1/1/2026              |                        | \$37.93            | \$23.71                | \$61.64      |
| Truckdriver class 2 (see notes)               | 1/1/2025              |                        | \$36.89            | \$23.52                | \$60.41      |
| Truckdriver class 2 (see notes)               | 1/1/2026              |                        | \$38.39            | \$24.02                | \$62.41      |
| Window Film / Tint Installer                  | 10/1/2019             |                        | \$25.00            | \$2.63                 | \$27.63      |

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

| <b>Project: 26-04635 - Heavy/Highway</b>                                  | <b>Effective Date</b> | <b>Expiration Date</b> | <b>Hourly Rate</b> | <b>Fringe Benefits</b> | <b>Total</b> |
|---|-----------------------|------------------------|--------------------|------------------------|--------------|
| Carpenter   | 1/1/2025              |                        | \$41.35            | \$22.09                | \$63.44      |
| Carpenter   | 1/1/2026              |                        | \$42.60            | \$22.84                | \$65.44      |
| Carpenter Welder  | 1/1/2025              |                        | \$42.85            | \$22.09                | \$64.94      |
| Carpenter Welder  | 1/1/2026              |                        | \$44.10            | \$22.84                | \$66.94      |
| Carpenters - Piledriver/Welder  | 1/1/2025              |                        | \$43.38            | \$22.72                | \$66.10      |
| Carpenters - Piledriver/Welder  | 1/1/2026              |                        | \$44.63            | \$23.47                | \$68.10      |
| Cement Finishers  | 1/1/2024              |                        | \$35.14            | \$26.30                | \$61.44      |
| Cement Finishers  | 1/1/2025              |                        | \$35.94            | \$27.50                | \$63.44      |
| Cement Masons   | 1/1/2020              |                        | \$32.84            | \$21.10                | \$53.94      |
| Electric Lineman  | 6/2/2025              |                        | \$57.10            | \$31.63                | \$88.73      |
| Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing) | 6/1/2025              |                        | \$41.50            | \$37.36                | \$78.86      |
| Laborers (Class 01 - See notes)   | 1/1/2025              |                        | \$33.70            | \$26.00                | \$59.70      |
| Laborers (Class 01 - See notes)   | 1/1/2026              |                        | \$34.70            | \$27.00                | \$61.70      |
| Laborers (Class 02 - See notes)   | 1/1/2025              |                        | \$33.86            | \$26.00                | \$59.86      |
| Laborers (Class 02 - See notes)   | 1/1/2026              |                        | \$34.86            | \$27.00                | \$61.86      |
| Laborers (Class 03 - See notes)   | 1/1/2025              |                        | \$34.25            | \$26.00                | \$60.25      |
| Laborers (Class 03 - See notes)   | 1/1/2026              |                        | \$35.25            | \$27.00                | \$62.25      |
| Laborers (Class 04 - See notes)   | 1/1/2025              |                        | \$34.70            | \$26.00                | \$60.70      |
| Laborers (Class 04 - See notes)   | 1/1/2026              |                        | \$35.70            | \$27.00                | \$62.70      |
| Laborers (Class 05 - See notes)   | 1/1/2025              |                        | \$35.11            | \$26.00                | \$61.11      |
| Laborers (Class 05 - See notes)   | 1/1/2026              |                        | \$36.11            | \$27.00                | \$63.11      |
| Laborers (Class 06 - See notes)   | 1/1/2025              |                        | \$31.95            | \$26.00                | \$57.95      |
| Laborers (Class 06 - See notes)   | 1/1/2026              |                        | \$32.95            | \$27.00                | \$59.95      |
| Laborers (Class 07 - See notes)   | 1/1/2025              |                        | \$34.70            | \$26.00                | \$60.70      |
| Laborers (Class 07 - See notes)   | 1/1/2026              |                        | \$35.70            | \$27.00                | \$62.70      |
| Laborers (Class 08 - See notes)   | 1/1/2025              |                        | \$36.20            | \$26.00                | \$62.20      |
| Laborers (Class 08 - See notes)   | 1/1/2026              |                        | \$37.20            | \$27.00                | \$64.20      |
| Millwright  | 6/1/2024              |                        | \$47.59            | \$23.72                | \$71.31      |
| Millwright  | 6/1/2025              |                        | \$49.72            | \$23.72                | \$73.44      |
| Operators (Class 01 - see notes)  | 1/1/2025              |                        | \$40.39            | \$24.23                | \$64.62      |
| Operators (Class 01 - see notes)  | 1/1/2026              |                        | \$41.96            | \$24.66                | \$66.62      |
| Operators (Class 02 -see notes)   | 1/1/2025              |                        | \$40.13            | \$24.23                | \$64.36      |
| Operators (Class 02 -see notes)   | 1/1/2026              |                        | \$41.70            | \$24.66                | \$66.36      |
| Operators (Class 03 - See notes)  | 1/1/2025              |                        | \$36.48            | \$24.23                | \$60.71      |
| Operators (Class 03 - See notes)  | 1/1/2026              |                        | \$38.05            | \$24.66                | \$62.71      |
| Operators (Class 04 - See notes)  | 1/1/2025              |                        | \$36.02            | \$24.23                | \$60.25      |
| Operators (Class 04 - See notes)  | 1/1/2026              |                        | \$37.59            | \$24.66                | \$62.25      |
| Operators (Class 05 - See notes)  | 1/1/2025              |                        | \$35.77            | \$24.23                | \$60.00      |
| Operators (Class 05 - See notes)  | 1/1/2026              |                        | \$37.34            | \$24.66                | \$62.00      |
| Operators Class 1-A   | 1/1/2025              |                        | \$43.39            | \$24.23                | \$67.62      |
| Operators Class 1-A   | 1/1/2026              |                        | \$44.96            | \$24.66                | \$69.62      |
| Operators Class 1-B   | 1/1/2025              |                        | \$42.39            | \$24.23                | \$66.62      |
| Operators Class 1-B   | 1/1/2026              |                        | \$43.96            | \$24.66                | \$68.62      |
| Painters Class 1 (see notes)  | 6/1/2022              |                        | \$34.45            | \$22.82                | \$57.27      |

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

| <b>Project: 26-04635 - Heavy/Highway</b>            | <b>Effective Date</b> | <b>Expiration Date</b> | <b>Hourly Rate</b> | <b>Fringe Benefits</b> | <b>Total</b> |
|---|-----------------------|------------------------|--------------------|------------------------|--------------|
| Painters Class 2 (see notes)                        | 6/1/2024              |                        | \$38.09            | \$24.93                | \$63.02      |
| Painters Class 2 (see notes)                        | 6/1/2025              |                        | \$40.36            | \$25.81                | \$66.17      |
| Painters Class 3 (see notes)                        | 6/1/2024              |                        | \$40.66            | \$24.93                | \$65.59      |
| Painters Class 3 (see notes)                        | 6/1/2025              |                        | \$43.68            | \$25.81                | \$69.49      |
| Painters Class 4 (see notes)                        | 6/1/2019              |                        | \$28.20            | \$20.06                | \$48.26      |
| Painters Class 5 (see notes)                        | 6/1/2019              |                        | \$22.91            | \$20.06                | \$42.97      |
| Pile Driver Divers (Building, Heavy, Highway)       | 1/1/2025              |                        | \$62.82            | \$22.72                | \$85.54      |
| Pile Driver Divers (Building, Heavy, Highway)       | 1/1/2026              |                        | \$64.70            | \$23.47                | \$88.17      |
| Piledrivers   | 1/1/2025              |                        | \$41.88            | \$22.72                | \$64.60      |
| Piledrivers   | 1/1/2026              |                        | \$43.13            | \$23.47                | \$66.60      |
| Steamfitters (Heavy and Highway - Gas Distribution) | 5/1/2022              |                        | \$48.43            | \$40.28                | \$88.71      |
| Truckdriver class 1(see notes)                      | 1/1/2025              |                        | \$36.43            | \$23.21                | \$59.64      |
| Truckdriver class 1(see notes)                      | 1/1/2026              |                        | \$37.93            | \$23.71                | \$61.64      |
| Truckdriver class 2 (see notes)                     | 1/1/2025              |                        | \$36.89            | \$23.52                | \$60.41      |
| Truckdriver class 2 (see notes)                     | 1/1/2026              |                        | \$38.39            | \$24.02                | \$62.41      |

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 01 11 00  
SUMMARY OF WORK**

**PART1    GENERAL**

1.1    REQUIREMENTS INCLUDED

- A.    The work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and furnishing all transportation and services, including fuel, power, water, and essential communications, and performance of all labor, work or other operations required for the fulfillment of the Contract in strict accordance with the specifications, schedules, drawings, and other Contract Documents as herein defined, all which are made a part hereof, and including such detail drawings as may be furnished by ENGINEER from time to time during construction in clarification of said Contract Documents. Work shall be completed and all work, materials, and services not expressly shown or called for in Contract Documents which may be necessary for the complete and proper construction of the work in good faith shall be performed, furnished, and installed by CONTRACTOR as though originally so specified or shown, at no increase in cost to OWNER.

1.2    WORK COVERED BY CONTRACT DOCUMENTS

- A.    The Work described in the Contract Documents can be generally described as follows:
1.    Aubrey Ave Ejector Station Replacement Project - Work to be completed includes the installation of a prefabricated pump station, a 5' diameter precast wet well, necessary final piping connections, miscellaneous electrical work, and restoration and appurtenances as required to complete construction. The full replacement of this pump station will solve the ongoing performance issues and maintenance requirements MVSA is currently facing with the existing ejector station.

1.3    CONTRACT METHOD

- A.    Work hereunder will be constructed under one (1) LUMP SUM contract as described above and as described in more detail in the Contract Documents.
- B.    All conditions in the Contract Documents shall apply to any and all subcontractors on this project. It shall be the Contractors responsibility to coordinate the Work with their respective subcontractors.

1.4    JURISDICTION

- A.    Agencies having jurisdiction over construction of this project include but are not limited to:
1.    The United States Environmental Protection Agency (USEPA),
  2.    Mon Valley Sewage Authority (MVSA), and
  3.    City of Monessen

## SUMMARY OF WORK

- B. CONTRACTOR shall secure any permits associated with construction as required by the agency(s) having jurisdiction, shall abide by all rules and regulations of each and shall pay all costs in connection with the permits. CONTRACTOR shall pay for such permits and inspection fees to ensure compliance with their requirements.

### 1.5 NOTICES

- A. CONTRACTOR's are required to comply with the Pennsylvania One Call requirements prior to digging, even though most of the utilities are internal to the plant.
- B. CONTRACTOR shall be responsible to coordinate with the various utility companies the construction methods and work to be done in the vicinity of utilities. When temporary relocation is necessary sufficient advance notice shall be given by CONTRACTOR to the utility involved.

### 1.6 COORDINATION

- A. It shall be responsibility of CONTRACTOR to coordinate his operations and those of his subcontractors in such a manner so as to avoid interference or delays and ensure the orderly progress of Work in the areas of common or interdependent construction activities. Limits of the Contract are indicated on the Plans and specified herein. However, these limits may be altered by mutual agreement of CONTRACTOR with the OWNER, with the written Agreement of OWNER'S REPRESENTATIVE, in order to facilitate the work operations.
- B. The CONTRACTOR will be responsible for coordinating for the duration of the project. All shut down requests needed shall be submitted to the OWNER through the CONTRACTOR. CONTRACTOR is responsible for coordinating their subcontractors and suppliers.
- C. The work of this Contract may involve coordination with other utility companies or agencies, either performing connection, repair or maintenance service on their own facilities. CONTRACTOR shall coordinate and cooperate with all utility companies and other contractors working in the same area that this Contract entails. This shall include, but not be limited to, the telephone company; the electric power company; the gas company; all subcontractors; and any other contractors who are performing work within the area of this Contract.
- D. All work at the plant is to be coordinated with the Plant Manager and Operations staff. It is mandatory that the plant remain in full operation at all times. Certain unit processes can be taken off line for certain periods of time. CONTRACTOR shall notify OWNER and ENGINEER at least seven (7) days in advance of any necessary process interruption or shutdown. During the interruption/shutdown, it shall be the contractor's responsibility to provide such temporary power, control, pumping or other services necessary to maintain plant operations. CONTRACTOR shall provide sufficient staff to ensure that the temporary facilities are maintained during off-shift

## SUMMARY OF WORK

periods.

### 1.7 REFERENCE STANDARDS

- A. Reference to the standards of any technical society, organization, or association or to codes of local, state or federal authorities shall mean the latest effective standard, code, specification, or standard adopted and published at the date of receipt of bids, unless specifically stated otherwise.

### 1.8 AVAILABILITY OF LAND

- A. Work is located within the property lines of the OWNER at the existing wastewater treatment plant. In areas where work will extend beyond right-of-ways or the property lines, OWNER will secure a construction easement to facilitate the work.
- B. Nothing in this Contract shall imply that CONTRACTOR has exclusive use of roadways or public and/or private land employed to perform the work.
- C. CONTRACTOR shall coordinate staging, layout and equipment storage areas with OWNER and subcontractors on site. CONTRACTOR shall be responsible for the complete restoration of areas used by CONTRACTOR for such purposes, the cost of which is to be included in the Lump Sum price for this Project. CONTRACTOR is responsible for securing the staging and storage areas and limiting the ability for persons to access the treatment plant site through the staging and storage area. CONTRACTOR shall coordinate with OWNER to allow reasonable access by OWNER to the staging and storage area to perform routine activities associated with the facility operation.

### 1.9 SALVAGE OF MATERIAL AND EQUIPMENT

- A. No items shall be salvaged and reused without permission from OWNER or OWNER'S REPRESENTATIVE unless specifically stated otherwise in the bid form.
- B. OWNER reserves the right of first refusal to salvage any item from the plant. If so directed by OWNER'S REPRESENTATIVE, CONTRACTOR shall deliver to a location on the plant site any items to be salvaged by OWNER.

### 1.10 STORAGE OF MATERIALS

- A. Storage conditions shall be acceptable to OWNER for all materials and equipment not incorporated into the Work but included in applications for payment. Such storage arrangements and conditions shall be presented in writing and shall afford adequate and satisfactory security and protection. Off-site storage facilities shall be accessible to OWNER and OWNER'S REPRESENTATIVE. Stored materials shall be insured for full value. Certificates of Insurance coverage must be submitted to OWNER or OWNER'S REPRESENTATIVE with the request for payment by the CONTRACTOR.

## SUMMARY OF WORK

- B. All arrangements and costs for storage facilities shall be paid by CONTRACTOR.

### 1.11 CONSTRUCTION SEQUENCE

- A. The Contract Documents include a detailed construction sequence to be used as a guideline during the performance of the Work.

The intent of the construction sequence is to maintain the existing sanitary flows through the area during construction of the proposed pump station.

- B. After Contract award, CONTRACTORS shall submit a construction sequencing plan for the Improvements that are part of his/her Contract. The sequencing plan may follow the plan provided in the Contract Documents or could be a variation of that plan. CONTRACTOR is ultimately responsible for its own means, methods and materials in the completion of the Contract. CONTRACTORS sequencing plan is to be submitted to ENGINEER for review in accordance with the requirement of Section 01 3300 of these Specifications. Approval of the sequencing plan does not relieve CONTRACTOR from its responsibility to perform the Work in accordance with the Contract Documents and to allow the OWNER to maintain and operate the treatment facility at all times.
- C. CONTRACTOR shall achieve all Milestones as set forth in Specification Section 01 10 30 Project Dates, including Substantial Completion, and Final Completion in accordance with the dates set forth in the Contract Documents. CONTRACTOR understands that TIME IS OF THE ESSENCE of this Contract.
- D. OWNER delegates all scheduling and coordination responsibility for the work of the Project to CONTRACTOR. CONTRACTOR shall be responsible for scheduling and coordinating CONTRACTOR'S Work with OWNER'S forces on the Project.
- E. CONTRACTOR'S Schedule. Within 30 days of the Notice of Award, CONTRACTOR shall provide to Engineer and OWNER for their review, comment and approval a CPM schedule providing for all activities necessary for the completion of CONTRACTOR'S Work within the time limits set forth in the Contract Documents. All CPM Schedules submitted shall provide for the Completion of CONTRACTOR'S work in accordance with the Milestone Dates, the Substantial Completion Date, and the Final Completion Date, unless such dates are modified in a written Change Order signed by OWNER.
- F. OWNER shall require all other Prime Contractors on the Project to provide to the General CONTRACTOR, within 30 days of the notice of Award to such other Prime Contractors, all schedule and coordination information reasonably necessary for the completion of such Prime Contractor's Work within the time limits set forth in the Contract Documents. All CPM Schedules submitted shall provide for the Completion of the Prime Contractor's work in accordance with the Milestone Dates, the Substantial Completion Date, and the Final Completion Date, unless such dates are modified in a written Change Order signed by OWNER.

## SUMMARY OF WORK

- G. General CONTRACTOR shall be responsible to coordinate the CONTRACTOR'S Schedule, to the extent appropriate, the OWNER'S own forces, into an overall Project Schedule which shall provide for the completion of all Project Work in accordance with the Milestone Dates, the Substantial Completion Date, and the Final Completion Date. In connection therewith, CONTRACTOR shall organize and conduct at least one schedule coordination meeting between and among CONTRACTOR, OWNER, and ENGINEER to obtain the agreement of all parties to the overall Project Schedule. All parties shall reach agreement and sign off on the overall Project Schedule. When agreed to by all parties, the Project Schedule shall become the baseline schedule for the Project.
- H. No later than the last day of each month, CONTRACTOR shall submit an updated CPM Schedule, clearly identifying and explaining (in the schedule and in narrative form) any changes from the prior schedule, including but not limited to any changes in duration, activity or logic from the prior schedule. All schedules and schedule updates shall be submitted in a separate file, and shall not overwrite the prior version. CONTRACTOR shall coordinate such changes with the overall schedule, and shall be responsible to resolve any schedule or coordination conflicts that arise therefrom. CONTRACTOR shall update the Project Schedule to reflect the coordinated schedule information. No Milestone Date, Substantial Completion Date or Final Completion Date may be modified or changed without a written Change Order executed by OWNER.
- I. No later than the 10th day of each month, CONTRACTOR shall submit to the ENGINEER and OWNER a schedule report containing the updated Project Schedule, and a narrative report describing the basis and extent of any changes to the Project Schedule from the prior version of the Project Schedule, and describing in detail and changes or issues which may have an effect on the ability to complete the Project or the Work of CONTRACTOR within the time required by the Contract Documents.
- J. If CONTRACTOR encounters any difficulty in obtaining necessary schedule or coordination information or cooperation from OWNER or ENGINEER, CONTRACTOR shall immediately notify OWNER and ENGINEER in writing, and shall schedule a meeting with Owner, Engineer and CONTRACTOR for the purpose of resolving such issue. Failure to notify OWNER of such issue shall constitute a representation by CONTRACTOR that it has been provided sufficient information to adequately discharge its coordination and scheduling responsibilities hereunder.
- K. All CPM schedules and updates shall be submitted as both paper copies and in electronic native format, or as requested by OWNER or ENGINEER.

**PART2** **PRODUCTS (NOT USED)**

**PART3** **EXECUTION (NOT USED)**

END OF SECTION

**SECTION 01 1120**  
**SUGGESTED SEQUENCE OF CONSTRUCTION**

**PART 1   GENERAL**

1.1   DESCRIPTION

- A.   It is the CONTRACTOR'S responsibility to maintain the existing sanitary flows through the area, fill seal and abandon the existing force main, remove the existing manhole, and remove the existing ejector station in accordance with all applicable regulations. In planning and executing his program for construction, the CONTRACTOR shall note that a bypass pumping shall be operational at all times. The CONTRACTOR shall discuss, coordinate and agree with the OWNER.
- B.   The CONTRACTOR shall field verify the locations and elevations of all existing piping prior to any piping submittals.
- C.   All temporary electrical and piping materials, supports and routings shall be submitted for approval prior to installation.
- D.   Interruptions in facility operations shall be coordinated in accordance with 01 35 23 Job Conditions, 01 50 00 Temporary Facilities and Controls, and other contract documents.

1.2   SEQUENCE

- A.   The Contractor will be responsible for ordering all equipment, materials, etc. to ensure that it is available when required by the sequencing plan.
- B.   The construction will have a time limit of 210 calendar days from Contract Notice to Proceed, which is anticipated to occur on or about July 13, 2026, and generally includes:
  - 1.   Contractor to prepare the laydown and staging area, including securing existing fence openings/gates.
  - 2.   Coordinate with OWNER on any emptying and isolating processes from service as necessary to perform work.
  - 3.   Install bypass pumping line.
  - 4.   Remove and replace existing pump station.
  - 5.   Install electrical and plumbing items as required to complete pump station installation.
  - 6.   Perform reconnections to existing sewer.
  - 7.   Perform testing of all mechanical, electrical and instrumentation.
  - 8.   Install fencing.
  - 9.   Place topsoil, seed, mulch and landscaping at any disturbed areas.
  - 10.   Complete commissioning and acceptance testing of installed equipment.

**SUGGESTED SEQUENCE OF CONSTRUCTION**

**PART 2 PRODUCTS**

NOT USED

**PART 3 EXECUTION**

NOT USED

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 01 12 00  
MAJOR EQUIPMENT SUPPLIERS**

**PART 1      GENERAL**

1.1    DEFINITIONS

- A.    Manufacturers or suppliers, as used in the context of "approved manufacturers or suppliers of major equipment," shall mean the manufacturers or suppliers listed in Article 1.3 of this Section.

1.2    INSTRUCTIONS FOR BIDDING MAJOR EQUIPMENT

- A.    Furnish, for base bid, cost to install equipment by any of the suppliers listed in Article 1.3 ACCEPTABLE MANUFACTURERS OF MAJOR EQUIPMENT, or as added to Article 1.3 by addendum. The OWNER will purchase this equipment.
- B.    Name only one of said suppliers in the schedule of major equipment suppliers found in the Proposal.
- C.    Proposal shall be considered irregular and subject to rejection if the Bidder:
1.    Fails to list an approved supplier for each item.
  2.    Lists more than one approved supplier for each item.
- D.    If the Bidder fails to list an approved supplier, the Owner has the sole right to select one of the suppliers from the list of acceptable Manufacturers of Major Equipment in Article 1.3.
- E.    If the Bidder lists more than one approved supplier, the Owner has the sole right to select one of the suppliers so listed.
- F.    Requests for prequalification of equipment to be listed in Article 1.3 must comply specifically with applicable provisions of the General Conditions and other pertinent section of the Contract Documents.

1.3    ACCEPTABLE MANUFACTURERS OF MAJOR EQUIPMENT

- A.    Aubrey Ave Ejector Station Replacement - General Construction:
1.    Prefabricated Pump Station: Smith & Loveless, Inc.

