

**WESTMORELAND COUNTY HOUSING AUTHORITY**

167 SOUTH GREENGATE ROAD  
GREENSBURG, PENNSYLVANIA 15601

**CONTRACT DOCUMENTS & TECHNICAL SPECIFICATIONS**

**BID**

**SHANER HOUSING - SANITARY SEWER EXTENSION  
& WWTP DECOMMISSIONING**

MARS HILL ROAD, OGGS LANE, MARLEY COURT  
SEWICKLEY TOWNSHIP, WESTMORELAND COUNTY, PA

**GENERAL SITE CONSTRUCTION  
SHANER-2024.1.SC.1**

MAY 2024

**PREPARED & ASSEMBLED BY:**

**WCHA**

167 South Greengate Road Greensburg, PA 15601

Phone: 724-832-7248 ... Ext. 3056

Fax: 724-832-0988

[eriks@wchaonline.com](mailto:eriks@wchaonline.com)

**Morris Knowles & Associates, Inc.**

1740 Golden Mile Highway, Suite 101

Monroeville, PA. 15146

Phone: 724-468-4622

Fax: 724-468-8940

[wputzman@morrisknowles.com](mailto:wputzman@morrisknowles.com)

[itdarazio@morrisknowles.com](mailto:itdarazio@morrisknowles.com)

**WESTMORELAND COUNTY HOUSING AUTHORITY**

**SHANER HOUSING – SANITARY SEWER EXTENSION & WWTP DECOMMISSIONING  
SEWICKLEY TOWNSHIP – WESTMORELAND COUNTY**

**SITE CONSTRUCTION CONTRACT – SHANER-2024.1.SC.1**

**TABLE OF CONTENTS**

<b><u>DIVISION 00000 - PROCUREMENT AND CONTRACTING REQUIREMENTS</u></b>	<b><u>No of Pages</u></b>
00116..... NOTICE TO BIDDERS	1
004113..... FORM OF PROPOSAL	4
004113.01.....NON-COLLUSION AFFIDAVIT	1
004113.02.....BID BOND	2
004113.03.... STATEMENT OF BIDDERS QUALIFICATIONS	1
005213..... AGREEMENT BETWEEN OWNER & CONTRACTOR	2
00600.....PERFORMANCE BOND & PAYMENT BOND	2
00610.....LABOR & MATERIAL BOND	2
00620.....MAINTENANCE BOND	2
00630.....CONTRACTOR'S CERTIFICATE & RELEASE OF LIENS	2
00640.....SURETY STATEMENT FOR CONTRACTOR RELEASE OF LIEN	2
00650.....CERTIFICATION OF BIDDER	1
00700.....GENERAL CONDITIONS	70
00710.....SUPPLEMENTARY CONDITIONS	10
00720.....SPECIAL CONDITIONS	3
Prevailing Wage Rates Project 24-04216 Heavy/Highway	7
 <b>DIVISION 01 – GENERAL REQUIREMENTS</b>	
011000.....SUMMARY OF WORK	7
012500..... CONTRACT MODIFICATION PROCEDURES	2
013300..... SUBMITALS	9
014200..... REFERENCES	3
015000..... TEMPORARY FACILITIES AND CONTROLS	5
016000..... PRODUCT REQUIREMENTS	5
017000..... CUTTING AND PATCHING	5
017700..... CLOSE OUT PROCEDURES	4
017810..... PROJECT RECORD DOCUMENTS	3

**DIVISION 32 – TECHNICAL SPECIFICATIONS - SITE WORK**

02 41 00.....	WWTP DEMOLITION / DECOMMISSIONING	14
02 41 19.....	SELECTIVE DEMOLITION	
03 30 00.....	CAST-IN-PLACE CONCRETE	14
03 41 00.....	PRECAST STRUCTURAL CONCRETE	1
03 60 01.....	GROUTING	3
31 05 16.....	AGGREGATES FOR EARTHWORK	3
31 05 19.....	GEOTEXTILES FOR EARTHWORK	3
31 10 00.....	SITE CLEARING	4
31 22 13.....	ROUGH GRADING	5
31 23 16.....	EXCAVATION	4
31 23 16.16..	TRENCHING	2
31 23 23.....	FILL	9
31 23 23.13..	BACKFILL	3
31 25 00.....	EROSION & SEDIMENTATION CONTROL	5
32 92 19.....	SEEDING	7
33 05 05.36..	VACUUM TESTING	4
33 05 05.41..	AIR TESTING	3
33 05 05.43..	MANDREL TESTING	2
33 31 00.....	SANITARY SEWERAGE PIPING	6

CONSTRUCTION DRAWINGS (SEPARATE ATTACHMENT)

## **NOTICE TO BIDDERS**

### **SHANER HOUSING – SANITARY SEWER EXTENSION & WWTP DECOMMISSIONING SEWICKLEY TOWNSHIP – WESTMORELAND COUNTY INVITATION FOR BIDS**

- **SITE CONSTRUCTION