**PART2      PRODUCTS (NOT USED)**

**PART3      EXECUTION (NOT USED)**

END OF SECTION

**SECTION 01 25 13  
SUBSTITUTION PROCEDURES**

**PART 1      GENERAL**

1.1 SECTION INCLUDES

- A. Options for making product or process selections.
- B. Procedures for proposing equivalent construction products or processes, including preapproved, prequalified, and approved products or processes.

1.2 DEFINITIONS

- A. Product: Means materials, equipment, or systems incorporated into the Project. Product does not include machinery and equipment used for production, fabrication, conveying, and erection of the Work. Products may also include existing materials or components designated for reuse.
- B. Process: Any proprietary system or method for installing system components resulting in an integral, functioning part of the Work. For this Section, the word Product includes Processes.

1.3 SELECTION OPTIONS

- A. Preapproved Products: Construction products of certain manufacturers or suppliers designated in the Specifications as "preapproved." A list of preapproved products is maintained by OWNER. Preapproved products for this Project are designated as preapproved in the Specifications. Products of other manufacturers or suppliers will not be acceptable for this Project and will not be considered under the submittal process for approving alternate products.
- B. Prequalified Products: Construction products of certain manufacturers or suppliers designated in the Specifications as "prequalified." Prequalified products for this Project are designated as prequalified in the Specifications. Products of other manufacturers or suppliers will not be acceptable for this Project and will not be considered under the submittal process for approving alternate products.
- C. Approved Products: Construction products or processes of certain manufacturers or suppliers designated in the Specifications followed by the words "or approved equal." Approval of alternate products or processes not listed in the Specifications may be obtained through provisions for product options and substitutions in Document 00 72 00 - General Conditions, and by following the submittal procedures specified in 01 33 00 - Submittal Procedures. The procedure for approval of alternate products is not applicable to preapproved or prequalified products.
- D. Product Compatibility: To the maximum extent possible, provide products that are of the same type or function from a single manufacturer, make, or source. Where more than one choice is available as a CONTRACTOR's option, select a product which is compatible with other products already selected, specified, or in use by OWNER.

## SUBSTITUTION PROCEDURES

### 1.4 CONTRACTOR'S RESPONSIBILITY

- A. CONTRACTOR's responsibility related to product options and substitutions is defined in Section 00 72 00, General Conditions.
- B. Furnish information ENGINEER deems necessary to judge equivalency of the alternate product.
- C. Pay for laboratory testing, as well as any other review or examination costs, needed to establish the equivalency between products in order to obtain information upon which ENGINEER can base a decision.
- D. If ENGINEER determines that an alternate product is not equal to that named in the Specifications, CONTRACTOR shall furnish one of the specified products.

### 1.5 ENGINEER'S REVIEW

- A. Alternate products or processes may be used only if approved in writing by ENGINEER. ENGINEER's determination regarding acceptance of a proposed alternate product is final.
- B. Alternate products will be accepted if the product is judged by ENGINEER to be equivalent to the specified product or to offer substantial benefit to OWNER.
- C. OWNER retains the right to accept any product or process deemed advantageous to OWNER, and similarly, to reject any product or process deemed not beneficial to OWNER.

### 1.6 SUBSTITUTION PROCEDURE

- A. Collect and assemble technical information applicable to the proposed product to aid in determining equivalency as related to the approved product specified.
- B. Submit a written request for a construction product to be considered as an alternate product.
- C. Submit the product information after the effective date of the Agreement and within the time period allowed for substitution submittals given in Section 00 72 00, General Conditions. After the submittal period has expired, requests for alternate products will be considered only when a specified product becomes unavailable because of conditions beyond CONTRACTOR's control.
- D. Submit six (6) copies of each request for alternate product approval. Include the following information:
  - 1. Complete data substantiating compliance of proposed substitution with Contract Documents.
  - 2. For products:
    - a. Product identification, including manufacturer's name and address.

## **SUBSTITUTION PROCEDURES**

- b. Manufacturer's literature with product description, performance and test data, and reference standards.
  - c. Samples, as applicable.
  - d. Name and address of similar projects on which product was used and date of installation. Include the name of OWNER, ENGINEER, and CONTRACTOR.
3. For construction methods:
    - a. Detailed description of proposed method.
    - b. Drawings illustrating methods.
  4. Itemized comparison of proposed substitution with product or method specified.
  5. Data relating to changes in construction schedule.
  6. Relation to separate contracts, if any.
  7. Accurate cost data on proposed substitution in comparison with product or method specified.
  8. Other information requested by ENGINEER.
- E. Approved alternate products will be subject to the same review process as the specified product would have been for shop drawings, product data, and samples.

**PART 2**      **PRODUCTS (NOT USED)**

**PART 3**      **EXECUTION (NOT USED)**

END OF SECTION

**SECTION 01 31 19  
PROJECT MEETINGS**

**PART 1      GENERAL**

1.1 PRECONSTRUCTION MEETING

- A. Prior to the delivery of materials or the start of any construction, CONTRACTOR shall request a Preconstruction Meeting from ENGINEER. A minimum seven (7) working days' notification to meeting participants shall be required.
- B. Schedule:
1. ENGINEER will establish the meeting place, time and date, distribute agenda, notify participants, and administer the meeting. CONTRACTOR shall notify major Subcontractors.
- C. Attendance:
1. OWNER
  2. ENGINEER
  3. CONTRACTOR
  4. Major Subcontractors
  5. Utility Companies
  6. Safety Representatives
  7. Governmental Agencies
- D. Agenda:
1. Distribution by CONTRACTOR and discussion, review and acceptance of:
    - a. List of names and telephone numbers for superintendent, foreman and other key personnel.
    - b. List of major Subcontractors and Suppliers.
    - c. Projected construction preliminary progress schedules.
    - d. Preliminary schedule of Shop Drawings and Sample submittals.
    - e. Estimated monthly payment schedule and schedule of values
  2. Critical Work sequencing.
  3. Major equipment deliveries and priorities.
  4. Project coordination.
  5. Responsibilities of OWNER, ENGINEER, CONTRACTOR and other agencies.
  6. Procedures and processing of:
    - a. Field decisions.
    - b. Proposal requests.
    - c. Submittals.
    - d. Change Orders.
    - e. Applications for Payment.
  7. Adequacy of distribution of Contract Documents.
  8. Procedures for maintaining Record Documents.
  9. Use of premises.

## PROJECT MEETINGS

10. Construction facilities, controls and construction aids.
11. Temporary utilities.
12. Safety and first aid procedures.
13. Security procedures.
14. Housekeeping procedures.
15. Testing

### E. Minutes:

1. ENGINEER will prepare and distribute copies to participants within seven (7) days of meeting. Participants shall report corrections and comments within ten (10) days of receipt of minutes.

## 1.2 PROGRESS MEETINGS

A. Periodic Progress Meetings will be held as required by the progress of the Work.

### B. Schedule:

1. ENGINEER will establish the meeting place, time and date, distribute agenda, notify participants and administer the meeting. CONTRACTOR shall notify major Subcontractors.

### C. Attendance:

1. ENGINEER
2. CONTRACTOR
3. Subcontractor as appropriate to the agenda.
4. Suppliers as appropriate to the agenda.
5. Others

### D. Agenda:

1. Review minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Review field observations, problems, conflicts.
4. Review problems which impede Construction Schedules.
5. Review of off-site fabrication, delivery schedules.
6. Review corrective measures and procedures to regain projected schedule.
7. Review revisions to Construction Schedules.
8. Review plan progress, schedule, during succeeding Work period.
9. Review coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Review maintenance of quality standards.
12. Review proposed changes for:
  - a. Effect on Construction Schedule and on completion date.
13. Other business.

## PROJECT MEETINGS

E. Minutes:

1. ENGINEER will prepare and distribute copies to participants and OWNER within seven (7) days of meeting for review at the next meeting.

**PART 2**      **PRODUCTS (NOT USED)**

**PART 3**      **EXECUTION (NOT USED)**

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 01 33 00  
SUBMITTAL PROCEDURES**

**PART 1      GENERAL**

1.1      SUBMITTALS - GENERAL

- A.      CONTRACTOR shall submit Shop Drawings, product data, and Samples, as required by the individual Specification Sections, to ENGINEER for review in accordance with the provisions of paragraphs 6.19 through 6.20, inclusive, of the General Conditions.

1.2      PROGRESS SCHEDULES

- A.      CONTRACTOR shall submit two (2) copies of Progress Schedules indicating the starting and completion dates of the various stages of the Work and estimated payments during the next three (3) months to ENGINEER.
- B.      Proposed Progress Schedules shall be submitted to ENGINEER prior to the preconstruction meeting. CONTRACTOR shall distribute copies of the Progress Schedules during the preconstruction meeting for discussion.
- C.      Progress Schedules shall be updated by CONTRACTOR and submitted to ENGINEER, as a part of applications for progress payments, through completion of the Work. *Failure to update progress schedule may be the basis for rejection of applications for progress payments.*

1.3      SHOP DRAWING SCHEDULE

- A.      CONTRACTOR shall submit two (2) copies of Shop Drawing Schedules indicating the individual items and submission dates to ENGINEER. A preliminary Schedule in accordance with the requirements in the General Conditions shall be submitted by CONTRACTOR prior to the preconstruction meeting. Copies of this preliminary Schedule shall be made available by CONTRACTOR during the preconstruction meeting. A final Schedule shall be submitted by CONTRACTOR at least ten (10) days prior to submitting the first Application for a Payment.

1.4      SCHEDULE OF VALUES

- A.      CONTRACTOR, if applicable, shall submit two (2) copies of Schedules of Value of the Work to ENGINEER. A preliminary Schedule of Values shall be submitted by CONTRACTOR 30 days from the award of the project. A final Schedule of Values, prepared in accordance with Paragraph 14.01 of the General Conditions and presented in sufficient detail to serve as the basis for payments during construction, shall be submitted to OWNER and ENGINEER for review and approval at least ten (30) days prior to submitting the first Application for Payment.

1.5      APPLICATIONS FOR PAYMENT

- A.      CONTRACTOR shall submit Applications for Payment to ENGINEER in accordance with the provisions of Article 14 of the General Conditions.

## SUBMITTAL PROCEDURES

Applications for Payment shall be made on forms provided by or approved by the ENGINEER.

- B. Sample CONTRACTOR's Application/Declaration, Payment Schedule and ENGINEER's Certificate forms for this purpose are included in the Contract Documents. Copies of these forms, with Project specific information completed by the ENGINEER, will be given to the CONTRACTOR at the preconstruction meeting or, if applicable, after approval of the final Schedule of Values.
- C. CONTRACTOR shall submit a completed Payment Schedule with an executed Contractor's Application for Payment and Contractor's Declaration to ENGINEER not more often than once per month.
- D. CONTRACTOR shall also submit with each payment, beginning with the second payment request, the Sworn Statement (Section 00 06520) regarding partial waiver of liens.
- E. ENGINEER will certify payments with the use of ENGINEER's Certificate for Payment.

### 1.6 SHOP DRAWINGS

- A. Shop Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to Plan Sheet Number and Detail, and Specification Section Number and Page Number. A standard shop drawing submittal form will be provided by ENGINEER prior to the start of the Work.

### 1.7 PRODUCT DATA

- A. Product data shall be presented in a clear and thorough manner identified the same as the Shop Drawings. Included with the information shall be performance characteristics and capacities depicting dimensions and clearances required.
- B. Manufacturer's standard schematic drawings and diagrams shall be modified to delete information which is not applicable to the Work. Manufacturer's standard information shall be supplemented to provide information specifically applicable to the Work.

### 1.8 SAMPLES

- A. Samples shall be of sufficient size and quantity to clearly illustrate functional characteristics of the product with integrally related parts and attachment devices depicting full range of color, texture and pattern.

### 1.9 SUBMISSION REQUIREMENTS

- A. CONTRACTOR shall make submittals in accordance with the approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other Contractor. No damages will be awarded or extension of time granted due to the Shop Drawing and product data review process.

## SUBMITTAL PROCEDURES

- B. CONTRACTOR shall submit an entire package of Shop Drawings and product data information for major items of Work so that ENGINEER can review the package as a unit.
- C. The number of submittals required shall be one (1) digital copy in .pdf format, three (3) reproducible paper copies and three (3) prints per Shop Drawings and four (4) copies of each product data information sheet. Submittals shall contain the following information:
1. Field dimensions, clearly identified as such.
  2. Relation to adjacent or critical features of the Work or materials.
  3. Applicable standards, such as ASTM or Federal Specification Numbers.
  4. Identification of deviations from Contract Documents.
  5. Identification of revisions on resubmittals.
  6. CONTRACTOR's stamp indicating as a minimum the Project Title, Date of Submission, Date of Previous Submission, and Specification Section number.
    - a. CONTRACTOR's stamp shall be initialed or signed, certifying the CONTRACTOR's review and approval of submittal per General Conditions paragraph 6.20, verification of products, field measurements, field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents.
- D. ENGINEER shall affix a stamp and initials or signature and indicate confirmation or requirements for resubmittal. ENGINEER shall return to CONTRACTOR one (1) digital copy, and up to one (1) of the reproducibles and three (3) copies of the product data information for distribution or for resubmission.
- E. Digital copies shall be either emailed or transferred via secure file transfer protocol (FTP) or other secure digital means, as agreed between OWNER, ENGINEER and CONTRACTOR. Files transferred by email or FTP shall be considered delivered if received prior to 5:00 pm. Files received after 5:00pm shall be considered as being received the next day. Files transferred by FTP shall be accompanied by an email to ENGINEER or CONTRACTOR indicating the transfer of the document. Scanned copies which are illegible shall be cause for rejection.
- F. REVIEW SCHEDULE: The following review times are expected for prompt review so as not to delay the work:
1. First Submission- Return comments to CONTRACTOR within:
    - a. OWNER: Fourteen (14) consecutive calendar days from receipt of first submission.
    - b. ENGINEER: Fourteen (14) consecutive calendar days from receipt of first submission.
  2. Resubmission/Rejection-
    - a. CONTRACTOR: If first submission is returned with a rejected or revise and resubmit or if additional information is requested by the

## SUBMITTAL PROCEDURES

- OWNER or ENGINEER, revise and return to the ENGINEER within fourteen (14) consecutive calendar days.
- b. OWNER/ENGINEER: Review and provide comment to CONTRACTOR: Return to ENGINEER within seven (7) consecutive calendar days of the receipt of the resubmission or request for additional information.
3. Additional (more than one (1)) Resubmission/Rejections of same shop drawing:
    - a. CONTRACTOR: Upon receipt from ENGINEER, provide updated shop drawings or additional information, as requested, within seven (7) consecutive calendar days.

### 1.10 RESUBMISSION REQUIREMENTS

- A. CONTRACTOR shall make all corrections or changes in the submittals required by ENGINEER and resubmit. CONTRACTOR shall indicate any changes which have been made other than those requested by ENGINEER.

### 1.11 SPECIFICATION SECTION REQUIREMENTS

- A. Miscellaneous schedules, field reports, test reports, affidavits, certificates, permits, agreements and other items identified in the Specification Sections, or as requested by ENGINEER shall be submitted to ENGINEER in duplicate. As a minimum, these submittals should be identified with the Project title, date of submission, and Specification section reference.

### 1.12 MANUFACTURER'S OPERATION AND MAINTENANCE DATA

- A. CONTRACTOR shall furnish one (1) digital file in .pdf format and four (4) copies of all operation and maintenance data required per the various Specification Sections. Prior to 50% completion of the Project, CONTRACTOR shall have submitted one (1) acceptable copy to ENGINEER for review.
- B. Operation and maintenance data shall be bound in a suitable number of 3-inch or 4-inch, 3-ring hard cover binders. Permanently imprinted on the cover shall be the words "Manufacturer's Operation and Maintenance Data", Project title, location of the Project, and the date. A table of contents shall be provided in the front of each binder to list the various sections in the manual.
- C. Information to be provided in each section of the manual, for each piece of equipment and project component shall include, but not be limited to, detailed equipment drawings; sections cut through all of the major equipment and subassemblies; installation and operational procedures; complete wiring and piping schematics; lubrication materials and procedures; maintenance procedures; and parts lists complete enough to permit identification of parts by nomenclature, manufacturer's part number and use.
- D. At the front of each section a maintenance schedule shall be provided for each piece of equipment in the section. The schedule shall display the daily, weekly, monthly, semi-annual, annual or fraction thereof, lubrication and preventative

## SUBMITTAL PROCEDURES

maintenance required to meet warranty conditions and the manufacturer's recommendations for optimum performance and life of the unit. A common schedule format is to be developed and used for all of the sections. Photocopies or reproductions of the manufacturer's literature will not be accepted.

- E. O&M Manual Review schedule shall follow the same schedule as the shop drawings schedule in 1.10.E of this Specification Section, unless otherwise instructed by the ENGINEER.

### 1.13 PHOTOGRAPHS

#### A. Preconstruction Photographs:

- 1. CONTRACTOR shall furnish ENGINEER with digital photos of the Project site, including staging areas and areas for ingress and egress of the Project site, to record the existing conditions of the Project areas prior to commencement of construction activities. OWNER shall have the authority to designate areas for which coverage may be added or omitted. Digital photos shall be taken prior to mobilization to the site and/or placement of materials or equipment on the construction area and furnished one (1) week prior to the preconstruction meeting. Photos will be provided on a thumb drive.

#### B. Construction Photographs:

- 1. CONTRACTOR shall furnish to ENGINEER digital color photos of the construction progress on a disc. At a minimum, ten (10) photos of each main construction area, or areas directed by OWNER and/or ENGINEER, shall be taken. Digital photographs of all underground facilities are to be taken in sufficient detail to allow visual confirmation as to their locations. Each photo is to be numbered and each number is to correspond to a separate photo identification sheet, in Word format, included on the disc. The photo information shall include, at a minimum, the photo number, date taken and description of the photo view. CONTRACTOR shall submit the digital photographs monthly along with the Application for progress Payment as described in Article 14 of the General Conditions.

### **PART 2      PRODUCTS (NOT USED)**

### **PART 3      EXECUTION (NOT USED)**

END OF SECTION

**SECTION 01 35 23  
JOB CONDITIONS**

**PART 1      GENERAL**

1.1 PROJECT CONDITIONS

- A. Prior to installation of material, equipment and other work, verify with Subcontractors, material or equipment manufacturers, and installers that the substrate or surface to which those materials attach is acceptable for installation of those materials or equipment. (Substrate is defined as building surfaces to which materials or equipment is attached to i.e., floors, walls, ceilings, etc.).
- B. Correct unacceptable substrate until acceptable for installation of equipment or materials.
- C. Maintaining Facility Operations:
  - 1. Facility is currently operating. Ensure construction activities do not interfere with OWNER's operation of facility. Planned process shut-downs may be permitted. CONTRACTOR must notify OWNER at least seven (7) days in advance of any shut-down. Shut-downs are only allowed between the hours of 8:00 a.m. and 4:00 p.m. CONTRACTOR responsible for providing any and all temporary pumping and piping system to ensure plant operations are not disrupted.
- D. The project area is subject to moist atmosphere and an atmosphere that can be potentially corrosive to equipment. Special care shall be taken by CONTRACTOR to ensure proper storage and use of equipment to minimize exposure of that equipment until controls are in place.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

END OF SECTION

**SECTION 01 45 00**  
**QUALITY CONTROL**

**PART 1**      **GENERAL**

1.1    GENERAL REQUIREMENTS

- A.    Sampling of materials will be made by CONTRACTOR in accordance with the methods designated by the Specifications. CONTRACTOR shall furnish such facilities as ENGINEER may require for collecting, storing, and forwarding samples to the CONTRACTORS Laboratory. CONTRACTOR in all cases shall furnish the required samples to OWNER without charge.

1.2    TESTS OF MATERIALS

- A.    Materials in the Work shall meet the requirements of the Contract Documents.
- B.    Tests of materials will be made as specified herein. ENGINEER shall have access to materials intended for use in the Work as well as to the plants where such materials are produced. Plant inspection may be made if the quantities are sufficient to warrant such inspection and if it is to the best interest of OWNER. In any case materials may be either inspected or tested when received on the Project.
- C.    Materials shall not be used until approval has been received from ENGINEER. Approval of materials at the producing plant does not constitute a waiver of ENGINEER's right for re-examination at the Project site.
- D.    Standards for testing materials, unless otherwise specified, shall be as established by the American Society for Testing and Materials (ASTM). Tests of materials will be made in accordance with the methods described or designated in the Specifications.
- E.    Sampling and testing of materials not specifically mentioned shall be done by generally accepted methods, unless otherwise specified by ENGINEER. CONTRACTOR shall be responsible for hiring an independent third party testing agency, acceptable to the ENGINEER and OWNER, to conduct the sampling and testing as noted in the contract documents.

1.3    CERTIFICATION OF MATERIALS

- A.    At the request of ENGINEER, CONTRACTOR shall provide ENGINEER with certification that the various materials to be used conform to the standards referred to in the Contract Documents.

1.4    SOURCE QUALITY CONTROL

- A.    Testing identified in the Specifications as Source Quality Control, which is required to establish quality of materials, equipment or fabricated items, shall be paid for by CONTRACTOR.

## QUALITY CONTROL

### 1.5 INSPECTOR DAYS

- A. Resident Project Representative(s) will be assigned to the Project by ENGINEER, as necessary (in the opinion of ENGINEER) to periodically monitor CONTRACTOR's work. When multiple CONTRACTOR crews are working on the Project, multiple Resident Project Representatives may be assigned to the Project.
- B. CONTRACTOR shall give ENGINEER at least 48 hours notice, exclusive of Saturdays, Sundays or holidays, when the Project requires an increase or decrease in the number of Resident Project Representatives.
  - 1. Failure to observe this requirement will either necessitate the charging of 4 hours show-up time if the Resident Project Representative appears on the Project, or the halting of all additional operations until a Resident Project Representative is available.
- C. Unless the Resident Project Representative is notified in advance, Inspector days will be charged when a Resident Project Representative appears on a project and CONTRACTOR decides not to work.
- D. A separate Inspector Day or a partial Inspector Day shall be charged for each and every Resident Project Representative working on a project for monitoring purposes.

**PART 2**      **PRODUCTS (NOT USED)**

**PART 3**      **EXECUTION (NOT USED)**

END OF SECTION

**SECTION 01 50 00**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1**      **GENERAL**

1.1    SITE ACCESS AND PARKING

- A.    CONTRACTOR shall locate roads, drives, walks and parking facilities to provide uninterrupted access to construction offices, mobilization, Work, storage areas, and other areas required for execution of the Contract. Access drives and parking areas shall be hard surfaced unless otherwise approved by ENGINEER.
- B.    CONTRACTOR shall maintain driveways a minimum of 15 feet (5 m) wide between and around combustible materials in storage and mobilization areas.
- C.    CONTRACTOR shall maintain traffic areas as free as possible of excavated materials, construction equipment, products, snow, ice, and debris.
- D.    CONTRACTOR shall not utilize existing parking facilities for construction personnel or for CONTRACTOR's vehicles or equipment, unless written permission from owner of parking facility is obtained.
- E.    CONTRACTOR shall maintain access drive adjacent to site at all times for private business access.

1.2    MAINTENANCE OF EJECTOR STATION

- A.    The Ejector Station must remain in operation at all times, 24 hours per day, 7 days per week. Work associated with this project shall be coordinated with OWNER and its operations staff. Any required equipment and/or process disruptions or shutdowns must be reviewed and approved by OWNER at least seven (7) days prior to the activities.

1.3    TRUCKING ROUTE AND PUBLIC ROAD MAINTENANCE

- A.    Prior to the start of construction, CONTRACTOR shall submit for review a schedule and list indicating the streets and roads within the municipality that his equipment will use off the Project site.
- B.    CONTRACTOR shall comply with all safety requirements, weight restrictions and speed limits.
- C.    Paved streets shall be maintained in a reasonable state of cleanliness and CONTRACTOR shall remove accumulations of debris, dirt or mud caused by his operations. Removal shall be done in such a manner as to prevent the release of dust. This shall be done at least every day at the close of each day's operation or additionally when requested by ENGINEER.
- D.    Roads or streets damaged by CONTRACTOR's operations, shall be repaired or removed and replaced to satisfactions of the agency having jurisdiction at no additional cost to the Project.

## TEMPORARY FACILITIES AND CONTROLS

- E. In order to insure adequate street maintenance and restoration as outlined above, CONTRACTOR may be required to deposit with the Agency having jurisdiction a cash Road Protection Bond.
  - 1. This Bond, if required, will be held in escrow until final release is given by the Agency having jurisdiction. In the event CONTRACTOR fails or neglects to maintain or restore the streets to the satisfaction of the Agency having jurisdiction, the Agency having jurisdiction shall have the required maintenance or restoration work done and the cost incurred shall be deducted from the Road Protection Bond.
  - 2. At the completion of the Project, the Agency having jurisdiction shall return the Road Protection Bond less any monies expended by the Agency having jurisdiction and shall render to CONTRACTOR an accounting of all monies so expended.
- F. CONTRACTOR shall not store any equipment, supplies, construction material or excess excavated material on any roads or streets unless otherwise approved by ENGINEER.

### 1.4 EMERGENCY ACCESS

- A. CONTRACTOR shall provide emergency access to property in the vicinity of the construction for police vehicles, fire equipment, ambulances or other emergency vehicles to protect life, health and property. Any areas damaged by emergency vehicles shall be restored by CONTRACTOR at no additional cost to OWNER.

### 1.5 TEMPORARY ELECTRICITY AND LIGHTING

- A. CONTRACTOR shall be responsible for and pay all costs for the installation and removal of circuit and branch wiring, with area distribution boxes located so that power and lighting is available throughout the construction by the use of construction-type power cords and shall pay all costs of electrical power used.
- B. In the event of multiple contracts, each CONTRACTOR shall be responsible for its own temporary electricity and lighting for their project areas. All work is to be coordinated between multiple contracts.
- C. Electrical wiring and distribution shall conform to the National Electrical Code as adopted by the State of Pennsylvania.

### 1.6 TELEPHONE

- A. CONTRACTOR is required to provide telephone service for contacting emergency services. Such emergency telephone service shall also be available for the use of OWNER and ENGINEER whether or not a field office is required for the Project. Emergency phone numbers are required to be posted and copies provided to OWNER and ENGINEER.
- B. CONTRACTOR shall pay all costs for installation, maintenance and removal, and service charges for local calls to provide service for his construction site office as well as for ENGINEER's field office. Toll charges for calls relating to Project

## TEMPORARY FACILITIES AND CONTROLS

business shall be at CONTRACTOR'S expense.

### 1.7 USE OF WATER

- A. CONTRACTOR shall acquire any and permits, post any bonds and pay all fees required by the local agency having jurisdiction prior to using hydrants or any other source of water.
- B. CONTRACTOR shall reimburse OWNER for water consumed during course of the Project at the current rate as set by the agency having jurisdiction, unless other arrangements are made with OWNER.

### 1.8 SANITARY PROVISIONS

- A. CONTRACTOR shall be responsible for installation, maintenance and removal of temporary sanitary facilities for use of construction personnel including OWNER and ENGINEER. All rules and regulations of the State and local health officials shall be observed, with precautions taken to avoid creating unsanitary conditions.

### 1.9 POTABLE WATER

- A. CONTRACTOR shall furnish a supply of potable water available for use of construction personnel including OWNER and ENGINEER.

### 1.10 MEDICAL SERVICES AND FIRST AID

- A. CONTRACTOR shall furnish first aid supplies and a person trained in first aid with a valid first aid certificate available for use of construction personnel including OWNER and ENGINEER. CONTRACTOR shall also furnish a communication system for contacting emergency services. Telephone numbers of the physician, hospital, or emergency services shall be conspicuously posted at the job site.

### 1.11 BY-PASS PUMPING

- A. CONTRACTOR shall maintain flow in existing sewers at all times by pumping, bypassing, or fluming as necessary. During wet weather events, the flow in the sewer will rise rapidly and may become surcharged. CONTRACTOR shall maintain flow in such a manner as the existing flow can be adequately transported including wet weather flow. CONTRACTOR shall furnish, install, operate, and maintain temporary pumping facilities to service the upstream area including piping, temporary channels, pumps, sumps, controls, temporary plugs, and bulkheads.
- B. For sanitary sewerage, by-pass piping shall be PVC Schedule 80, ABS truss pipe, or equivalent with solvent welded joints, or HDPE with butt fused joints. Flexible hoses of whatever types are not acceptable. By-passed flow shall be discharged to a sanitary sewer of acceptable size to handle the bypassed and existing flows. CONTRACTOR shall plan his operation such that there will be no backups, leaks, or discharges of pollutants.

## TEMPORARY FACILITIES AND CONTROLS

1. The by-pass pumping point of connection is to be shared with proposed effluent force main.
- C. CONTRACTOR shall also furnish and have available, redundant pumping facilities in case of any failure of the pumping system including pumps, piping, electrical, connections, etc. Redundant pumping facilities also include having a backup power generator in case the primary power source fails. CONTRACTOR shall provide an adequate labor force, when required, to oversee the by-pass pumping including providing labor to maintain 24 hour per day operation and emergency backup service.
- D. Costs for pumping and by-passing flow shall be included in the lump sum bid for other items of Work unless otherwise specified in the Proposal.
- E. It may be necessary during the course of work for the CONTRACTOR to provide by-pass pumping of the existing ejector station pumps to the downstream manhole. The CONTRACTOR shall provide a minimum flow capacity of 50 gpm with sufficient provisions to operate the temporary pumps in the event of a loss of electrical service. At no time during the course of the work shall a direct by-pass of raw or partially treated sanitary sewage to waters of the Commonwealth of Pennsylvania be permissible. Failure of the CONTRACTOR's temporary pumping configuration resulting in a by-pass discharge to Brush Creek may result in possible enforcement action by DEP. Should a by-pass occur during the work, DEP shall be notified within 4 hours of the discharge event. CONTRACTOR shall be responsible for paying the resulting fine from the PADEP.
- F. CONTRACTOR shall submit a by-pass pumping/diversion scheme to OWNER and ENGINEER for approval not less than 15 days prior to any anticipated by-pass pumping/diversion. By-pass plan shall include pumping capacity and expected flow rates.

**PART 2**      **PRODUCTS (NOT USED)**

**PART 3**      **EXECUTION (NOT USED)**

END OF SECTION

**SECTION 01 60 00**  
**PRODUCT REQUIREMENTS**

**PART 1**      **GENERAL**

1.1    TRANSPORTATION AND HANDLING

- A.    CONTRACTOR shall provide for expeditious transportation and delivery of materials and equipment to the Project site in an undamaged condition and on a schedule to avoid delay of the Work. Materials and equipment shall be delivered in original containers or packaging with identifying labels intact and legible.
- B.    CONTRACTOR shall provide equipment and personnel at the site to unload and handle materials and equipment in a manner to avoid damage. Materials and equipment shall be handled only at designated lifting points by methods to prevent bending or overstressing.

1.2    STORAGE AND PROTECTION

- A.    CONTRACTOR shall store materials and equipment immediately on delivery, and protect it until installed in the Work.
- B.    Products subject to damage by elements shall be stored in weather-tight enclosures with temperature and humidity ranges as required by manufacturer's instructions.
- C.    Loose granular materials shall be stored on solid surfaces to prevent mixing with foreign matter.
- D.    The place of storage shall be located so as to minimize interference with traffic and to provide easy access for inspection. No material shall be stored closer than five (5) feet (1.5 m) to the edge of a pavement or traveled way open to the public.
- E.    Materials that have been stored shall be subject to retest and shall meet the requirements of their respective specifications at the time they are to be used in the Work.
- F.    CONTRACTOR shall provide protection of stored or installed materials and equipment as necessary to prevent damage from traffic and subsequent operations.
- G.    Location of staging and storage areas will be developed and coordinated with OWNER so that the location of these areas do not interfere with the daily operations of OWNER's facilities.

1.3    MANUFACTURER'S INSTRUCTIONS

- A.    When the Contract Documents require that installation of Work shall comply with manufacturer's instructions, CONTRACTOR shall obtain and distribute copies of such instructions to parties involved in the installation including two (2) copies to ENGINEER. CONTRACTOR shall handle, install, connect, clean, condition and

## PRODUCT REQUIREMENTS

adjust products in strict accord with such instructions and in conformity with specified requirements. Should Project conditions or specified requirements conflict with manufacturer's instructions, consult with ENGINEER for further instructions.

### 1.4 PRODUCTS LIST

- A. Within four (4) days of request, CONTRACTOR shall submit a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor, if applicable, to ENGINEER.

### 1.5 CONTRACTOR'S PRODUCT OPTIONS

- A. For products specified only by reference standard, CONTRACTOR shall select any product meeting that standard.
- B. For products specified by naming several products or manufacturer's CONTRACTOR shall select any one of the products or manufacturers named, which complies with the specifications.
- C. For products specified by naming one or more products or manufacturers and "or equal," CONTRACTOR must submit a Substitution Request Form for any product or manufacturer not specifically named, in accordance with paragraph 6.04 of the General Conditions.
- D. For products specified by naming only one product and manufacturer, there is no option.

### 1.6 EQUIPMENT STARTUP AND TESTING

- A. CONTRACTOR shall perform a comprehensive startup and demonstration of equipment performance and compliance with the design requirements. When there is more than one mode of operation, the equipment shall be operated in every mode to verify proper operation.
- B. When equipment is to operate in conjunction with other equipment as a system, each piece of equipment shall be operated both by itself and automatically as a system to verify its proper operation.
- C. CONTRACTOR is to provide to ENGINEER, in advance of startup, a schedule and listing of startup and testing procedures for review by ENGINEER. Checklists and diagrams may be required to ensure adequate startup and testing. ENGINEER may recommend changes to the startup procedure as necessary.
- D. Equipment is to be inspected prior to operation for debris or other obstructions. Equipment is to be properly lubricated and calibrated prior to operation. CONTRACTOR shall make all adjustments necessary to assure correct operation. When required, equipment installation and operation is to be witnessed and checked

by manufacturer.

- E. When required, CONTRACTOR shall train OWNER's operation and maintenance personnel in the proper operation and maintenance of each piece of equipment and the system as a whole.
- F. Equipment startup is to be witnessed by OWNER and ENGINEER.

**PART 2**      **PRODUCTS (NOT USED)**

**PART 3**      **EXECUTION (NOT USED)**

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 01 64 00  
OWNER FURNISHED PRODUCTS**

**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. This section provides a listing of Owner-furnished products and the procedures for obtaining them.

1.02 DELIVERY, STORAGE, AND HANDLING

- A. Owner furnished materials are stored at the Owner's Wastewater Treatment Plant.
- B. The Contractor shall be responsible for delivery to the Project site and offloading materials.
- C. It is the Contractor's responsibility to store items that are received from the Owner and ensure that they are protected from the weather and elements and protected against any physical damage and theft. The Contractor shall be responsible for replacing any items damaged or stolen after acceptance of equipment.
- D. Contractor shall contact Owner/Engineer and arrange for equipment pickup at least 4 working days prior to actual date of requested pickup.

**PART 2 PRODUCTS**

2.01 OWNER FURNISHED PRODUCTS

- A. The Owner will provide the **pre-packaged pump station** equipment to the Contractor for installation.
- B. Any items or miscellaneous materials needed to complete the Work not listed as part of the **pre-packaged pump station** equipment shall be furnished by the Contractor.

**PART 3 EXECUTION**

3.01 EXAMINATION

- A. Inspect items upon delivery for physical damage, cleanliness, finish, integrity and conformance to specifications.
- B. Notify Engineer and Owner of any deficiencies in the above inspection.
- C. Contractor shall inspect and approve materials prior to accepting from Owner. Accepting material from Owner indicates Contractor's acceptance and full responsibility of the material.
- D. Upon acceptance, sign delivery ticket and submit copy of signed delivery ticket to Engineer.

**SECTION 01 7700  
CLOSEOUT PROCEDURES**

**PART 1      GENERAL**

1.1    CLEANING

- A.    CONTRACTOR shall perform periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and wind-blown debris, resulting from construction operations.
- B.    Waste material, debris and rubbish shall be periodically removed from the site and disposed of at legal disposal areas away from the site.
- C.    Prior to OWNER acceptance CONTRACTOR shall conduct an inspection of sight-exposed interior and exterior surfaces, and all Work areas, to verify that the entire Work is clean.
- D.    CONTRACTOR shall broom clean exterior paved surfaces and rake clean other exterior surfaces of the site.

1.2    PROJECT RECORD DOCUMENTS

- A.    CONTRACTOR shall deliver one (1) copy of all Specifications, Plans, Addenda, Shop Drawings and Samples, annotated to show all changes made during the construction process, to ENGINEER upon completion of the Work. Submittal of the record documents shall be made with a transmittal letter 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.    Documents shall be submitted in good order and in a legible condition.

1.3    OPERATION AND MAINTENANCE DATA

- A.    Prior to final inspection or acceptance, CONTRACTOR shall fully instruct OWNER's designated operating and maintenance personnel in the operation, adjustment and maintenance of all products, equipment and systems specified.
- B.    Operation and maintenance data required by the individual Specification sections and the manufacturer's operation and maintenance data required in Section 01 33 00, Submittal Procedures, shall constitute the basis of such instruction.

1.4    START UP

- A.    CONTRACTOR shall coordinate efforts between OWNER, ENGINEER, any equipment manufacturers, subcontractors and governing agencies in the start up of applicable portions of the Work.

## **CLOSEOUT PROCEDURES**

### 1.5 SUBSTANTIAL COMPLETION

- A. Certification that the Work is substantially complete shall be in accordance with paragraph 14.07 of the General Conditions.

### 1.6 FINAL PAYMENT AND ACCEPTANCE

- A. The final inspection, final application for payment and acceptance shall be in accordance with paragraphs 14.09 thru 14.13 of the General Conditions.

### **PART 2      PRODUCTS (NOT USED)**

### **PART 3      EXECUTION (NOT USED)**

END OF SECTION

**SECTION 03 11 00  
CONCRETE FORMING**

**PART 1      GENERAL**

1.1 SCOPE OF WORK

- A. This Section includes formwork for cast-in-place concrete, complete with furnishing, preparation, installation, coating, protection, adjustment, removal and accessories.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 15 00: Concrete Accessories
- B. Section 03 20 00: Concrete Reinforcing
- C. Section 03 30 00: Cast-In-Place Concrete

1.3 DESIGN STANDARDS

- A. Formwork shall be designed for the loads, lateral pressure, and allowable stresses outlined in "Recommended Practice for Concrete Formwork" ACI 347 and for design considerations, wind loads, allowable stresses and other applicable requirements of the local building code. Design and construction of the formwork shall be the responsibility of the CONTRACTOR.
- B. Formwork shall be true in every respect to produce hardened concrete to the required shape, size, grade and alignment as indicated on the Plan, and of sufficient strength, bracing and rigidity to maintain their position and shape under the loads and operations incidental to placing and curing the concrete, as well as all other forces resulting from the movement of the forms. Limit panel deflection to 1/360 of exact component span to achieve tolerances specified.
- C. Forms shall be mortar-tight at the time concrete is placed in them and shall be so constructed that the surfaces of the finished concrete will be reasonably free from ridges, fins, offsets, or similar defects.
- D. Adequate and suitable means for removing the forms without injury to the surfaces or edges of the finished concrete shall be provided.

1.4 ALLOWABLE TOLERANCES

- A. Formwork shall be constructed such that the hardened surfaces shall conform to the tolerance limits of ACI 347, except where more stringent tolerances are required below:
  - 1. Variation from the level or from the grades:
    - a. In any ten (10) feet (3 m) of length: 1/4 inch (5 mm)
    - b. Maximum for entire length: 3/4 inch (20 mm)

## CONCRETE FORMING

2. Variation of the linear lines from established position as indicated on the Plans:
  - a. In any 20 feet (6 m) of length: 1/2 inch (10 mm)
  - b. Maximum for entire length: 1-inch (25 mm)
3. Thickness  $\pm$  5%, up to maximum of 1 inch (25 mm)

### 1.5 REFERENCE STANDARDS

- A. ACI - American Concrete Institute
- B. ASTM - ASTM International

### 1.6 SUBMITTALS

- A. Submit manufacturer's literature for form coating.
- B. Submit formwork layout plans, design data and procedures if requested by ENGINEER.

### 1.7 STORAGE AND HANDLING

- A. Store and handle form coating to prevent contamination of coating in accordance with manufacturer's recommendations.

### 1.8 SEQUENCING

- A. Sequence installation of formwork with the Work of Section 03 2000, Concrete Reinforcing; Section 03 1500, Concrete Accessories; and Section 03 3000, Cast-In-Place Concrete.

### 1.9 QUALIFICATIONS

- A. Formwork Designer: Formwork, falsework, and shoring design shall be performed by an engineer licensed in the State of Pennsylvania, with at least five years of experience designing similar systems.

## **PART 2** **PRODUCTS**

### 2.1 FORM MATERIALS

- A. Use lumber that is straight, uniform width and thickness, free from knots, offsets, holes, dents, warpage and other surface defects.
- B. Use plywood product of standard psi, waterproof, resin-bonded, exterior-type Douglas Fir, face adjacent to concrete shall be Grade B or better.

## CONCRETE FORMING

- C. Metal forms to be smooth metal plate free of surface irregularities.
- D. Chamfer Strips: Use clear white pine, surface against concrete planed, 1-inch (25 mm) bevel width or cant strip.
- E. Circular Columns: Fabricated steel or fiber reinforced plastic with bolted together sections or spirally wound fiber form internally treated with release agent for full height of column.

### 2.2 FORM COATING

- A. Use nonstaining form oil or other mineral oil which will neither discolor nor otherwise injuriously affect the concrete.

### 2.3 FORM TIES

- A. Use permanently embedded body type with removable end cones on outer ends, permanently embedded portion 1 ½ -inch (40 mm) back from concrete face.

### 2.4 FORMS - GENERAL

- A. Use forms that conform to ACI 347. Fabricate with facing materials that produce the specified tolerance requirements of Article 1.4 of this Section; produce true surfaces, sharp corners and true lines; and are free of offsets, ridges, bulging, waves and concave or convex areas.

## **PART 3**      **EXECUTION**

### 3.1 PREPARATION

- A. Forms shall not be reused if there is any evidence of surface wear and tear or defects which would impair the quality of the surface. Surfaces of forms and embedded materials shall be cleaned of any mortar from previous concreting and of all other foreign material or water before coating is placed in them.
- B. Forms shall be coated in accordance with manufacturer's recommendations before the form or reinforcement is placed in final position. Surplus coating on form surfaces, or any coating on reinforcing steel and construction joints shall be removed before placing concrete.

### 3.2 INSTALLATION OF FORMS

- A. Forms shall be sufficiently tight to prevent loss of mortar from the concrete, set true to the lines and elevations indicated on the Plans, tied and braced to remain true during and after concrete placement within tolerances of Article 1.4 of this Section. ENGINEER may at any time condemn any section or sections of forms found deficient in any respect, and such form shall be promptly removed and replaced.

## CONCRETE FORMING

- B. No wooden spreaders shall be allowed to remain in the concrete. No metal shall be within 1-inch (25 mm) of any surface.
- C. Place chamfer strips in forms to bevel all corners, edges, joints and other structural elements exposed to view, including use of dummy chamfer and false joints to provide neat and uniform appearance. Exposed corners and edges shall have 3/4" x 3/4" - 45 degree chamfers (20 mm x 20 mm x 45 degree), unless otherwise indicated on the Plan.
- D. Provide temporary openings at the base of wall forms and at the other points when necessary to facilitate cleaning and inspection immediately before depositing concrete.
- E. Secure in position wedges used for final alignment and items to be embedded in concrete.
- F. Forms for keyways shall be prepared in advance of pouring concrete. Keyway forms in slab edges and vertical wall joints shall be rigidly secured in place before the concrete is poured. Forms for keyways for horizontal joints in walls may be placed at the conclusion of the pour, but proper provision shall be made for obtaining and holding the full depth and form of the keyway. Raking, shoveling, or tooling in keyways is not acceptable.
- G. Provide openings and recesses and place sleeves in concrete as may be required and furnished by other sections of these specifications and as shown by all discipline drawings.

### 3.3 ADJUSTMENT OF FORMS

- A. Positive means of adjustment should be provided to permit realignment or readjustment of shores if excessive settlement occurs.
- B. A pair of wedges may be used at the top or bottom of shores, but not at both ends, to facilitate vertical adjustment, to correct uneven settlements, or to facilitate dismantling of the formwork.
- C. Screw jacks for pipe shores or scaffold-type shoring may be used at both top and bottom so long as they are secured by the shore or scaffold leg against loosening or falling out, to avoid lateral deflections.
- D. During and after concreting, but before initial set of the concrete, the elevations, camber, and plumbness of formwork systems shall be checked, using telltale devices. Appropriate adjustments shall be promptly made where necessary. If, during construction, any weakness develops and the formwork shows any undue settlement or distortion, the Work shall be stopped, the affected construction removed if permanently damaged, and the formwork strengthened.

## CONCRETE FORMING

### 3.4 REMOVAL OF FORMS

- A. Forms, wedges or shoring shall not be removed or disturbed until the concrete has attained sufficient strength to safely support superimposed dead, temporary construction, and live loads.
- B. When forms or shoring are removed, there shall be no excessive deflection or distortion of the concrete.
- C. Forms shall be removed in an orderly fashion; with care to avoid surface gouging, corner or edge breakage, or other damage or injury to the concrete surface or physical property; and without impact or shock, to permit the concrete to carry its share of the loads gradually and uniformly.
- D. Form removal shall not impair the safety and serviceability of the structure or concrete members.
- E. Forms and shoring in the formwork used to support the weight of concrete in beams, slabs, and other structural members shall remain in place a minimum of 14 days or until the concrete has reached a minimum of 80% of the design compressive strength. Cylinder strength shall be based on test specimens cured in the field, as described in ASTM C31, under conditions which are not more favorable than the most unfavorable conditions for the portions of the concrete which the test specimens represent and shall be determined in accordance with Section 03 3000, Cast-In-Place Concrete.
- F. Formwork for columns, walls and other vertical members shall remain in place a minimum of five (5) days or until the concrete has attained a minimum of 75% of its design strength. Where such formwork also supports the formwork of beams and slabs, the removal times of the latter shall govern. Face and edge forms shall be removed as soon as practicable and permitted by ENGINEER in order to facilitate effective repair of voids or broken corners before the surface has dried.
- G. Forms and shoring in the formwork shall not be removed without the approval of ENGINEER. The minimum in-place times are for ordinary conditions and represent cumulative number of days, not necessarily consecutive, after the concrete was placed, during which the temperature of the air surrounding the concrete is above 50 degrees Fahrenheit (10 degrees Celsius). Times may be increased or decreased as directed by ENGINEER, dependent on air temperatures, cement type, concrete additives or other conditions of the Work in accordance with ACI 347.

### 3.5 RESHORING

- A. When removing forms before structural members are strong enough to carry dead load and/or construction loads, reshores shall be installed to assure safe distribution of loading. Reshoring operations shall be planned in advance and shall be subject to ENGINEER's review.

## CONCRETE FORMING

- B. During reshoring, no construction loads shall be permitted on the new construction.
- C. Reshores shall be placed as soon as practicable after form removal, but in no case later than the end of the working day on which form removal occurs, and shall remain in place until the concrete has acquired the required strength.

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 03 15 00  
CONCRETE ACCESSORIES**

**PART 1      GENERAL**

1.1 SCOPE OF WORK

- A. This Section includes joint fillers, joint sealants, waterstops, and miscellaneous embedded items in concrete.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 11 00: Concrete Forming
- B. Section 03 20 00: Concrete Reinforcing
- C. Section 03 30 00: Cast-In-Place Concrete

1.3 REFERENCE STANDARDS

- A. ASTM - American Society for Testing Materials
- B. CRD - U.S. Army Corps of Engineers Handbook for Concrete and Cement Specifications

1.4 SUBMITTALS

- A. Submit certified manufacturer's affidavits for expansion joint filler, joint sealant and waterstops to verify compliance with the applicable Specifications.
- B. Submit a schedule of concrete pouring and indicate locations of proposed construction and expansion joints. Schedule is subject to approval of ENGINEER.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Environmental requirements relative to temperature for placing joint sealants are specified in article 3.4 of this Section.

1.6 SEQUENCING

- A. CONTRACTOR shall sequence installation of miscellaneous embedded items with the Work of Section 03 11 00 Concrete Forming; Section 03 20 00, Concrete Reinforcing; and Section 03 30 00 Cast-In-Place Concrete.

## CONCRETE ACCESSORIES

### PART 2      Products

#### 2.1 JOINT FILLER

- A. Backup Material: ASTM D 1056, round closed cell foam rod, sized 30 to 50 percent larger than joint width.
- B. Preformed Expansion Joint Filler for Concrete (Bituminous Type) ASTM D994.
- C. Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) ASTM D1751.
- D. Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Concrete ASTM D1752.

#### 2.2 JOINT SEALER

- A. Joint Primer: Two component, penetrating liquid resinous primer for use with urethane and epoxy sealants.
- B. Joint Sealants: Shall be a two component polyurethane, elastomeric sealant conforming to ASTM C 920, shall be SikaFlex – 2C, by SIKA Corporation, or approved equal. Sealant shall be capable of 50 percent joint movement. Use self leveling (SL) consistency for horizontal applications and non-sag (NS) consistency for vertical applications.

#### 2.3 WATERSTOPS

- A. Waterstops shall be of the size and type indicated on the plans and as specified.
- B. PVC waterstops shall conform to CRD-C572 polyvinyl chloride (PVC) or CRD-C513 styrene-butadiene rubber (SBR). Flat ribbed type (6" x 3/8") shall be used in joints in walls and slabs where shown on the plans. Center bulb type (9") shall be used in expansion joints
- C. Bentonite waterstops shall be flexible, specially formulated compound of sodium bentonite-butyl (1" x 3/4" min.) with manufacturer recommended adhesive. Bentonite waterstops shall be used in walls and slabs where indicated on the plans.
- D. Hydrophilic rubber waterstop shall be flexible, hydrophilic synthetic rubber, strip waterstop (1" x 3/4" min.) with manufacturer recommended adhesive. Hydrophilic rubber waterstops shall be used in joints in walls and slabs where indicated on the plans.

### 2.4 CONCRETE ANCHORS

#### A. General:

1. Select type and size to achieve required loading capacity using information provided by manufacturer. Anchors shall be adhesive type unless otherwise indicated, or where not appropriate at anchor locations.
2. Maintain critical edge distance and spacing per manufacturer's recommendations for all anchors. Provide tamper proof hardware when called for on the plans.

#### B. Adhesive Anchors:

1. Adhesive anchoring system shall be HY-150 hybrid adhesive mortar (by Hilti, Inc. or approved equal) utilizing urethane resin, hardener, Portland cement and water. This adhesive system shall be used for all post installed anchors and reinforcing steel dowels into existing concrete.
2. Threaded rod: Threaded rods shall be 316 stainless steel HAS rods (by Hilti, Inc. or approved equal) conforming to ASTM 593, CW. All nuts shall be stainless steel conforming to ASTM F594 and all washers shall conform to ANSI B18.22.1.

#### C. Wedge Type Anchors:

1. One piece body with expansion mechanism installed in pre-drilled hole using matching tolerance bit.
2. Carbon steel anchor body, washers, nuts and wedges, plated in accordance with ASTM B 633, SC1, Type III or Type 316 stainless steel anchor body, washers, nuts and wedges when so indicated on plans.

#### D. Anchor Rods:

1. Anchor rods shall conform to ASTM F 1554 grade 36, unless otherwise noted on the drawings.
2. All rotating equipment anchor rods shall be supplied with sleeves. These sleeves shall not be grouted but should be filled with an appropriate material and sealed to prevent water penetration.
3. Vertical vessels with base rings and other equipment with cast bases or bed plates, Shall have anchor rods supplied with sleeves. These sleeves shall be filled with grout after setting the equipment in place.
4. Use two nuts on anchor rods for towers, reciprocating pumps, compressors and other vibrating equipment.

## CONCRETE ACCESSORIES

### PART 3      EXECUTION

#### 3.1 CONTRACTOR'S VERIFICATION

- A. Inspect the locations and surfaces to receive joint filler, joint sealer, waterstops, or miscellaneous embedded items and correct defects or conflicts which will affect the proper performance of the item to be placed.

#### 3.2 PREPARATION

- A. Accessories to be embedded into concrete shall have contact surfaces free of dirt, curing compound, protrusions of hardened concrete or any other foreign material which would affect bond with concrete.
- B. Prime surfaces in accordance with manufacturer's recommendations.

#### 3.3 INSTALLATION OF JOINT FILLERS

- A. Details, including materials and methods of installation of joint fillers shall be as indicated on the Plans and as approved by ENGINEER.

#### 3.4 INSTALLATION OF JOINT SEALANTS

- A. Joints shall not be sealed when the sealant, air or concrete temperature is less than 40 degrees Fahrenheit (4 degrees Celsius). Bond breaker and backup material shall be installed where required as indicated on the Plans or manufacturer's recommendations.

#### 3.5 INSTALLATION OF PVC WATERSTOPS

- A. Waterstops shall be of maximum practicable length to minimize joints.
- B. Waterstops shall be positioned as indicated on the Plans in a manner to permanently retain flexibility.
- C. Splice in length or at intersections shall be performed by heat sealing and in accordance with manufacturer's recommendations.
- D. Reform splices with a remolding iron with ribs or corrugations to match the pattern of the waterstop. When cooled and bent by hand in as sharp an angle as possible, the splice shall show no sign of separation.
- E. Provide support and protection of the waterstops during the progress of the work. Any waterstop punctured or damaged shall be replaced or repaired at CONTRACTOR's expense. Concrete shall be thoroughly consolidated in the vicinity of the waterstop. Suitable guards shall be provided to protect exposed projecting

## CONCRETE ACCESSORIES

edges and ends of partially embedded waterstops from damage when concrete placement has been discontinued.

### 3.6 CONCRETE ANCHORS

- A. Do not begin installation until substrates have been properly prepared. Do not proceed with installation if substrate preparation is unsatisfactory.
- B. Clean surfaces thoroughly prior to installation. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Install in accordance with manufacturer's instructions and recommendations and as required by applicable code. Anchor applied items neatly, with item mounted plumb and level unless otherwise indicated.
- D. ENGINEER reserves the right to require the anchor manufacturer's representative to demonstrate proper installation procedures for post-installed anchors and to observe CONTRACTOR's installation procedures, at no extra cost to OWNER. ENGINEER reserves the right to require pullout or shear tests to determine adequacy of anchors, at no extra cost to OWNER.

### 3.7 MISCELLANEOUS EMBEDDED ITEMS

- A. Sleeves, inserts, anchor bolts, and other embedded items required for adjoining Work or for its support shall be placed prior to concreting.
- B. Embedded items shall be positioned accurately and supported against displacement. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable material to prevent the entry of concrete into the voids.

END OF SECTION

**SECTION 03 20 00  
CONCRETE REINFORCING**

**PART 1      GENERAL**

1.1 SCOPE OF WORK

- A. This Section includes the furnishing, fabrication, placement and care of material used as concrete reinforcement.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 11 00: Concrete Forming
- B. Section 03 15 00: Concrete Accessories
- C. Section 03 30 00: Cast-In-Place Concrete

1.3 REFERENCE SPECIFICATIONS

- A. The latest or current ACI Standards and Code Requirements for "Concrete and Reinforced Concrete" shall govern all concrete Work except where otherwise specified herein. Copies of standards can be obtained from the American Concrete Institute.

1.4 TESTING AGENCY

- A. Testing agencies shall meet the requirements of Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as Used in Construction, ASTM E329.

1.5 ALLOWABLE TOLERANCES

A. Fabrication:

- 1. Sheared length:  $\pm 1$ -inch (25 mm).
- 2. Depth of truss bars: +0, -1/2 inch (+0, -10 mm).
- 3. Stirrups, ties, and spirals:  $\pm 1/2$  inch ( $\pm 10$  mm)
- 4. All other bends:  $\pm 1$ -inch ( $\pm 25$  mm).

B. Placement:

- 1. Concrete cover to form surfaces:  $\pm 1/4$  inch ( $\pm 5$  mm).
- 2. Minimum spacing between bars: -1/4 inch (-5 mm).
- 3. Top bars in slabs and beams:
  - a. Members eight (8) inches (200 mm) deep or less:  $\pm 1/4$  inch (5 mm).
  - b. Members more than eight (8) inches (200 mm) but not over two (2) feet (600 mm) deep:  $\pm 1/2$  inch ( $\pm 10$  mm).
  - c. Members more than two (2) feet (600 mm) deep:  $\pm 1$ -inch ( $\pm 25$  mm).

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4. Crosswise of members: Spaced evenly within two (2) inches (50 mm) of stated separation.
5. Lengthwise of members:  $\pm 2$  inches ( $\pm 50$  mm).
6. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 1-bar diameter, with approval from ENGINEER.

### 1.6 SOURCE QUALITY CONTROL

- A. Reinforcing steel shall be subject to inspection at the source of supply, fabricator, or after delivery to the Project Site at the discretion of ENGINEER.
- B. CONTRACTOR may be required to furnish additional test of reinforcing steel for each 100 tons (90 metric ton) or fraction thereof. Testing for bend, pull, elongation and weight to assure compliance with Specifications shall be in accordance with ASTM A370.

### 1.7 REFERENCE STANDARDS

- A. ACI - American Concrete Institute
- B. ASTM – American Society for Testing Materials
- C. CRSI - Concrete Reinforcing Steel Institute

### 1.8 SUBMITTALS

- A. CONTRACTOR shall submit Shop Drawings indicating the size and dimensions for fabrication and placing of reinforcing steel, including bar schedules, stirrup spacing, and diameter of bend bars. Bar supports type and grade shall be indicated.
- B. CONTRACTOR shall submit shop and placement drawings indicating all construction and expansion joints. Shop drawings shall include pour sequence.
- C. CONTRACTOR shall submit test certificates of the manufacturer's laboratory, identifying chemical and physical analysis of each load of reinforcing steel delivered.
- D. CONTRACTOR shall submit test certificates of a qualified independent testing agency evaluation of the mechanical splice devices to assure compliance with ACI 318.

### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver reinforcement to Project site in bundles tagged and marked in accordance with "Manual of Standard Practice" of the CRSI.

## CONCRETE REINFORCING

- B. Reinforcing steel shall be stored above ground on platforms or other supports, in an orderly manner to facilitate inspection and checking, and be protected from physical injuries or contamination.

### 1.10 SEQUENCING

- A. CONTRACTOR shall coordinate placement of the reinforcing in a manner which will not prevent the proper and timely completion of dependent construction phases.

## **PART 2**      **PRODUCTS**

### 2.1 REINFORCING BARS

- A. Reinforcement shall be of the grade and type as specified herein unless otherwise indicated on the Plans or Shop Drawing.
- B. Bars:
  - 1. Deformed and Plain Billet-Steel Bars: ASTM A615, Grade 60.
  - 2. Rail-Steel Deformed and Plain Bars: ASTM A616, Grade 60.
  - 3. Axle-Steel Deformed and Plain Bars: ASTM 617, Grade 60.
  - 4. Low Alloy Steel Deformed Bars: Bars to be welded shall conform to ASTM A706.
- C. Mats:
  - 1. Fabricated steel bar or rod mats of the clipped type shall conform to ASTM A184.

### 2.2 WELDED WIRE FABRIC

- A. Welded wire fabric shall be in flat mats only.
- B. Plain:
  - 1. Conform to ASTM A185, 6 x 6 – w2.9 x w2.9 unless otherwise indicated on the Plans.
- C. Deformed:
  - 1. Conform to ASTM A496, 6 x 6 – w2.9 x w2.9 unless otherwise indicated on the Plans.

### 2.3 TIE WIRE

- A. Plain:

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1. Conform to Cold Drawn Steel Wire for Concrete Reinforcement, ASTM A82, 16-gage minimum size.
- B. Deformed:
  1. Conform to Deformed Steel Wire for Concrete Reinforcement, ASTM A496, size D-4 minimum.

### 2.4 BAR SUPPORTS

- A. Metal bar supports shall be fabricated from cold-drawn steel wire in accordance with current CRSI Standards.
- B. Stainless steel supports shall be of Type 1, with stainless steel wire conforming to ASTM A493 attached to the tips of the support so the nonstainless wire will lie no closer than 1/4 inch (5 mm) from the form surface.
- C. Plastic coated supports shall be of Type 1, with plastic coating of polyethylene conforming to ASTM D1248 on the legs and tips.
- D. Precast concrete brick supports shall conform to ASTM C55, Type 1, Grade N.

### 2.5 FABRICATION

- A. Bars shall be bent cold to the shapes and dimensions as indicated on the Plans, or as required by the current "Manual of Standard Practice" of the CRSI. Steel shall not be bent or straightened in a manner that will injure the material. Bars with kinks or improper bends shall not be used.
- B. The diameter of bend measured on the inside of the bar for standard hooks, other than stirrups and tie hooks, shall not be less than the values of the following table.

| Minimum Diameters of Bend         |                  |
|-----------------------------------|------------------|
| Bar Size                          | Minimum Diameter |
| #3 through #8<br>(#10M - #25M)    | 6 bar diameters  |
| #9, #10, and #11<br>(#29M - #36M) | 8 bar diameters  |
| #14 and #18<br>(#43M - #57M)      | 10 bar diameters |

- C. Bends for stirrups and ties with number 5 (#16M) bar and smaller shall not be less than four bar diameters. For bars larger than No. 5 (#16M), bends shall be according to the "Minimum Diameter of Bend" table above.
- D. Bends for stirrups and ties for welded wire fabric shall not be less than 4-bar diameters for deformed wire larger than D-6 and 2-bar diameters for all other wires.

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Bends with inside diameter of less than 8-bar diameters shall not be less than 4-bar diameters from nearest welded intersection.

### **PART 3**      **EXECUTION**

#### 3.1 CONTRACTOR'S VERIFICATION

- A. CONTRACTOR shall examine the areas in which the reinforcing steel is to be placed to assure proper lines and levels.

#### 3.2 PREPARATION

- A. Remove dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that will reduce bond with concrete or splicing method.
- B. The ends of bars to be butt spliced shall be cut square and smooth.

#### 3.3 INSTALLATION - GENERAL

- A. Reinforcing shall be placed as indicated on the approved Shop Drawings, within allowable tolerances. Bar supports, as indicated on approved Shop Drawings, or in Specifications, shall be used for proper separation and support of reinforcing steel.

#### 3.4 MINIMUM SPACING

- A. Unless otherwise indicated on the Plans, the minimum spacing of bars shall be the following:
- B. Footings and other principal structural members in which the concrete is deposited against the ground shall have three (3) inches (75 mm) of concrete between the bar and the ground contact surface.
- C. Concrete surfaces which, after removal of the forms, are to be exposed to the weather or in contact with the ground or liquids, shall be protected with two (2) inches (50 mm) of concrete.
- D. Concrete protective covering for any reinforcement at surfaces not exposed directly to the ground, liquids or weather shall be 3/4 inch (20 mm) for slabs and walls and 1-1/2 inches (40 mm) for beams and girders.
- E. Column spirals or ties shall be protected everywhere by a covering of concrete cast monolithically with the core and shall be at least 1-1/2 inches (40 mm).
- F. Concrete protection for reinforcement shall in all cases be at least equal to the diameter of bars, except for concrete slabs as noted above.

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- G. Minimum center to center distance between parallel bars shall be 2-1/2 times the diameter of the bars. In no case shall the clear spacing between bars be less than one inch (25 mm) nor less than 1-1/3 times the maximum size of the coarse aggregate. The maximum center to center distance in parallel bars shall be 18 inches (450 mm). Where reinforcement in beams and girders is placed in two (2) or more layers, the clear distance between layers shall be not less than 1-inch (25 mm), and the bars in the upper layers shall be placed directly above those in the bottom layer.
- H. Welded wire fabric designated as load-carrying reinforcement shall be overlapped wherever successive mats are continuous in such a way that the overlap measured between outermost cross wires of each fabric sheet is not less than the spacing of the cross wires plus two (2) inches (50 mm). It shall be supported as required for reinforcing bars.

### 3.5 SPLICING

- A. Splices shall be avoided at points of maximum stress. Splicing of bars shall be in accordance with ACI 318.
- B. Splicing of bars shall be done by overlapping in accordance with ACI Detailing Manual SP-66, and securely laced with wire unless indicated otherwise on the Plans or approved Shop Drawing.
- C. Lap adjoining wire mesh by no less than one (1) full mesh and lace securely with wire. Offset end laps in adjacent widths to prevent continuous splice.
- D. Welded wire fabric reinforcement shall be overlapped wherever successive mats are continuous in such a way that the overlap measured between outermost cross wires of each fabric sheet is not less than one full mesh spacing plus two (2) inches (50 mm). The fabric shall extend across supporting beams and walls and to within four (4) inches (100 mm) of concrete edges. It may extend through contraction joints where alternate wires are field cut. It shall be adequately supported during placing of concrete to insure its proper position in the slab either by the methods of Article 3.06 of this Section or by laying the fabric on a layer of the fresh concrete of the correct depth before placing the upper layer of the slab.
- E. Vertical bars in columns shall be offset at least 1-bar diameter at lapped splices. To insure proper placement, templates shall be furnished for all column dowels.
- F. Bars of size 14, 18 or larger (#43M #57M or larger), where size 11 (#36M) bars are butt spliced to larger sizes and/or when approved by ENGINEER shall be welded in accordance with ACI 301 by full penetration butt welds. Adequate jigs and clamps or other devices shall be provided by CONTRACTOR to support, align and hold the longitudinal centerline of the bars in a straight line.
- G. Bars larger than size eleven (#36M) may be butt spliced by mechanical devices approved by ENGINEER, in accordance with ACI 318. Splices shall be made using

## CONCRETE REINFORCING

manufacturer's standard jigs, clamps, ignition devices and other required accessories to support, align and hold the longitudinal centerline of the bars in a straight line.

### 3.6 SECURING REINFORCEMENT

- A. Reinforcement shall be securely laced with wire to supports or reinforcing to prevent displacement during the concrete placement, as required by the current "Manual of Standard Practice" of the CRSI.

### 3.7 FIELD QUALITY CONTROL

- A. ENGINEER shall inspect the reinforcing steel after it has been installed, and the reinforcing steel placement shall be approved by ENGINEER prior to placement of concrete.
- B. CONTRACTOR shall avoid displacement of the reinforcing steel during concrete placement.

END OF SECTION

**SECTION 03 30 00  
CAST-IN-PLACE CONCRETE**

**PART 1      GENERAL**

1.1 SCOPE OF WORK

- A. This Section includes all monolithic cast-in-place concrete work complete with materials, mixes, installation and testing.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 11 00: Concrete Forming
- B. Section 03 15 00: Concrete Accessories
- C. Section 03 20 00: Concrete Reinforcing

1.3 REFERENCE STANDARDS

- A. Unless otherwise specified, the Work for this Section shall conform to the applicable portions of the latest version of the following Standard Specifications and Industry Standards:
  - 1. ASTM - ASTM International
  - 2. AASHTO - American Association of State Highways and Transportation Officials
  - 3. PennDOT - Pennsylvania Department of Transportation

1.4 REFERENCE SPECIFICATIONS AND CODES

- A. The latest or current ACI Standards and Code Requirements for "Concrete and Reinforced Concrete" shall govern all concrete Work except where otherwise specified herein.

1.5 ALLOWABLE TOLERANCES

- A. See Section 03 11 00, Concrete Forming, for the allowable tolerances for concrete surfaces.

1.6 DESIGN CRITERIA

- A. Mixes shall be designed and tested for each size and gradation of aggregates and for each consistency intended for use. Design quantities and test results of each mix shall be submitted for review.

## CAST-IN-PLACE CONCRETE

### 1.8 SOURCE QUALITY ASSURANCE

- A. All inspections and tests required by this section shall be performed by an independent laboratory acceptable to the ENGINEER.
- B. Testing shall be in accordance with applicable ASTM Standards to assure compliance with Specifications.
- C. Furnish tests of cement and aggregates. Material sampling shall conform to the following ASTM Standards:
  - 1. Cement - C183.
  - 2. Aggregates - D75.
- D. Make tests for the following quantities, or fraction thereof:
  - 1. Cement.....550 tons (500 metric ton)
  - 2. Fine Aggregate.....2,000 Tons (1800 metric ton)
  - 3. Coarse Aggregate .....2,000 Tons (1800 metric ton)
- E. Use same brand cement for any given structure produced by a single mill unless otherwise provided by authorization of the ENGINEER.
- F. OWNER reserves the right to make inspections at any time at the source of supply of materials, at the place of preparation of materials or at the mixing plant if ready-mixed concrete is used.

### 1.9 SUBMITTALS

- A. Submit Concrete Placement Drawings showing the sequence of placement and the location of joints. Included shall be a schedule of the concrete pouring. Location of joints and pouring schedule shall be subject to approval by ENGINEER.
- B. CONTRACTOR shall submit test reports for cement and aggregates to assure compliance with the Specifications.
- C. Concrete mixture designs and test data shall be submitted for review by ENGINEER with a written request for approval. No concrete shall be placed until CONTRACTOR has received such approval in writing.
  - 1. Each mixture report shall include:
    - a. Slump on which design is based.
    - b. Total gallons of water per cubic yard (l/m<sup>3</sup>).
    - c. Brand, type, composition, and quantity of cement.
    - d. Brand, type, composition, and quantity of pozzolan or other mineral admixtures.

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- e. Brand, type, composition, and quantity of ground granulated blast furnace slag.
  - f. Specific gravity and gradation of each aggregate.
  - g. Ratio of fine to total aggregates.
  - h. Weight (surface dry) of each aggregate, lbs./c.y. (kg/m<sup>3</sup>).
  - i. Brand, type, ASTM designation, active chemical ingredients, and quantity of each admixture.
  - j. Air content.
  - k. Compressive strength based on 7-day and 28-day compression tests.
  - l. Time of initial set.
  - m. Water/Cement ratio.
- D. Submit manufacturer's literature of abrasive wear resistant floor finish and of chemical curing compound for review by ENGINEER.
- E. Submit a sample concrete delivery ticket for review by ENGINEER.
- F. Submit tickets collected at the site of concrete placement accompanying each load of concrete. A printout system for producing these tickets in connection with automatic batching will be permitted.
- G. Each ticket shall be serially numbered, show the charging time, quantity and grade of concrete, location of delivery and the signatures of inspectors at the plant and site. Transit mixed concrete tickets shall also include revolution counter reading at charging and mixing completion.
- H. Submit reports of the sampling and testing of slump, air content and strength performed.
- I. Submit reports of nondestructive, core and/or liquid retention testing required for acceptance of concrete in place.

### 1.10 MATERIAL STORAGE AND HANDLING

- A. Materials shall be stored and handled in accordance with ACI 304 and as specified below.
- B. When permission is given to store cement in the open, a floor at least six (6) inches (150 mm) above the ground and a waterproof covering shall be provided and so placed as to insure runoff in case of rain.
- C. Cement sacks shall be thoroughly shaken when emptying sacks into the batch. Cement salvaged by CONTRACTOR by cleaning sacks mechanically or otherwise, or from discarded sacks of cement, shall not be used in the Work.

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1. The use of a fractional sack of cement will not be permitted unless the fractional part is measured by weight.
  2. At the time of its use in the Work, the cement shall be free from lumps.
- D. No aggregates which have become intermixed prior to proportioning shall be used. Sufficient aggregate shall be available at the site to preclude the possibility of damaging delays while placing the concrete.
- E. Cars used for shipping aggregates shall be clean and in good repair.
1. The use of straw, marsh, hay or other similar materials for closing cracks or holes in cars will not be tolerated.
- F. Pozzolans and other cementitious materials shall be stored and handled in the manner of cement.
- G. Store and handle curing compound in a manner to prevent contamination.

### **1.11 ENVIRONMENTAL REQUIREMENTS**

- A. Environmental requirements shall be in accordance with ACI 305 for hot weather concreting, and ACI 306 for cold weather concreting.
1. Specific temperature requirements are contained in Article 2.10 of this Section for mixing and Article 3.13 of this Section for placing.

## **PART 2      PRODUCTS**

### **2.1 GENERAL**

- A. The materials shall meet the requirements of ACI 301, ACI 318, ASTM C33, and PennDOT.
- B. Concrete materials shall be tested and inspected as the Work progresses. The review and/or check-test of the proposed materials, securing of production samples of materials at plant stockpiles and/or review of the manufacturer's reports for compliance will be performed at no cost to CONTRACTOR.
- C. Testing and inspection required due to substitution or change of materials requested by CONTRACTOR shall be at CONTRACTOR's expense.

### **2.2 CEMENT**

- A. Cement shall be the type as specified:

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1. Type I and IA, conforming to ASTM C150, air-entraining Portland cement when special properties are not specified.
2. Type III and IIIA, conforming to ASTM C150, air-entraining Portland cement for use when high-early strength is specified.
3. Type IS and IS-A, conforming to ASTM C595, air-entraining Portland blast-furnace slag cement for use in general concrete construction.
4. Type IP and IP-A, conforming to ASTM C595, air-entraining Portland-Pozzolan cement for use in general construction. The addition of suffix (MS) signifies that moderate sulfate resistance is specified. The addition of suffix (MH) signifies that moderate heat of hydration is specified. Aggregates

### 2.3 AGGREGATES

- A. Washing will be required to eliminate the dust, clay, or silt coating. Aggregates which have been washed shall not be used sooner than 24 hours after washing, unless approved by the DESIGN PROFESSIONAL.
- B. Coarse aggregate shall be gravel or crushed rock, conforming to ASTM C33.
- C. Gravel shall consist of hard, clean, durable particles of rock or pebbles and shall be free from lumps of clay.
- D. Crushed rock shall consist of angular fragments of crushed hard heads or boulders or crushed igneous rock free from weathered rock and of uniform quality.
- E. All sieve and screen analyses determination of clay, silt, and dust content and percentages of objectionable particles will be based on dry weights and conform to PennDOT Specifications, Standard sizes of coarse aggregate and shall conform to the physical requirements specified in PennDOT Specifications.
- F. Fine aggregate shall be natural sand, manufactured sand or a combination thereof conforming to ASTM C33.
- G. Fine aggregates shall conform to PennDOT Specifications and to the grading requirements stated therein.

### 2.4 ADMIXTURES

- A. Admixtures shall be used to achieve concrete as indicated on the Plans or specified herein. Calcium chloride shall not be used.
  1. Air-entraining, conforming to ASTM C260.
  2. Pozzolan and Fly Ash, conforming to ASTM C618, Class C or F.
  3. Water reducing, conforming to ASTM C494.

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4. Retarder, conforming to ASTM C494.
5. Plasticizer, conforming to ASTM C494.
6. Ground granulated blast furnace slag conforming to ASTM C989, grade 100.

- B. Abrasive wear resistant floor finish shall be packaged, dry combination of Portland cement, graded Quartz aggregate and dispersing agents formulated to produce an abrasive and wear resistant monolithic surface.

### 2.5 JOINT FILLER

- A. See Section 03 15 00, Concrete Accessories.

### 2.6 WATER

- A. Water shall be free from oil, acid, alkali, organic matter, and any other deleterious substances.

### 2.7 CURING COMPOUND

- A. Shall be adequate to prevent checking, cracking and loss of moisture, conforming to ASTM C309.

### 2.8 MIXES

- A. Concrete shall consist of a mixture of air-entraining Portland cement, coarse and fine aggregate, and water with admixtures if required.
1. Admixtures shall not be used without ENGINEER's review.
  2. The mixture, combined in proportions, shall meet the requirements of PennDOT, and ACI 211.1.
- B. Concrete shall be classified and proportioned on the basis of minimum compressive strength at 28 days when cured in a moist room at a temperature within the range of 65 degrees to 75 degrees Fahrenheit (18 degrees to 24 degrees Celsius). The desired strength of the concrete shall be shown on either the Plans or in the Specifications.
- C. Table below shows for each grade of concrete the minimum compressive strength, cement content, and the modulus of rupture. Concrete shall be 5000 psi, Grade 5.0, unless otherwise shown on the Plans.

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| Concrete Grade | Fine Aggregate | Coarse Aggregate | Min Cement Content * |               |                |                       | Minimum Compressive Strength At 28 Days (PSI/MPa) | Minimum Modulus of Rupture At 28 Days (PSI/MPa) | Air Content (% by vol) | Slump at point of placement (inches) ** | Water-Cement Ratio (by weight max) |
|----------------|----------------|------------------|----------------------|---------------|----------------|-----------------------|---|---|------------------------|---|------------------------------------|
|                |                |                  | Type of Cement       | Lbs. per C.Y. | Sacks per C.Y. | Kg per m <sup>3</sup> |   |   |                        |   |                                    |
| 5.0            | 2NS            | 6AA              | II                   | 705           | 7.5            | 416                   | 5,000/35.0  | 5,000 / 5.3                                     | 4-6                    | 2-4                                     | 0.40                               |
| 4              | 2NS            | 6AA or 17A       | I, IA, IS, IS-A      | 611           | 6.5            | 362                   | 4,000/28.0  | 700 / 4.8                                       | 4-6                    | 2-4                                     | 0.44                               |
| 3.5            | 2NS            | 6AA or 17A       | IS, IS-A or IP, IP-A | 564           | 6              | 335                   | 3,500/24.0  | 650 / 4.5                                       | 4-6                    | 2-4                                     | 0.44                               |
| 3              | 2NS            | 6AA or 17A       | IS, IA               | 517           | 5.5            | 305                   | 3,000/20.0  | 600 / 4.1                                       | 4-6                    | 3-5                                     | 0.58                               |
| CLSM           | 2NS            | NA               | I, IA, IS, IS-A      | 38-282        | 0.4-3          | 22-166                | 50-100/.34-0.67                                   | NA  | NA                     | NA                                      | 0.40-0.75                          |

\* For concrete with fly ash or GGBFS, values are total of cement plus pozzolan or GGBFS (except CLSM).

\*\* For concrete containing HRWR admixture, slump shall not exceed 8 inches after addition of HRWR to verified 2-4 inches slump concrete.

\*\*\* Where fibrous concrete is required, provide 1.5% -3%=1.5-4.5 pounds per cubic yard. Add per manufacturer's

D. Aggregates shall be proportioned by weight, except for small structures and for incidental Work requiring less than ten (10) cubic yards (7 m<sup>3</sup>) of concrete, in which case they may be proportioned by volume when approved by ENGINEER.

E. Cement in bulk, when permitted, shall be proportioned by weight.

F. When proportioned by volume, the amount of each aggregate required for a single batch shall be measured separately and accurately.

1. Shovel methods of measuring will not be permitted.
2. Unit of volumetric measurement shall be one (1) cubic foot or one (1) cubic yard.

G. When proportioned by weight, the amount of each aggregate required for a single batch shall be weighed in a separate container.

1. Equipment for weighing shall be of an approved type, and of such accuracy that there shall not be an error of more than one (1) percent in any one (1) batch.

### 2.9 BATCHING ADMIXTURES

A. Batching of admixtures to achieve and maintain production of the mix design of concrete shall be in accordance with ACI 212.

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- B. If the air content is found to be less or greater than the specified amount, CONTRACTOR shall immediately discontinue Work and correct the air content.
- C. Decreasing the air content may be accomplished by blending air-entraining Portland cement with Portland cement, manufactured at the same mill, in a ratio which will reduce the air content to a value within the specified limits, this blending shall be reviewed by ENGINEER.
- D. Increasing the air content may be accomplished by adding to each batch a sufficient amount of air-entraining admixture to bring the air content up to the designed amount.
- E. Pozzolan and ground granulated blast furnace slag shall be proportioned based on the mix design approved by ENGINEER per Article 1.09 of this Section to produce watertight concrete.
- F. Water Reducer can be used to reduce the water requirement of concrete to obtain consistency of slump, modify workability, increase strength or any other approved use.

### 2.10 TEMPERATURE LIMITS OF MIXTURE

- A. The temperature of the cement, at the time of delivery to the mixer, shall not exceed 165 degrees F (74 degrees Celsius). It may be required that it be stored at CONTRACTOR's expense until cooled to that temperature.
- B. Temperature limits of aggregates and water entering the mixer shall be as follows:

| Mix Components       | Minimum     | Maximum      |
|----------------------|-------------|--------------|
| Water                | 75°F (24°C) | 140°F (60°C) |
| Fine Aggregate       | 65°F (18°C) | 140°F (60°C) |
| Coarse Aggregate     | 65°F (18°C) | 110°F (43°C) |
| Concrete (resulting) | 60°F (15°C) | 90°F (32°C)  |

### 2.11 MIXERS AND MIXING

- A. Concrete mixing operations shall be in accordance with ACI 304, and shall be subject to random inspection during the progress of the Work at no charge to CONTRACTOR.
- B. Central Mixed Concrete:
  - 1. Mixers shall be capable of quickly and completely discharging without segregation or loss.
    - a. Efficiency of the mixers shall be maintained at all times through repair or replacement of worn parts when necessary.

## CAST-IN-PLACE CONCRETE

- b. They shall be provided with readily adjustable, automatic devices which will measure the cement and water within one (1) percent and admixtures within three (3) percent.
  - c. Drum of the mixer shall be kept free from hardened concrete and shall be completely emptied before recharging.
  - d. Retempering or remixing concrete that has partially set will not be permitted.
  - e. Mixer shall be cleaned thoroughly each time when out of operation for more than 1/2 hour.
2. Recommended mixing time is a minimum time of one (1) minute for one (1) cubic yard (or cubic meter), with an additional 15 seconds for each additional cubic yard (or cubic meter).
  3. Concrete shall be delivered to the site in clean, tight truck bodies designed for this purpose and painted with paraffin, if necessary, for easy dumping.
  4. Concrete at the point of delivery shall have the proper consistency and shall be free from segregation.
    - a. Mechanical agitators in the truck bodies will be required if the period of time from the mixing plant to the point of dumping exceeds 30 minutes.
  5. No concrete shall be dumped if the elapsed time from the mixing plant to the point of dumping exceeds 60 minutes.
- C. Transit Mixed Concrete: Transit-mix concrete shall be in accordance with ASTM C94. If transit-mix concrete is used, it shall meet all the foregoing requirements specified for central mixed concrete and, in addition, the following:
- a. Batched materials shall be properly proportioned and in a dry state.
  - b. The proper amount of water shall be added to the mixer on the trucks, and no additional water shall be added.
  - c. No admixtures or accelerators shall be added except as herein noted, without the approval of ENGINEER.
  - d. Trucks shall not be loaded beyond their rated capacity and shall have mixing drums cleaned of all set-up materials at frequent intervals while in use.
  - e. Trucks with leaking water valves shall not be used.
  - f. Recommended mixing speed should be no less than 12 revolutions per minute, with a minimum of 90 revolutions or until the mix is satisfactory.
  - g. Mixing shall be continuous after water is added to the mix in the drum, but no concrete shall be placed in the forms more than 90 minutes after water is added to the mix.
- D. Truck-mixed concrete shall be delivered to the site of the Work and discharged from the mixer within the maximum period of 1-1/2 hours from the first introduction of water to the mix.
- a. Any concrete which remains in the mixer after this period and any concrete which appears too stiff to be properly workable

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or which appears to have begun to take its initial set shall be rejected and removed from the site of the Work.

- b. OWNER may employ an independent testing laboratory to provide a qualified inspector to be present at the plant where batching of concrete occurs.
  - (1) The inspector shall verify the compliance of the mix with the Specifications and shall sign a form indicating the quantity of concrete and the concrete mixture of each load.

### 2.11 CHANGE OF MIXTURE

- A. If CONTRACTOR requests a change or substitution of approved batch proportioning, mixing, or delivery operations additional testing and/or inspection shall be at CONTRACTOR's expense.

### 2.12 ACCEPTABLE MANUFACTURERS

- A. Acceptable manufacturers of abrasive wear resistant floor finish include: Master Builders Company "Mastercon Aggregate," Sonneborn Building Products "Harcot," or equal.

## **PART 3**      **EXECUTION**

### 3.1 VERIFICATION OF FORMWORK, REINFORCING, AND SUBGRADES

- A. CONTRACTOR shall inspect formwork, reinforcement and subgrades to confirm compliance with the related Work specified elsewhere.

### 3.2 EMBEDDED ITEMS

- A. CONTRACTOR shall verify the location, from certified vendor or applicable engineering drawings, of all embedded items including anchor bolts, wall sleeves, wall casting, railing post sleeves and miscellaneous pipes and conduits and shall install the items accurately at the locations determined.

### 3.3 BUILDING IN OTHER WORK

- A. CONTRACTOR shall make all necessary provisions in concrete Work for other Work installed by this or other contractors, and build in all required steel beams, frames, curbs, expansion joints, inserts, hangers, pipes, floor drains, pipe trench covers and frames, anchors, sleeves, floor ducts, fiber and steel conduit, pipe hanger sockets, and all other Work furnished by either this or other contractors.
- B. The CONTRACTOR shall build in all anchors, ties, etc., specified under brick and other Work, in faces of concrete Work which are to be faced with

## CAST-IN-PLACE CONCRETE

masonry, and any other Work shown or noted to be built into concrete. In addition, the CONTRACTOR shall provide all openings and holes in concrete Work as shown or as needed to accommodate other Work.

### 3.4 SPECIAL CONCRETE

- A. CONTRACTOR shall verify the use and/or locations of watertight concrete and/or high-early strength concrete.

### 3.5 PREPARATION

- A. CONTRACTOR shall notify ENGINEER two (2) working days prior to placement of concrete.
- B. Before depositing new concrete on or against existing concrete the existing concrete shall be roughened, thoroughly cleaned of foreign matter and laitance and saturated with water. The cleaned and saturated surface of the hardened concrete, including vertical and inclined surfaces, shall be coated with a bonding agent or slushed with a minimum 2-inch (50 mm) thick coating of concrete without coarse aggregate grout against which the new concrete shall be placed before the mixture has attained its initial set.
- C. Before concrete is placed in any unit, the forms and the placing and fixing of all steel and incidental items shall be complete, and the forms, steel and adjacent concrete shall be thoroughly cleaned and wetted down.
- D. Where indicated on the Plans, CONTRACTOR shall bridge the subgrade with at least 2,000 psi (13.8 MPa), 3-inch (75 mm) thick lean concrete before placing the reinforcement. This shall be at no extra cost.
- E. No concrete shall be deposited in any unit until the area has been completely dewatered in accordance with Section 31 2319, Dewatering, and not until after CONTRACTOR has made satisfactory provisions to eliminate all possibility of water entering or flowing through the concrete while it is being poured or is taking its set. No concrete shall be placed under or on water.

### 3.6 CONVEYING

- A. Concrete handling equipment shall be of such a nature and shall be so located that the concrete after leaving the mixer will reach its destination with a minimum lapse of time, with no segregation, and loss of slump.
  - 1. Use of drop chutes, except at or in the forms, is prohibited.
- B. The interior hopper slope of concrete buckets shall be not less than 60 degrees from the horizontal, the minimum dimension of the clear gate

## CAST-IN-PLACE CONCRETE

opening shall be at least five (5) times the nominal maximum size aggregate and the area of the gate opening shall be not less than two (2) square feet (0.2 m<sup>2</sup>). The maximum dimension shall not be greater than twice the minimum dimension.

1. Bucket gates shall be essentially grout tight when closed and may be manually, pneumatically or hydraulically operated except for buckets larger than two (2) cubic yards (1.5 m<sup>3</sup>) shall not be manually operated.
  2. Design of the bucket shall provide means for positive regulation of the amount and rate of deposit of concrete in each dumping position.
- C. Belt conveyors shall be designed and operated to assure a uniform flow of concrete from mixer to final place of deposit without segregation of ingredients or loss of mortar and shall be provided with positive means for preventing segregation of the concrete at the transfer points and the point of placing.
- D. Concrete may be conveyed by positive displacement pump when authorized by ENGINEER.
1. The pumping equipment shall be piston or squeeze pressure type.
  2. The pipeline shall be rigid steel pipe or heavy duty flexible rubber hose.
  3. The inside diameter of the pipe shall be at least three (3) times the nominal maximum size coarse aggregate in the concrete mixture to be pumped.
  4. The maximum size coarse aggregate shall not be reduced to accommodate the pumps.
- E. Distance to be pumped shall not exceed limits recommended by the pump manufacturer. The concrete shall be supplied to the pump continuously.
- F. When pumping is completed, concrete remaining in the pipeline shall be ejected without contamination of concrete in place.
- G. After each operation, equipment shall be thoroughly cleaned, and flushing water shall be wasted outside of the forms.

### 3.7 PLACING

- A. Concrete shall be so deposited as to maintain the top surface level, unless otherwise shown on the Plans, and also as to avoid any appreciable flow in the mass.
- B. Where placing operations involve dropping the concrete more than three (3) feet (1 m) in the forms, it shall be deposited through sheet metal or other approved spouts or pipes.

## CAST-IN-PLACE CONCRETE

1. These spouts or pipes shall have suitable receiving hoppers at the upper ends, and the lower ends shall be kept within six (6) inches (150 mm) of the newly placed concrete so as to prevent segregation and avoid spattering the reinforcing steel with mortar.
  2. Under no circumstances shall concrete that has partly hardened be deposited in the Work.
- C. Each layer of concrete shall be plastic when covered with the following layer and the forms shall be filled at a rate of vertical rise of not less than two (2) feet (600 mm) per hour.
1. Concrete vibrators shall penetrate the initial layer when placing the following layer.
  2. Vertical construction joints shall be provided as necessary to comply with these requirements.
- D. Concrete shall be placed and compacted in wall or column forms before any reinforcing steel is placed in the system to be supported by such walls or columns.
1. The portion of any wall or column placed monolithically with a floor or roof slab shall not exceed six (6) feet (1.8 m) of vertical height.
  2. Concrete in walls or columns shall set at least two (2) hours before concrete is placed in the structural systems to be supported by such walls or columns.
- E. Concrete shall be set when top finished. Laitance, debris, and surplus water shall be removed from concrete surfaces at tops of forms by screeding, scraping, or other effective means. Wherever the top of a wall will be exposed to weathering, the forms shall be overfilled and after the concrete has settled, the excess shall be screeded off.
- F. No concrete shall be placed in contact with frozen ground.
- G. Time between charging and placement of concrete shall not exceed 1-1/2 hours.
- H. Concrete shall be compacted by continuous vibrating, tamping, spading or slicing. Mechanical vibration shall be employed.
1. Care shall be taken to eliminate all voids and to provide full bond on reinforcing steel and embedded fixtures.
  2. Concrete shall be compacted and thoroughly worked with suitable tools combined with the use of vibrators applied internally and providing a frequency not less than 7,000 revolutions per minute.
  3. All such vibrating, including the methods and equipment, shall be subject to the review of ENGINEER.

## CAST-IN-PLACE CONCRETE

- I. The time of vibrating in any area shall only be sufficient to get efficient compaction, but shall in no case be carried to the point where there is segregation of the fine and coarse materials of the mix.
  1. There shall be an absolute minimum of direct vibration of the steel or forms during the process of vibrating.
  2. Vibrators shall be inserted and withdrawn from the concrete at numerous locations, from 18 to 30 inches (450 to 750 mm) apart, but shall not be used to transport concrete within the forms.
  3. CONTRACTOR shall have a stand by vibrator on the job site during all concrete pouring operations.

### 3.8 FINISHING UNFORMED SURFACES

- A. Unformed surfaces of all concrete shall be screeded and given an initial float finish followed by steel troweling.
- B. Screeding shall provide a concrete surface conforming to the proper elevation and contour with all aggregates completely embedded in mortar.
  1. Screeded surfaces shall be free of surface irregularities with a height or depth in excess of 1/4 inch (5 mm) as measured from a 10-foot (3 m) straightedge.
- C. Screeded surfaces shall be given an initial float finish as soon as the concrete has stiffened sufficiently for proper working.
  1. Any piece of coarse aggregate which is disturbed by the float or which causes a surface irregularity shall be removed and replaced with mortar.
  2. Initial floating shall produce a surface of uniform texture and appearance with no unnecessary working of the surface.
  3. Floating shall be performed with hand floats or suitable mechanical compactor floats.
- D. Troweling shall be performed after the second floating when the surface has hardened sufficiently to prevent an excess of fines being drawn to the surface. Troweling shall produce a dense, smooth, uniform surface free from blemishes and trowel marks.
  1. Top surface of driveways, and sidewalks shall be given a broomed finish after troweling.
- E. Unless specified to be beveled, exposed edges of floated or troweled surfaces shall be edged with a tool having 1/4 inch (5 mm) corner radius.

## CAST-IN-PLACE CONCRETE

### 3.9 FINISHING FORMED SURFACES

- A. After removal of forms, the finishing of all concrete surfaces shall be started as soon as its condition will permit. Grind all seams, fins or projections flush with the concrete surface.
  - 1. Fill and point all honeycomb, tie holes and voids.
  - 2. Dampen the surface with water and apply a cement and silica sand slurry to the entire surface to fill small defects and air voids.
  - 3. Remove excess slurry from concrete. Surfaces to be finished shall receive an application of dry Portland cement which shall be rubbed into the slightly dampened surface with a suitable cloth.
- B. After pointing and removal of projections as specified herein, exposed surfaces of concrete, including walls, columns, beams, pilasters and the undersides of slabs, shall be given a rubbed surface finish.

### 3.10 CONCRETE CURING

- A. Concrete shall be cured for a period not less than seven (7) consecutive days.
- B. CONTRACTOR shall have adequate equipment and curing material on the job site before concrete placement begins, and it shall be adequate to prevent checking and cracking and loss of moisture from all the surfaces of the concrete.
  - 1. Concrete shall be protected from rain, flowing water, wind and the direct rays of the sun.
  - 2. Openings in concrete shall be sealed to prevent drying of the concrete during the curing period.
- C. Curing compounds shall not be used on surfaces to which additional concrete or other material are to be bonded.
- D. Curing compounds when used shall be applied in strict accordance with the manufacturer's recommendations.
- E. Concrete cured with water shall be kept wet by covering with ponded water or fog spraying to keep all surfaces continuously wet.
- F. Horizontal construction joints and finished surfaces cured with sand shall be covered a minimum thickness of 1-inch (25 mm), uniformly, and kept saturated during the curing period.

## CAST-IN-PLACE CONCRETE

- G. Burlap used for curing shall be treated to resist rot and fire and free of sizing or any substances that are injurious to Portland cement or cause discoloration.
  - 1. Strips shall be lapped by half widths.
  - 2. The burlap shall be saturated with water after placement and during the curing period.
  
- H. Straw or hay shall be in a layer no less than six (6) inches (150 mm) thick and held in place by screens, wire or other means to prevent dispersion by the wind.
  - 1. Care shall be observed to avoid discoloration of the concrete surface from the vegetable fibers and for the flammability of the material.
  - 2. The straw shall be saturated with water after placement and during the curing period.

### 3.11 ENVIRONMENTAL CONDITIONS

- A. CONTRACTOR shall provide cold or hot weather protection in accordance with ACI and as specified herein. There shall be no additional cost for hot or cold weather protection of the concrete.
  
- B. Cold Weather Protection:
  - 1. When placing concrete in cold weather, CONTRACTOR shall plan and prosecute his Work in a manner which shall assure results free from damage through freezing, contraction, and loss of concrete strength.
  - 2. No concrete shall be poured when the surrounding temperature is below 40 degrees Fahrenheit (4 degrees Celsius), unless the aggregates and water are properly heated.
    - a. Concrete which has been poured at higher temperatures but has not attained a strength equal to 75 percent of the required strength of the class of concrete involved, shall be housed and protected in accordance with the provisions of this Section whenever the surrounding temperature falls below 40 degrees Fahrenheit (4 degrees Celsius).
  - 3. Application of heat to the materials shall be made in a manner which will keep these materials clean and free from injurious substances.
  - 4. Aggregates may be heated only by steam coils or steam jets, except in the case of small quantities of concrete when other methods may be approved by ENGINEER. A sufficient quantity of properly heated aggregates shall be on hand prior to starting the pouring of any unit.
  - 5. Concrete shall be properly housed with canvas, burlap, or other windproof material in such a manner that any necessary removal of the forms or finishing of the concrete can proceed without undue damage to the concrete from the elements.

## CAST-IN-PLACE CONCRETE

- a. Heating of the housing shall be done in a manner which will maintain a temperature between 50 degrees Fahrenheit and 70 degrees Fahrenheit (10 degrees and 20 degrees Celsius, respectively), at all times for at least five (5) days after the pour is complete and 12 hours before the pour begins.
  - b. All supplemental heating units shall have exhaust vented to the exterior and shall not cause deleterious reactions or deposits to occur to concrete.
- C. Hot Weather Protection:
1. Concrete deposited in hot weather shall not have a placing temperature that will cause difficulty from loss of slump, flash set, or cold joints. Concrete temperature shall be less than 90 degrees Fahrenheit (32 degrees Celsius).
  2. In hot weather, suitable precautions shall be taken to avoid drying of the concrete prior to finishing operations. Use of windbreaks, sunshades, fog sprays, or other devices shall be provided.

### 3.12 ADDITION OF WATER

- A. To increase workability, adding water to the mix shall be limited to a one time addition of one (1) gallon of water per cubic yard of concrete (5 liters per cubic meter) and mixed with a minimum of 30 revolutions at a rate of 12 to 15 revolutions per minute. Addition of water shall be within the slump requirements.

### 3.13 CONCRETE DELIVERY TICKET

- A. A ticket system shall be used for recording the transportation of concrete from the batching plant to point of delivery. This ticket shall be issued to the truck operator at the point of loading and given to ENGINEER upon delivery. The ticket shall as a minimum indicate the time of mixer charging, quantity of concrete, type of mixture including amount of cement, and the plant where the concrete was batched.

### 3.14 CONCRETE DELIVERY REJECTION

- A. Concrete not permitted for inclusion in the Work by ENGINEER shall be removed from the site. Rejection of concrete will be determined through concrete testing and elapsed time from mixer charging to delivery.

### 3.15 CONCRETE TESTING AT PLACEMENT

- A. Tests shall be made of fresh concrete for each 50 cubic yards (40 m<sup>3</sup>), or whenever consistency appears to vary. The sampling and testing of slump, air content and strength will be performed at no cost to CONTRACTOR.

## CAST-IN-PLACE CONCRETE

- B. Composite samples shall be secured in accordance with the Method of Sampling Fresh Concrete, ASTM C172.
- C. Slump Test:
1. Slump Test shall be in accordance with ASTM C143. CONTRACTOR shall use the least slump possible consistent with workability for proper placing of the various classifications of concrete.
  2. A tolerance of up to 1-inch (25 mm) above the indicated maximum slump shall be allowed for individual batches provided the average for all batches or the most recent ten (10) batches tested, whichever is fewer, does not exceed the maximum limit.
- D. Air Content:
1. Air content of normal weight concrete will be determined in accordance with Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method, ASTM C231.
- E. Compressive Strength:
1. A set of cylinders for compressive strength tests will consist of four cylinders per each set.
  2. Molding and curing specimens from each set shall be in accordance with Method of Making and Curing Concrete Test Specimens in the Field, ASTM C31. Deviations from the requirements of this Standard shall be recorded in the test report.
  3. Testing specimens will be in accordance with Method of Test for Compressive Strength of Cylindrical Concrete Specimens, ASTM C39.
    - a. One (1) specimen shall be tested at seven (7) days for information and two (2) shall be tested at 28 days for acceptance. The acceptance test results shall be the average of the strengths of the two (2) specimens tested at 28 days.
    - b. If one (1) specimen in a test manifests evidence of improper sampling, molding or testing, it shall be discarded and the strength of the remaining cylinder shall be considered the test result.
  4. The strength level of the concrete will be considered satisfactory so long as the averages of all 28 day strength test results equal or exceed the specified 28-day strength and no individual strength test result falls below the specified 28-day strength by more than 500 psi (3.4 MPa).
  5. If the strength test is not acceptable, further testing shall be performed to qualify the concrete.
- F. The temperature of concrete sample will be determined for each strength test.

## CAST-IN-PLACE CONCRETE

### 3.16 TESTING OF CONCRETE IN PLACE

- A. Additional testing of materials or concrete occasioned by their failure by test or inspection to meet specification requirements shall be at the expense of CONTRACTOR.
- B. Testing by impact hammer, sonoscope, or other nondestructive device may be permitted by ENGINEER to determine relative strengths at various locations in the structure as an aid in evaluating concrete strength in place or for selecting areas to be cored. Such tests, unless properly calibrated and correlated with other test data, shall not be used as a basis for acceptance or rejection.
- C. When required by ENGINEER, cores at least two (2) inches (50 mm) in diameter shall be obtained and tested in accordance with Methods of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete, ASTM C42.
  - 1. If the concrete in the structure will be dry under service conditions, the cores shall be air dried (temperature 60 degrees to 80 degrees Fahrenheit (15 degrees to 25 degrees Celsius), relative humidity less than 60 percent) for seven (7) days before test and shall be tested dry.
  - 2. If the concrete in the structure will be more than superficially wet under service conditions, the cores shall be tested after moisture conditioning in accordance with ASTM C42.
- D. At least three (3) representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient.
  - 1. The location of cores shall be determined by ENGINEER so as to least impair the strength of the structure.
  - 2. If, before testing, one or more of the cores shows evidence of having been damaged subsequent to or during removal from the structure, it shall be replaced.
- E. Concrete in the area represented by a core test will be considered adequate if the average strength of the cores is equal to at least 85 percent of and if no single core is less than 75 percent of the specified 28-day strength.
- F. Core holes shall be filled by low slump concrete or mortar.

### 3.17 DEFECTIVE CONCRETE

- A. If, in the opinion of ENGINEER, the defects in the concrete are of such a nature as to warrant condemnation, that portion of the pour may be ordered replaced in its entirety and CONTRACTOR shall promptly replace same without additional compensation.

## CAST-IN-PLACE CONCRETE

- B. Defective concrete shall be repaired by cutting out the defective area and placing new concrete which shall be formed with keys, dovetails or anchors to attach it securely in place.

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 26 05 00  
GENERAL REQUIREMENTS**

**PART 1 GENERAL**

1.1 GENERAL REQUIREMENTS

A. CONTRACTOR:

1. Furnish all labor, materials, equipment, and devices necessary for the complete electrical system as shown on the drawings and herein specified. It is the responsibility of the CONTRACTOR that the system is balanced, phased-out, tested, adjusted, fully protected and coordinated.
2. The work shall include but not be limited to the following:
  - a. Identification
  - b. Raceway
  - c. Wire
  - d. Boxes
  - e. Wiring Devices
  - f. Grounding
  - g. Instrumentation
3. Furnish and install all components of the listed systems as specified and indicated on the drawings.

1.2 GENERAL MECHANICAL CONTRACTOR (G.C.)

- A. Will furnish and mount all electric motors, and other devices for equipment furnished under the "General/Mechanical" contract.
- B. Will provide installation instructions, wiring diagrams, motor size information, etc. to the Electrical CONTRACTOR for all electrical equipment furnished as part of the General/Mechanical contract for installation by the Electrical CONTRACTOR.

1.3 CONTRACTOR DEFINITION

- A. All references to "CONTRACTOR" throughout these Electrical specifications refers to the CONTRACTOR responsible for the work defined by the Electrical specification Sections and the associated Electrical Drawings, except where another Contractor is referred to specifically, for example, General/Mechanical CONTRACTOR.

1.4 PROTECTION

- A. The CONTRACTOR shall take necessary precautions to protect his materials and equipment from damage. After completion of his work, the CONTRACTOR shall clean all electrical equipment and enclosures inside and out.
- B. All materials delivered to the job site shall be packaged by the manufacturer to prevent damage during shipment, handling and storage prior to installation.
- C. All materials shall be stored in clean dry area. Materials stored on the ground with plastic covers to shed the elements will not be acceptable. Conduit may be stored outdoors with appropriate provisions to keep it clean & dry.

## GENERAL REQUIREMENTS

- D. Storage or installation of electrical equipment inside the building prior to completion of a watertight roof is not acceptable. Conduit may be installed if all open ends are sealed at the end of each day's work.

### 1.5 SUBMITTALS

- A. The CONTRACTOR shall prepare and submit shop drawings for the work under this Section.
- B. Shop drawings shall consist of manufacturer's data, catalog sheets, fabrication drawings, etc. as required to completely describe the equipment or material.
- C. Manufacturer's data shall include ratings, dimensions, model numbers, options, etc., to allow for a review to determine conformance with the contract documents.
- D. Submit shop drawings for all electrical equipment and materials furnished, including basic items such as wire, conduit, boxes, etc.
- E. Prior to forwarding submittals for review, the CONTRACTOR shall verify that the equipment proposed interfaces properly with all associated devices such as control panels, motor control center, electric power source, etc.

### 1.6 JOB SITE DOCUMENTS

- A. The CONTRACTOR shall keep up-to-date at a central job site location a complete set of prints, specifications, shop drawings, etc. including all changes and modifications. These documents shall be available on the job site for use by the CONTRACTOR's personnel and for examination by the OWNER/ENGINEER. The Contract Drawings shall be corrected daily to show every change from the original plans and specifications. This set of drawings shall be used as reference in preparation of the final as-built prints. These as-built prints shall be submitted to the ENGINEER at the completion of the work.

### 1.7 QUALITY ASSURANCE

- A. All material shall be new and shall conform to the standards of the Underwriter's Laboratories, Inc., in any case where such a standard has been established. In case of assemblies, the components shall be Underwriter's Laboratories, Inc. listed for use as an integral part. In addition all materials shall conform to applicable NEMA, ANSI, and Federal Specifications requirements.
- B. The entire installation shall be made in conformance with the requirements of the latest publications of:
  1. National Fire Protection Association (NFPA)
  2. National Electrical Code (NEC)
  3. National Electrical Safety Code (NESC)
  4. National Electric Manufacturers Association (NEMA)
  5. Institute of Electrical and Electronic Engineers (IEEE)
  6. Occupational Safety and Health Administration (OSHA)

## GENERAL REQUIREMENTS

7. Applicable state and local codes and ordinances.
- C. The CONTRACTOR shall coordinate with the local inspection authority, throughout the course of the construction, to make sure that all installation methods and materials meet the inspector's requirements.
- D. After completion of all work, the CONTRACTOR shall have the installation inspected and certified by the local inspection authority. Any rework necessary to obtain approval shall be at the expense of the CONTRACTOR.
- E. The CONTRACTOR shall pay all charges and fees associated with inspection and certification of the electrical work.

### 1.8 SLEEVE OPENINGS, CUTTING AND PATCHING

- A. The CONTRACTOR shall provide all sleeve holes and other openings through any part of the various buildings and structures.
- B. The CONTRACTOR shall be responsible for all cutting and patching required to accommodate his work.
- C. Structural members and tank walls shall not be cut without consent from the ENGINEER. Patching shall match the original conditions.

### 1.9 SEALING OPENINGS

- A. All sleeve holes or other openings in outside walls shall be sealed to prevent any water seepage through these openings. All locations where wall sleeves pass through exterior structure walls or tank walls shall have cast iron or steel sleeves installed. The sleeves shall be complete with water stop.
- B. Where sleeve openings enter spaces through walls at a location below grade, the space between the conduit and the wall opening shall be sealed with a mechanical type seal. The mechanical seal shall be a modular type consisting of synthetic rubber link shaped to continuously fill the annular space between the pipe and the wall opening. The closure shall be water tight when the bolts are tightened. The seal shall be "Link Seal" manufactured by Thunderline Corporation of Wayne, Michigan or equal.
- C. All sleeves or other openings penetrating the roof shall be suitably flashed and sealed in accordance with the requirements of the Section on Roofing.
- D. All conduit entering or leaving explosion hazard areas shall have rated seals installed near the point of penetration.

### 1.10 RECORD DOCUMENTS

- A. At the completion of the project, all operating instructions, parts lists, shop drawings and maintenance instructions for material and equipment furnished by

## GENERAL REQUIREMENTS

the CONTRACTOR shall be indexed and neatly bound into a set of record documents.

- B. Initially, a single set of record documents shall be submitted to the ENGINEER for review and approval. After the review set has been returned to the CONTRACTOR with comments, three (3) complete revised sets of record documents shall be turned over to the OWNER.

### 1.11 GUARANTEE

- A. The CONTRACTOR shall guarantee all equipment and material furnished under this specification for a period of two (2) years after the date of final acceptance. Equipment manufacturer's warranties shall be passed on to the OWNER. Should any defects appear within this period, the CONTRACTOR shall repair or replace said defects or any damage to building or contents caused by defective workmanship or equipment, and shall make immediate adjustments at no cost to the OWNER or ENGINEER.
- B. The CONTRACTOR shall furnish maintenance and call-back service for the equipment provided by him for a period of one (1) year after the building is substantially complete. This service shall include regular examinations of the installation by competent and trained employees of the CONTRACTOR, and shall include all necessary adjustments, cleaning, supplies and parts to keep the equipment in good operation, except parts made necessary by misuse or accidents not caused by the CONTRACTOR.

### 1.12 EQUIPMENT LOCATIONS

- A. Equipment locations shown on the drawings may change due to interference problems, equipment design, etc. The CONTRACTOR shall verify the locations of devices and equipment installed by other contractors prior to final rough-in. Adjust conduit layouts as required to compensate for changes.

### 1.13 ACCESS TO EQUIPMENT

- A. All devices and equipment shall be located to allow easy access for maintenance and repair. Access shall be from the floor without the use of ladders.
- B. The equipment locations shall be reviewed with the work of other trades and contractors to verify that adequate working space will remain after all equipment is installed. All electrical equipment shall have NEC required access space.
- C. Where equipment locations shown on the drawings deny adequate access, the CONTRACTOR shall notify the ENGINEER to allow for review and adjustment of the location.

### 1.14 PAINTING

- A. All unpainted equipment and equipment which has its finish damaged during the course of construction shall be painted.

## GENERAL REQUIREMENTS

- B. Enclosures made of PVC or stainless steel do not require paint.
- C. Where conduit is installed or changed after the General/Mechanical's painting in an area is completed, the Electrical CONTRACTOR shall be responsible for arranging and paying for the electrical materials to be painted.

### 1.15 TESTING

- A. When electrical service conductors and branch feeders are installed, the voltage and phase relationships shall be verified prior to energizing loads.
- B. Test all motors for proper phase rotation prior to energizing.
- C. See additional requirements noted in the various Sections.

### 1.16 DEMONSTRATION

- A. The CONTRACTOR shall demonstrate to the OWNER, or his representative, the proper use, operation and maintenance of all equipment furnished and installed under any of the Electrical Sections.
- B. The demonstration shall include written materials, diagrams, hands-on instruction and other aids.
- C. The demonstration shall pay particular attention to all safety related aspects.
- D. See additional requirements in appropriate Sections.

### 1.17 SEQUENCE OF WORK

- A. The CONTRACTOR shall review the overall construction requirements and schedule his work to coordinate with the work of the General Mechanical Contract.

### 1.18 COORDINATION

- A. These specifications and accompanying plans are mutually explanatory and anything required by one but not by the other shall be considered as required by both. Where the requirements differ or are contradictory between different specification sections, between different drawings or between drawings and specifications, the more restrictive (larger size, greater rating, more options, etc.) shall apply.
- B. If installed work interferes with the work of others, it shall be corrected.
- C. Pre-occupation of a space by a CONTRACTOR does not give the CONTRACTOR the right to the space. All work must be coordinated with other contractors and trades in advance of installation.

## GENERAL REQUIREMENTS

### 1.19 EQUIPMENT INTERFACE COORDINATION

- A. The plans and schematic drawings show the required control connections and interfaces between the various control panels and devices, however, during the construction process some products may be substituted by the General/Mechanical, the manufacturer may change his product, etc.
- B. The CONTRACTOR shall be responsible for coordinating with the General/Mechanical and review all submittals to verify that they conform to the electrical requirements of other devices to which they are connected. Where discrepancies are noted, the CONTRACTOR shall:
  - 1. Inform the General/Mechanical CONTRACTOR so that the proper equipment will be supplied, OR
  - 2. Where the equipment specified will not work properly, inform the ENGINEER prior to final shop drawing review to allow changes to make the devices compatible, OR
  - 3. Provide necessary materials and equipment to interface the incompatible devices. Added materials will require the approval of the ENGINEER. All costs for added materials and labor shall be by the CONTRACTOR.
  - 4. After equipment and materials have arrived on the job site, the CONTRACTOR shall be responsible for all materials and work required for proper interface and operation.

### 1.20 IDENTIFICATION

- A. Each instrument, transmitter, etc. shall be labeled to indicate the name of the equipment controlled, load served, designation letter, voltage and phase, etc.
- B. Tags and labels required in paragraph "A" above shall be engraved laminated phenolic plastic type with 1/4" high letters. The tags and labels shall be permanently attached to the various devices. (i.e. rivets, screws, etc.)
- C. All equipment shall be appropriately labeled to warn of potential safety hazards.
- D. See specific Sections for additional identification requirements.

## **PART 2 Products**

### 2.1 GENERAL

- A. See individual specification Sections for product information.

## **PART 3 Execution**

### 3.1 INSTALLATION STANDARDS

- A. The installation of all materials and equipment for the electrical work shall comply with the "National Electrical Contractor's Association Standard of Construction". All work shall be completed in a neat, thorough, clean and workmanlike manner.

## GENERAL REQUIREMENTS

- B. Installation of materials shall comply with the manufacturer's recommendations.
- C. The CONTRACTOR shall supply all auxiliary equipment, frames, supports, access panels, and other devices required for proper installation and operation of equipment furnished and installed by him.

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 26 05 19**  
**ELECTRICAL CONDUCTORS AND CABLES**

**PART 1 GENERAL**

1.1 GENERAL REQUIREMENTS

- A. The CONTRACTOR is to provide all wiring and cables as shown on the drawings and as required for proper installation of the various electrical systems (service feeders, power feeders, branch circuits, lighting, control, signal, etc.).
- B. Provide electrical wiring as required to serve electrical equipment specified and furnished under other sections of the specifications.
- C. Determine wire numbers for each control, signal, instrumentation, and communication conductor, complete the Control cable schedules and identify each conductor and cable.
- D. Provide all electrical wiring between panels and devices furnished with equipment (FWE) as provided by the General/Mechanical CONTRACTOR.
- E. Provide all electrical wiring for devices, feeders, etc. provided by this contract.

1.2 TESTING

- A. All wiring size #8 AWG and larger shall be tested for shorts, grounds, and faulty insulation. The tests shall be performed after the wire is pulled and before devices and equipment are connected to the wire. The wiring shall be tested with a "Megger" type insulation-testing device with 1000-volt test voltage or as recommended by the wire manufacturer.
- B. All other wires shall be tested for continuity and ground with a hand held tester.
- C. All wires or cables that fail or show a weakness, indicating damage, shall be replaced.

**PART 2 PRODUCTS**

2.1 WIRE

- A. All wire and cable shall have copper (98% conductivity) conductors and shall be installed in conduit.
- B. Single Conductors: Conductors shall be annealed stranded copper, uncoated, conforming to ASTM B3, B8, and B33 and shall have cross-linked polyethylene insulation, rated 90 °C in dry or wet locations, and listed by UL as Type XHHW-2.
- C. 16 AWG, Twisted, Shielded Pair, Instrumentation Cable: Single pair, designed for noise rejection for process control, computer, or data log applications meeting NEMA WC 57 requirements.

## ELECTRICAL CONDUCTORS AND CABLES

1. Outer Jacket: 45-mil nominal thickness
  2. Individual Pair Shield: 1.35-mil, double-faced aluminum/synthetic polymer overlapped to provide 100 percent coverage.
  3. Dimension: 0.31-inch nominal OD.
  4. Conductors:
    - a. Bare soft annealed copper, Class B, seven-strand concentric, meeting requirements of ASTM B8
    - b. 16 AWG, seven-strand tinned copper drain wire
    - c. Insulation: 15-mil nominal PVC
    - d. Jacket: 4-mil nominal nylon
  5. Color Code: Pair conductors, black and red or clear
- D. Acceptable manufacturer's or equal:
1. American Wire & Cable
  2. Colonial Wire & Cable
  3. Triangle
  4. Cerrowire
  5. Belden
  6. Rome Wire & Cable

### 2.2 TERMINATIONS

- A. Terminations, taps and splices shall be made with bolted or mechanical compression connectors.
- B. Insulated compression type connectors shall be used on 120 volt power wire size #12 AWG. Spring compression type connectors shall not be used on stranded wire.
- C. Connectors shall have an insulation covering with a thickness of 1.5 times the conductor insulation thickness. The insulation covering may be part of the assembly or an applied heat shrinkable material.
- D. All control and instrumentation wiring shall be terminated in control panels, terminal boxes and at control devices with compression type, PVC or nylon insulated pin type lugs. Pin type lugs shall be suitable for use with box type connectors. Where pin type lugs are not suitable for the terminal strips in panels that are furnished with equipment (FWE), compression type, PVC or nylon insulated fork type lugs shall be utilized.
- E. Acceptable manufacturer's or equal:
1. Burndy
  2. Thomas & Betts
  3. Ideal
  4. 3M Company
  5. Square D
  6. Berk-Tek

## ELECTRICAL CONDUCTORS AND CABLES

### 2.3 WIRE MARKERS

- A. Wire markers for power feeders and branch circuit conductors shall be Brady B-500 adhesive backed vinyl cloth type or equal.
- B. Wire markers for control wiring shall be Brady B-321 heat shrinkable polyolefin type or equal.

## **PART 3 EXECUTION**

### 3.1 WIRE

- A. All wiring shall be installed in conduit.
- B. All feeder and branch circuit wires shall be color coded as follows:

| Wire    | 277/480V, 3PH-4W | 120/208V. 3PH-4W |
|---------|------------------|------------------|
| Phase A | Brown            | Black            |
| Phase B | Orange           | Red              |
| Phase C | Yellow           | Blue             |
| Neutral | White/Grey       | White            |
| Ground  | Green            | Green/White      |

- C. Wire sizes #8 AWG and larger may be identified by tags or labels on each end instead of insulation color. Tags or labels to have the same color coding.
- D. Pulling lubricant shall be a type recommended by the wire or cable manufacturer.
- E. No conductors shall be pulled until conduits are free from moisture and contaminates.

### 3.2 WIRE AND CABLE MARKERS

- A. All power feeders and branch circuit wires shall be tagged in cabinets, junction boxes, panel boards, etc. with permanent labels attached to the wire within 6 inches of the termination point. Labels shall be legible and shall not be removed, cut-off, etc.
- B. All control, signal and instrumentation wires shall be identified on each end using the wire numbers derived from the line numbers on the schematic drawings or from the numbering system in the associated control panels.
  - 1. Numbers shall be typed on the heat shrinkable labels with permanent ink. Hand lettered labels are not acceptable.
  - 2. Labels shall be installed approximately 1/2" from the termination point and shrunk to a tight fit on the wire with a heat gun.
  - 3. Labels shall be oriented to so that they are right side up and readable after the wire is connected to the terminal block.
- C. All cables shall be identified in all pull boxes, terminal boxes, manholes, control cabinets, control panels, etc. with permanent labels attached to the cable.

## ELECTRICAL CONDUCTORS AND CABLES

### 3.3 TERMINATIONS

- A. All control and instrumentation wire shall terminate with compression type, PVC or nylon insulated pin type lugs. Pin type lugs shall be suitable for use with box type connectors on terminal strips in control cabinets, terminal boxes, starters, control panels or device terminals. Control wire may be installed without compression type termination lugs on a temporary basis for checkout prior to final wire marking.
- B. Control and instrumentation wire shall not be spliced. All control wires shall terminate on terminal blocks or at device terminals.
- C. Where control and power wiring are in the same enclosure, the control wiring shall be bundled and separated to the maximum extent possible from the power wiring. Where 4-20 mA-DC circuits (shielded cable) can not be separated from power wiring, all device manufacturer wiring and installation instructions shall be administered.
- D. Each terminal shall be identified to match the identification of the wire attached. The terminal identification shall be in addition to and separate from the wire identification. Terminal identification shall be completed with typed labels and shall not be hand labeled.

END OF SECTION

**SECTION 26 05 33  
RACEWAY AND BOXES**

**PART 1 GENERAL**

1.1 GENERAL REQUIREMENTS

- A. Electrical CONTRACTOR to provide:
1. All raceways as shown on the drawings and as required for proper installation of the various electrical systems (service feeders, power feeders, branch circuits, lighting, control, telephone, instrumentation, etc.).
  2. Conduit to serve all electrical loads specified and furnished in other parts of the contract documents and under the General Mechanical Contract.
  3. Provide all boxes as shown on the drawings and as required for proper installation of the various electrical systems.
  4. Coordinate outlet locations with the work of the General/Mechanical CONTRACTOR.

1.2 RACEWAY DESCRIPTIONS

- A. Raceways including suitable fittings:
1. PVC conduit
  2. Liquid tight flexible conduit

**PART 2 PRODUCTS**

2.1 RACEWAYS

- A. All plastic conduit shall be electrical type (Schedule 40) suitable for direct burial or concrete encasement. PVC conduit shall meet the requirements of Federal Specifications WC1094A, NEMA TC2 and UL 651. PVC conduit shall be UL listed and carry a UL label.
- B. Liquid tight (Type LA) conduit shall be UL listed and carry a UL label, shall meet the requirements of NEC 351 and shall have a flexible core formed of hot dipped galvanized steel strip with extruded PVC jacket.
- C. Each length of conduit of any type shall be stamped with the manufacturer's name or trademark.
- D. Manufacturer or equal:
1. Allied
  2. Wheatland Tube
  3. Triangle

2.2 FITTINGS

- A. Plastic fittings for PVC conduit shall have solvent welded type connections. Solvent shall be by the manufacturer of the conduit.

## RACEWAY AND BOXES

- B. Fittings for liquid tight flexible conduit shall be designed and approved for the application.
- C. All box connectors and bushings shall be Meyers hub type with insulated throat.
- D. Manufacturer or equal:
  - 1. Appleton
  - 2. Steel City
  - 3. Raco
  - 4. Crouse-Hinds
  - 5. OZ/Gedney

### 2.3 SUPPORTS

- A. Conduit support devices and clamps shall be specifically manufactured and designed for applications with specific type of electrical conduit.
- B. All support devices shall be aluminum or stainless steel.
- C. All channel shall be hot-dipped galvanized steel. Channel shall be mounted between the wall and the device at all locations below grade. Aluminum channel used for support of PVC coated conduit does not require a PVC coating.
- D. Beam clamps, threaded rod, `U' hangers, trapeze supports, etc. shall be used in conjunction with support devices.
- E. Acceptable manufacturer's:
  - 1. Crouse-Hinds
  - 2. Raco
  - 3. Thomas & Betts
  - 4. Unistrut
  - 5. Beeline

### 2.4 BOXES

- A. All exposed outlet boxes installed in non-hazard environments shall be "FD" cast iron alloy (Feraloy) with cast device plates or cast blank covers.
- B. Junction boxes, pull boxes control stations and control panel enclosures which must be larger than outlet boxes and installed in non-hazard spaces shall be made of 14-gauge type 316 stainless steel and shall be rated NEMA 4X. All boxes with any dimension greater than 6" shall have a hinged cover and quick release, quarter turn type fasteners with operating handles.
- C. All boxes shall be of ample size to allow the conductors to be installed without bending them, either before or after installation, to a radius less than that recommended by the conductor manufacturer, in addition, the boxes shall meet NEC size requirements.

## RACEWAY AND BOXES

### PART 3 EXECUTION

#### 3.1 RACEWAY

- A. All raceway installed and exposed indoors shall be RGS.
- B. No conduit shall be smaller than 3/4" trade size
- C. All exposed conduit runs shall be installed parallel or perpendicular to the building walls.
- D. All conduit systems shall be mechanically and electrically continuous from source of current to all outlets and grounded in accordance with the National Electrical Code.
- E. All conduits shall have a separate ground conductor installed.
- F. Seal each end of all conduit where they enter a junction box, motor control center, disconnect switch, control panel, etc. with "duct seal".
- G. Flexible liquid tight conduit shall be used for final connections to motors and transmitters.
- H. All conduits shall be blown and swabbed before wires are pulled.
- I. Install all conduits with standard radius bends with not more than three (3) bends between terminals. Should a greater number of bends be necessary, install pull boxes or manholes.
- J. Install pull boxes in all above grade conduit runs exceeding 100 feet in length.
- K. Maintain a minimum separation from fluid (water, sewer, etc.) piping of 6" and do not install electrical conduit below fluid piping.

#### 3.2 BOXES

- A. The CONTRACTOR shall furnish and install outlet and junction boxes as shown on the Drawings or where required for the proper installation of the systems.
- B. Outlet and junction boxes shall be installed at locations as shown on the drawings, however, the CONTRACTOR shall coordinate all rough-in with the General/Mechanical CONTRACTOR to verify that the device locations do not interfere with other elements. Notify the ENGINEER of conflicts and modify device locations as directed.
- C. All junction boxes shall be installed so that they are accessible.
- D. All boxes for control panels shall be sized to house the devices required by the schematic diagrams plus 25% spare space. Boxes for control panels shall be NEMA4X stainless steel except where noted other wise on the drawings.

## RACEWAY AND BOXES

- E. Locations of all junction boxes shall be verified on the job site and coordinated with the General/Mechanical CONTRACTOR.

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

**SECTION 33 30 00**  
**SANITARY UTILITY SEWERAGE PIPING**

**PART 1   GENERAL**

1.1   SCOPE

- A.   This Section includes sanitary sewer Work indicated on the Plans complete with pipe, joints, pipe bedding, installation, television inspection and testing.

1.2   REQUIREMENTS OF REGULATORY AGENCIES

- A.   Testing shall conform to the applicable requirements of State and local authorities having jurisdiction, and shall include such tests as: deflection, air, exfiltration and infiltration.

1.3   REFERENCE STANDARDS

- A.   Unless otherwise specified, the Work for this Section shall conform to the applicable portions of the following Standard Specifications:
  - 1.   ANSI - American National Standard Institute
  - 2.   ASTM - ASTM International
  - 3.   PENNDOT - Pennsylvania Department of Transportation, Standard Specifications for Construction, latest edition
  - 4.   NCPI - National Clay Pipe Institute

1.4   SOURCE QUALITY CONTROL

- A.   Laboratory test not less than one (1) percent, with a minimum of three (3) pieces, each size, material and class of gravity pipe required in the Work.

1.5   TOLERANCES

- A.   The actual grade of the invert of the sewer shall not deviate from plan grade by more than 0.1 feet/100 feet (0.03 m/30 m), and not more than 0.2 ft. (60 mm) in total for a sewer run from manhole to manhole.
- B.   Alignment of sewer shall be within 0.2 feet/100 feet (0.06 m/30 m) and within 0.5 feet (150 mm) in total for a sewer run from manhole to manhole.

1.6   SUBMITTALS

- A.   Submit independent grade checks in accordance with Article 3.06 of this section.
- B.   Submit manufacturer's data for pipe bulkheading devices in accordance with Article 3.13 of this Section.
- C.   Submit two (2) copies of the laboratory test reports required per Article 1.05 of this Section to the ENGINEER.

## **SANITARY UTILITY SEWERAGE PIPING**

### **1.7 STORAGE OF MATERIALS**

- A. Piping material shall not be stacked higher than four (4) feet (1.2 m). Suitable racks, chairs, and other supports shall be provided to protect preformed pipe mating surfaces from damage. Store bottom tiers off the ground, alternate tiers and chock tier ends.
- B. All joint and sealing materials used in the sanitary sewer system shall be protected from sunlight and stored in cool and clean place until ready for installation.

### **1.8 HANDLING OF MATERIAL**

- A. Load and unload piping using suitably approved hoists, skids, etc. Piping shall not be dropped, bumped or allowed to impact against itself. Damaged piping is not to be used by the CONTRACTOR.
- B. Lifting devices shall be suited to the Work and shall protect surfaces from damage.

## **PART 2 PRODUCTS**

### **2.1 SCOPE**

- A. It is the intent of the Articles in Part 2 of this specification section to specify in detail the various types of sewer pipe, joints, manholes, etc. which have been indicated throughout the Plans and Specifications. These Articles shall not be construed as allowing any alternate type of material to that which is indicated on the Plans or elsewhere in the Specifications.

### **2.2 PVC SOLID WALL PIPE**

- A. PVC Solid Wall Pipe in sizes 6-inch through 15-inch (150 mm through 375 mm) shall be ASTM D3034, SDR 35.
- B. Joints for polyvinyl chloride pipe (PVC) shall be ASTM D3212, push-on type. A joint in which an elastomeric ring gasket is compressed in the annular space between a bell end or socket and a spigot end of pipe.

### **2.3 STRUCTURES**

- A. Material for sanitary sewer structures shall conform to the requirements as indicated on the plans and as specified below. Precast concrete structures are required except when constructing a structure over an existing sewer may require limited use of concrete block or brick as approved by the ENGINEER.
- B. Precast Concrete:
  - 1. Precast concrete manhole, flat top slabs, risers, transition sections and bottom sections shall conform to ASTM C478, and shall be circular with

## SANITARY UTILITY SEWERAGE PIPING

circular reinforcement. Base slab shall be minimum eight (8) inches (200 mm) thick for depths up to 25 feet (7.5 m).

2. Transition sections, reducers and flat top slabs shall be designed for the earth loading at the design depth of bury with a factor of safety of 1.5.
3. Precast bottom sections shall be cast with the bottom end flat to provide bearing of the full wall thickness. The openings for sewer pipe shall be cast in the manhole and the bottom section by the manufacturer.
4. 6-inch through 48-inch (150 mm through 1200 mm) connections to manholes shall use a mechanically compressible flexible joint, as indicated on the Plans.
5. Riser sections of a manhole shall have modified grooved tongue joints with "O" ring gaskets or a tongue and groove joint with a Butyl Rubber based gasket type sealant meeting the requirements of AASHTO M-198 and having a nominal size of 1-inch (25 mm).
6. Concrete grade rings shall have smooth finished top and bottom surfaces. Grade rings shall be provided with "O" ring gaskets.

### 2.4 BOLT, STUDS, NUTS

- A. Bolt, studs, and nuts shall conform to the following ASTM Standards:
  1. Cadmium Plating: ASTM B766, Grade N.S.
  2. Zinc Coating: ASTM A153 or B663, Type G.S.

### 2.5 CONCRETE

- A. In accordance with PENNDOT Section 701, use Grade S2; 3,500 psi (24 MPa) strength; Type IA cement; 6.0 sacks cement per cubic yard (355 kg/m<sup>3</sup>); 6A coarse aggregate; 2NS fine aggregate; 6.5% ± 1.5% air content; 3-inch (75 mm) maximum slump; no admixtures without the ENGINEER's approval.

### 2.6 CONCRETE REINFORCEMENT

- A. In accordance with PENNDOT Section 709, use ASTM A615, Grade 60 for bars and ASTM A185 for welded wire fabric.

## **PART 3 EXECUTION**

### 3.1 VERIFICATION OF EXCAVATION AND BEDDING

- A. Prior to the installation of any sanitary sewer piping, structures, or materials, examine all trenches and other excavations for the proper grades, lines, levels and clearances required to receive the new Work. Ascertain that all excavation bottoms, compacted subgrades and piping bedding are adequate to receive the sanitary sewer materials to be installed. Correct all defects and deficiencies before proceeding with the Work.

## SANITARY UTILITY SEWERAGE PIPING

### 3.2 EXISTING SANITARY SEWERS

- A. When connecting a new sewer to an existing sewer or a new building lead to an existing building lead, where the pipe joints are not compatible, use a "Fernco" rubber adapter. When connecting clay to clay, concrete to concrete or plastic to plastic, use stainless steel shear ring type couplers.

### 3.3 VERIFICATION OF PIPE CLASS AND JOINTS

- A. Prior to the installation of any sanitary sewer piping, ascertain that the class of pipe, joint material and bedding are as specified herein and as indicated on the Plans.

### 3.4 PREPARATION OF PIPE ENDS

- A. The outside surface of the spigot end and the inside surface of the bell end shall be cleaned and free of any foreign material, other than sealant recommended by the manufacturer, prior to installation.

### 3.5 EXAMINATION OF MATERIAL

- A. All pipe, accessories, and appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective or damaged material shall be rejected and removed from the Project by the CONTRACTOR.

### 3.6 INSTALLATION - GENERAL

- A. Each section of pipe, when placed to grade and line, shall have firm bearing on the trench bedding throughout its length.
- B. All pipe shall be laid to the line and grade called for on the Plans. Each pipe as laid shall be checked by the CONTRACTOR with line and grade pole or laser system to insure proper result is obtained. When employing a laser system, the CONTRACTOR shall have an alternate and independent means of checking the line and grade. CONTRACTOR shall check line and grade every 100-foot minimum. The finished work shall be straight and shall be sighted through between manholes.
- C. Construction shall begin at the outlet end and proceed upstream with spigot ends pointing in direction of flow. Bell holes shall be excavated so that the full length of the barrel will bear uniformly on the bedding.
- D. Mechanical means shall be used for pulling home all pipe where manual means will not result in pushing and holding the pipe home. Mechanical means shall consist of a cable placed inside of the pipe with a suitable winch, jack, or come along for pulling the pipe home and holding the pipe in position.

## SANITARY UTILITY SEWERAGE PIPING

- E. After laying of pipe, care shall be taken so as not to disturb its line and grade. Any pipe found off grade or out of line shall be re-laid.
- F. Cutting of pipe shall be done with approved tools and by approved methods suitable for the pipe material. Pipe cutting methods that produce a smooth, square-cut end without damage to the pipe and that minimize airborne particles shall be employed. Pipe cutting shall be performed using the recommendations of the manufacturer of the type of pipe materials being cut and according to the best trade practices. When cutting of pipe or fittings, care shall be taken to prevent damage to the lining and the exterior surface. Damage to either shall be cause for rejection of complete section.
- G. During the preparation of the pipe bedding and until the trench has been satisfactorily backfilled, the trench shall be kept free of water and sewage. A dewatering system, in accordance with Section 31 2319, Dewatering, shall be provided and maintained by the CONTRACTOR. The dewatering system shall remain in operation until the trench is backfilled.
- H. Backfill shall be as indicated on the Plans and as specified in Section 31 2333, Trenching and Backfilling.

### 3.7 PIPE LAYING

- A. Flexible Pipe:
  - 1. Installation of flexible pipe shall conform to ASTM D2321.
  - 2. Except as otherwise specified herein, installation of PVC piping shall be made in complete accordance with the published installation guide of the pipe manufacturer.
  - 3. Joints for PVC pipe shall be made by using a lubricant immediately before joining. Apply lubricant on the bell and spigot, coating the entire circumference of the bell and spigot bevel plus 1-inch (25 mm) behind the taper. Insert lubricated spigot into the bell, and using normal force insert spigot until insertion stripe mark is flush with the bell entrance.
  - 4. When jointing PVC pipe, rotate the pipe when inserting it approximately 1/4 to 1/2 turns.

### 3.8 PIPE BEDDING

- A. After the bottom of trench has been excavated the pipe bedding material will be installed in accordance with Section 31 2333, Trenching and Backfilling. The pipe shall then be installed strictly in accordance with the manufacturer's recommendations. After the pipe is laid, the bedding shall be continued above the pipe as specified in Section 31 2333, Trenching and Backfilling. Particular care shall be taken to assure filling and tamping all spaces under, around and above the top of the pipe.

## SANITARY UTILITY SEWERAGE PIPING

- B. A continuous and uniform bedding as specified in Section 31 2333, Trenching and Backfilling, shall be provided in the trench for all buried pipe.

### 3.9 MANHOLE STRUCTURES

- A. Construct sanitary sewer manhole and other sanitary structures to the grades, lines and levels indicated on the Plans, or as specified herein. Structures shall be precast concrete, complete with concrete bases, reinforcing, and adjustment rings, as shown and as required for a complete installation. Wye openings in manholes are prohibited unless indicated on Plans. Sanitary sewer structures shall conform to the type of material and dimensions indicated on the Plans.
- B. Manholes shall be completed and ready for final inspection within one (1) week after the manhole is constructed.
- C. Construct as detailed on the Plans.
- D. Cement mortar plaster coat shall be applied to the exterior surfaces of all brick and/or concrete block sections of all manholes. Plaster coat shall be 1/2 inch (10 mm) thick.
- E. Pipe, 6-inch through 24-inch (150 mm through 600 mm) diameters, shall be connected to manholes using an approved mechanically compressible flexible joint as indicated on the Plans. The pipe shall be properly supported with compacted pipe bedding material from undisturbed ground so that any settlement will not disturb the connection.
- F. The joint for existing pipe, six (6) inches (150mm) in diameter and larger, over which the sanitary manhole will be constructed, shall be a grouted joint as indicated on the Plans.

### 3.10 FIELD QUALITY CONTROL

- A. After all the pipe, structures, and leads have been laid, constructed and backfilled, the system shall be final inspected and tested. The inspection and testing shall consist of the following parts: first inspection, and testing.
- B. The first inspection shall be completed and all repairs made. Testing of the system shall immediately follow the repairs and shall be completed within a 2-week period.
- C. Failure to maintain a schedule in compliance with this specification will automatically cause the stoppage of other work at the particular site in question until such time as the final inspection of the completed underground portion of the system has progressed to within acceptable limits.
- D. First Inspection:

## SANITARY UTILITY SEWERAGE PIPING

1. The CONTRACTOR shall have the underground portion of the sewer system ready for the first inspection within two (2) weeks after the completion of each 2,000-foot (600 m) section of sewer installed.
2. The first inspection shall consist of a visible and audible check of the sewers and manholes to ascertain that all lift holes jointed, the channeling of the manhole bottoms completed, all visible or audible leaks stopped, all pipe has been placed straight and true to the proper grades and elevation, the required adjusting rings and frame and cover properly installed, all trenches and structures backfilled in a workmanlike manner and that the system has been thoroughly cleaned.
3. The first inspection shall be considered completed when all the repairs have been made.

### E. Testing:

1. The CONTRACTOR shall provide the necessary supervision, labor, tools, equipment and the materials necessary for the tests which shall be conducted in the presence of the ENGINEER. The ENGINEER shall be notified two (2) working days in advance of all testing. The following tests shall be performed and approved prior to placing any system in service:
  - a. Leakage tests shall be conducted on all new sewer lines and existing lines which have not been previously approved. All sewers shall be subjected to air, exfiltration or infiltration tests, or a combination of same, prior to acceptance. All sewers of 24-inch (600 mm) diameter or smaller, where the groundwater level above the top of the sewer is over seven (7) feet (2m), shall be subjected to infiltration tests. All sewers of 24-inch (600 mm) diameter or less, where the groundwater level above the top of the sewer is seven (7) feet (2 m) or less, shall be subjected to air tests or exfiltration tests.
2. Exfiltration/Infiltration Test:
  - a. Exfiltration and Infiltration testing will be performed in accordance with ASTM C1091, C969, F2487 or other appropriate standard except as specified herein. If an exfiltration test is performed, the maximum exfiltration rate shall be the same as the permitted from infiltration. For the purposes of exfiltration testing, the internal water level shall be equal to the external water level plus seven (7) feet (2 m) as measured from the top of pipe, and the elevation must be at least as high as the highest house service.
  - b. Maximum allowable infiltration shall not exceed 100 gallons per inch of diameter per mile of pipe between manholes per 24 hours (18.5 L/mm diameter/km length/24 hours) for any section of the system and shall include the infiltration from all manholes and other appurtenances.
3. Air Test:
  - a. The procedure for air testing of sewers shall be in accordance with ASTM C828 for Vitrified Clay Pipe, ASTM C924 for Concrete Pipe, and ASTM F1417 for Plastic Pipe except as follows:

## SANITARY UTILITY SEWERAGE PIPING

- b. All house leads shall be properly plugged and blocked to withstand the air pressure. The sewer line shall be tested in increments between manholes. The line shall be cleaned and plugged at each manhole. Such plugs shall be designed to hold against the test pressure and shall provide an airtight seal. One (1) of the plugs shall have an orifice through which air can be introduced into the sewer. An air supply line shall be connected to the orifice. The air supply line shall be fitted with suitable control valves and a pressure gauge for continually measuring the air pressure in the sewer. The pressure gauge shall have a minimum diameter of 3-1/2 inches (90 mm) and range of 0 - 10 psig (0 to 70 kPa). The gauge shall have minimum divisions of 0.10 psig (0.5 kPa) and an accuracy of  $\pm 0.04$  psig (0.2 kPa).
  - c. The sewer shall be pressurized to an initial test pressure of 4.0 psig (27.5 kPa) greater than the greatest back pressure caused by groundwater over the top of the sewer pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. If necessary, air shall be added to the sewer to maintain a pressure within 1.0 psig (7 kPa) of the initial test pressure.
  - d. After the stabilization period, the air supply control valve shall be closed so that no more air will enter the sewer. The sewer air pressure shall be noted and timing for the test begun. The test shall not begin if the air pressure is not within 1.0 psig (7 kPa) of the initial test pressure.
  - e. The time required for the air pressure to decrease 1.0 psig (7 kPa) during the Test shall not be less than the time calculated from Table 1 and the Appendices of the applicable ASTM standard as noted above.
  - f. Manholes on sewers to be subjected to air tests shall be equipped with a 1/2 inch (10 mm) diameter galvanized capped pipe nipple extending through the manhole wall, three (3) inches (75 mm) into the manhole and at an elevation equal to the top of the sewer pipe. Prior to the air test, the groundwater elevation shall be determined by blowing air through the pipe nipple to clear it and then connecting a clear plastic tube to the pipe nipple. The tube shall be suspended vertically in the manhole and the groundwater elevation determined by observing the water level in the tube. The air test pressure shall be adjusted to compensate for the maximum groundwater level above the top of the sewer pipe to be tested. After all tests are performed and the sewer is ready for final acceptance, the pipe nipple shall be removed and the hole in the manhole wall shall be plugged with hydraulic cement.
4. If a sewer fails to pass any of the previously described tests, the CONTRACTOR shall determine the location of the leaks, repair them and retest the sewer. The tests shall be repeated until satisfactory results are obtained.

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### 3.11 DEFLECTION TEST FOR PLASTIC PIPE

- A. Plastic pipe shall be tested for deflection, but no sooner than 30 days following the backfilling of the pipe. Maximum allowable deflection (reduction in vertical inside diameter) shall be five (5) percent. Locations with excessive deflection shall be excavated and repaired by re-bedding and/or replacement of the pipe. Optional devices for testing include a deflectometer, calibrated television or photography, or a properly sized "go, no-go" mandrel or sewer ball. Mandrel shall have a minimum of nine (9) legs.

END OF SECTION

**SECTION 33 3400  
SANITARY UTILITY FORCE MAINS**

**PART 1 GENERAL**

1.1 SCOPE

- A. This Section includes underground force main work complete with piping, valves, force main manholes, fittings, thrust blocks, retainers, plugs and accessories required for installation as indicated on the Plans and specified herein. This Section also includes hydrostatic testing of completed portions of new force main.

1.2 REFERENCE STANDARDS

- A. Unless otherwise specified, the Work of this Section shall conform to the applicable portions of the following Standard Specifications:
  - 1. ANSI - American National Standards Institute
  - 2. ASTM - ASTM International
  - 3. AWWA - American Water Works Association

1.3 SUBMITTALS

- A. Where concrete pipe is used in the force main work, a tabulated laying schedule, showing stationing, deflection, elevation, slope, and description of pieces shall be submitted to the ENGINEER. Pipe manufacture shall not be started until the laying schedule has been reviewed by the ENGINEER.
- B. Submit certified copies of hydrostatic test results of completed force main sections as specified in Article 3.15.
- C. Submit manufacturer affidavit showing compliance with AWWA Standards for valves.
- D. Submit manufacturer's data for restrained joint connections, valves or special fittings.

1.4 DELIVERY OF MATERIALS

- A. Provide two (2) percent of pipe lengths to be delivered as short pieces with a length ten (10) feet (3 m) or less. These short pieces shall be in addition to those required under the tabulated laying schedule.

1.5 STORAGE OF MATERIALS

- A. Pipe shall be stored in a manner to minimize infiltration of dirt, debris, and other extraneous materials.
- B. Piping materials shall not be stacked higher than four (4) feet (1.2 m). Suitable racks, chairs, and other supports shall be provided to protect performed pipe mating surfaces from damage. Store bottom tiers off the ground, alternate tiers, and chock tier ends.

## **SANITARY UTILITY FORCE MAINS**

- C. All joint and sealing materials subject to ultraviolet or ozone attack and used in the force main system shall be protected from the sunlight, atmosphere and weather, and stored in suitable enclosures until ready for installation.

### **1.6 HANDLING OF MATERIALS**

- A. Load and unload piping using suitable hoists and skidding. Piping shall not be dropped, bumped or allowed to impact against itself. Damaged piping shall not be used by the CONTRACTOR.
- B. Lifting devices shall be suited to the Work and shall protect surfaces from damage.

### **1.7 ENVIRONMENTAL REQUIREMENTS**

- A. Cast iron or ductile iron pipe joints shall comply with the requirements due to outside ambient air temperatures specified under Article 3.05 of this Section.

## **PART 2 PRODUCTS**

### **2.1 SCOPE**

- A. It is the intent of the Articles in Part 2 of this specification section is to specify in detail the various types of pipe, joints, and fittings which have been indicated throughout the Plans and Specifications. These Articles shall not be construed as allowing any alternate type of material to that which is indicated on the Plans or elsewhere in the Specifications.

### **2.2 DUCTILE IRON PIPE**

- A. Ductile iron pipe shall be ANSI A21.51, with double thickness cement mortar lining inside and 1-mil (25 µm) minimum thickness asphaltic coating outside. Pipe shall have a Pressure Class rating of 350 psi.
- B. Mechanical joints for ductile iron pipe shall be compression gasket type, conforming to ANSI A21.11 except that slots with the same width as the diameter of the bolt holes in mechanical joints shall not be allowed in the bell flange.
- C. Fittings and plugs shall be ductile iron, mechanical joint, pressure rating of 350 psi (2.4 MPa), conforming to ANSI/AWWA C110/A21.10, and ANSI/AWWA C111/A21.11, with double thickness cement mortar lining inside and 1-mil (25 µm) minimum thickness asphaltic coating outside and 1-mil (minimum thickness asphaltic coating outside).
- D. Nuts and bolts shall be high strength low-alloy steel conforming to ANSI A21.11.
- E. Flexible ball and retainer type joints shall be ball and retainer type, boltless, locking, and capable of being deflected up to 15°.
- F. Flange joints shall have full face neoprene gaskets, 1/8" thick and conform to ANSI B16.1. Carbon steel bolts shall conform to ASTM A449 with nuts

## SANITARY UTILITY FORCE MAINS

conforming to ASTM A563 Grade B. Stainless steel bolts and nuts shall conform to ASTM A320. Bolt head and nuts shall be hex. All piping connection bolts and nuts used on this Project including piping in the wet areas shall be cadmium plated. Flange joints shall not be buried.

### 2.3 RESTRAINED JOINTS

- A. All pipe shall be restrained joints per the following:
- B. Where the plans or specifications call for restrained joints they shall be per the following.
- C. Restrained joints for ductile iron pipe and fittings shall be designed for a working pressure of 350 psi (2.4 MPa). Joints shall be capable of being deflected after assembly. Restraints shall be by a positive axial lock between the bell interior surface and a retainer weldment on the spigot end of the pipe.

### 2.4 POLYETHYLENE ENCASEMENT

- A. Polyethylene material for encasement shall be either 4 mil high density, cross-laminated polyethylene film or 8 mil linear low-density polyethylene film per AWWA C105.

### 2.5 RESTRAINTS, CLAMPS, RODS, AND TIES

- A. Cast iron or stainless steel as recommended by pipe manufacturer. Bolts, nuts, clamps, rods, ties and fittings shall be bronze alloy or corrosion protected steel.

### 2.6 TRACER WIRE

- A. Copper clad steel wire with 30 mil High Density Polyethylene insulation. Concentric copper cladding metallurgically bonded to a steel core through a continuous solid cladding process. Copper cladding to measure 3% minimum of the overall wire diameter. Wire to be 12 AWG, .0808 in. diameter, .00242 inch nominal copper thickness, 9.5270 ohms nominal resistance per 1,000 feet, 675 pounds breaking strength. Wire to be Copperweld® or equal.

### 2.7 ACCEPTABLE MANUFACTURERS

- A. Pipe
  - 1. Acceptable manufacturers for ductile iron pipe include Griffin Pipe Products Company, American Cast Iron Pipe Company, United States Pipe and Foundry Company, Clow Water Systems Company or Engineer approved equal.
- B. Restrained Joints
  - 1. Acceptable manufacturers for restrained joints for ductile iron pipe include: Griffin Pipe Products Company, "Snap-Lok", American Cast Iron Pipe Company, "Flex-Ring; United States Pipe and Foundry Company,

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“TR Flex”; Clow Water Systems Company “Super Lock” or Engineer approved equal.

### 2.8 STEEL CASING FOR TRENCHLESS APPLICATIONS

- A. Steel casing shall be in accordance with ASTM A139, Standard Specification for Electric-Fusion (Arc)-Welded Pipe (NPS 4 and Over), with minimum diameter as indicated in the Contract Documents. Unless otherwise noted in the Contract Documents, the minimum wall thickness shall conform to the requirements of Table 2.08.1. Use Grade A steel for all applications unless otherwise indicated in the contract documents.
- B. The casing pipe and joints shall be of steel and of leakproof construction.
- C. Cathodic protection shall be applied to all casing pipes.

Table 2.08.1  
Steel Casing Wall Thickness

| Sewer Pipe Size<br>Inches | Casing Diameter<br>Inches | Wall Thickness<br>Inches |
|---------------------------|---------------------------|--------------------------|
| 18                        | 30                        | 0.406                    |
| 24                        | 40                        | 0.531                    |
| 48                        | 78                        | 1.000                    |

## **PART 3 EXECUTION**

### 3.1 CONTRACTOR'S VERIFICATION

- A. Prior to the installation of any force main piping or materials, examine all trenches and other excavations for the proper grades, lines, levels and clearances required to receive the new Work. Ascertain that all excavation bottoms, compacted subgrades and pipe bedding are adequate to receive force main materials to be installed. Correct all defects and deficiencies before proceeding with the Work.

### 3.2 PREPARATION OF PIPE ENDS

- A. Remove all lumps, blisters and excess coatings from the socket and plain ends of pipe. Wire brush and wipe clean the outside surfaces of all plain ends and the inside surfaces of all socket ends before installation. Any pipe or fitting which has acquired a coating of mud or other adhesive foreign material shall be scrubbed clean.

### 3.3 EXAMINATION OF MATERIALS

- A. All pipe fittings, accessories, and appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective or damaged materials shall be rejected and removed from the Project by the CONTRACTOR.

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### 3.4 INSTALLATION - GENERAL

- A. Foreign matter shall be prevented from entering the pipe while it is being placed in the trench. During and after laying operations, no debris, clothing or other materials shall be placed in the pipe. Plug pipe ends when construction stops overnight or for extended periods.
- B. Each section of pipe, when placed to grade and line, shall have firm bearing on the trench bedding throughout its length between bell holes.
- C. Cutting of pipe shall be done with approved tools and by approved methods suitable for the pipe material. Pipe cutting methods that produce a smooth, square-cut end without damage to the pipe and that minimize airborne particles shall be employed. Pipe cutting shall be performed using the recommendations of the manufacturer of the pipe materials being cut and according to the best trade practices.
- D. When cutting pipe or fittings, care shall be taken to prevent damage to linings and coatings. Damage to linings shall be cause for rejection of the complete Section. Damage to exterior coatings shall be corrected to original Specifications.
- E. Where pipe using a resilient gasket to affect the seal is cut, the cut pipe end shall be tapered at a 30-degree angle with the centerline of the pipe, and ground smooth, on the outside end to remove any sharp edges or burrs which might damage the gasket.
- F. Provide restrained joints meeting this specification and as recommended by the manufacturer. Connection shall be made in accordance with manufacturer's recommendations.
- G. After the bottom of trench has been excavated, the pipe bedding material will be installed in accordance with Section 31 2333, Trenching and Backfilling. The pipe shall then be installed strictly in accordance with the manufacturer's recommendations. After the pipe is laid, the bedding shall be continued above the pipe as specified in Section 31 2333, Trenching and Backfilling. Particular care shall be taken to assure filling and tamping all spaces under, around and above the top of the pipe.
- H. A continuous and uniform bedding as specified in Section 31 2333, Trenching and Backfilling, shall be provided in the trench for all buried pipe.
- I. Unless otherwise specified, pipe shall be laid with bell ends facing in the direction of laying. After a length of pipe is placed in the trench, the spigot shall be centered in the bell end of the adjacent pipe section, the pipe shoved into position and brought to true alignment and secured. Adequate support shall be provided for all force main pipe.
- J. Backfill shall be as indicated on the Plans and as specified in Section 31 2333, Trenching and Backfilling.

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- K. All fittings, plugs, adapters, and horizontal and vertical blocking shall be installed by the CONTRACTOR as shown on the Plans; and the cost of the same shall be included in the unit price per lineal foot of force main.

### 3.5 INSTALLATION OF DUCTILE IRON PIPE

- A. Push on joints shall be made by means of a compression type push-on resilient gasket. Gasket shall be pre-lubricated before installation using a lubricant recommended by the pipe manufacturer. The seated joint shall be identified by the visible mark on the spigot of the installed pipe section.
- B. When the temperature is above 60 degrees F (15° C), the spigot end of each pipe lead shall be forced tightly on the bell of the proceeding pipe. When the temperature is below 60 degrees F (15° C), the pipe shall be laid with the spigot end 1/16-inch (1 mm) from the face of the bell for expansion.
- C. Mechanical joints shall be made with bolts, molded resilient gasket and cast iron follower gland. All nuts shall be screwed up finger tight before using a wrench. The gland and rubber gasket shall be brought up evenly at all points around the bell flange and then torqued per the manufacturers recommendations.
- D. Exposed portions of bolts shall be covered with mastic.
- E. Flexible joint pipe shall be assembled, handled and installed in accordance with the printed recommendations which accompanies the pipe and is provided by the manufacturer of the piping materials being installed. Methods of handling and installation shall be acceptable to the ENGINEER.

### 3.6 INSTALLATION OF RESTRAINED JOINTS

- A. Restrained joints shall be provided where indicated on the plans. Joints shall be assembled in strict accordance with manufacturer's directions. All joints shall be fully extended after assembly.

### 3.7 POLYETHYLENE ENCASEMENT

- A. Where called for on the plans, ductile iron water main, fittings and hydrants shall be encased in a polyethylene film tube. The polyethylene film tube shall be installed in accordance with ANSI/AWWA C105/A21.5, Method A. Method A consists of cutting the polyethylene tube two feet (600 mm) longer than the pipe to provide an overlap at the joints. The cost of the polyethylene encasement shall be incidental to the force main.

### 3.8 ANCHORS

- A. Anchors, encasements and restraints shall be provided at the locations and dimensions as indicated on the Plans. Anchoring, encasement and restraint methods shall be as detailed. All bearings shall be as shown. Anchors, encasements and restraints shall rest on firm, stable, compacted bedding and shall be provided for all standard and special fittings.

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### 3.9 HYDROSTATIC TESTING

- A. After the pipe has been laid and backfilled, the pipe shall be hydrostatically tested for leakage. The CONTRACTOR shall furnish the pump, pipe connection, blow-off valves and all other necessary apparatus including gages and meters and all personnel necessary for conducting the test. Before applying the test pressure, all air shall be expelled from the pipe. If necessary, threaded taps shall be made at the points of higher elevation and then closed with brass plugs.
- B. Any faulty pipe fittings, valves or other accessories which permit leaks during testing shall be replaced by the CONTRACTOR with sound material and the test shall be repeated until specified requirements are met.
- C. When practicable, tests shall be made on sections between valves, or sections not exceeding 2,000 feet (610 m) in length. Dead ends, bends and other fittings shall have a firm foundation and be securely blocked against the trench walls before testing or completing the backfill as specified.
- D. The full test pressure shall be held for no less than one (1) hour or longer as necessary to permit thorough examination of all exposed joints in the section of main being tested. Test pressure shall be maintained at 150 psi (1000 kPa) for force mains.
- E. Leakage shall be measured by the quantity of water pumped into the pipe to maintain test pressure during test period. All leaks shall be located and repaired until the test meets the following requirements.
- F. Maximum permissible leakage of force main shall not exceed the following:

| Force Main Diameter<br>inches (mm) | Allowable Leakage gallons/1,000<br>feet/hour (liters/0.5 km/hour) |
|------------------------------------|---|
| 4 (100) or less                    | 0.5 (3.0)   |
| 6 (150)                            | 0.75 (4.5)  |
| 8 (200)                            | 1.00 (6.0)  |
| 10 (250)                           | 1.25 (8.0)  |
| 12 (300)                           | 1.50 (9.0)  |
| 14 (350)                           | 1.75 (11.0)   |
| 16 (400)                           | 2.00 (12.5)   |
| 18 (450)                           | 2.25 (14.0)   |
| 20 (500)                           | 2.50 (15.5)   |
| 22 (550)                           | 2.75 (17.0)   |
| 24 (600)                           | 3.00 (18.5)   |

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### **3.10 WATER FOR TESTING**

- A. Water for testing shall be obtained from a water source approved by the ENGINEER. The CONTRACTOR shall provide all water required at his own expense and shall make all necessary arrangements with the authority which controls the source of water system and shall be governed in his use of water by all rules and regulations imposed thereon by said authority. The CONTRACTOR shall provide and remove temporary connections between the source water system and the mains constructed under this Contract. All temporary connections shall meet the approval of the ENGINEER, the authority controlling the source water system and authorities having jurisdiction.
- B. Water for testing shall be removed from the force main by pumping to waste. Water discharge shall be controlled adequately to protect any surface water resource or adjacent property from potential environmental damage or from creation of hazard to traffic.

### **3.11 FLUSHING FORCE MAIN**

- A. At pump station start-up, should the force main flows not meet design requirements, the CONTRACTOR shall flush the force main at no additional cost to the OWNER. Flushing shall be done using the "poly-pig" method of flushing. The CONTRACTOR shall furnish foam "poly-pig" swabs to be used. Prior to pigging and flushing, the force main must be charged with water. The CONTRACTOR shall insert "poly-pig" swab in the end of the new main nearest the pump station (or where shown on the Plans). The swab shall be passed through the new main using water pressure. The swab shall be recovered at the end of the main or cleanout.

END OF SECTION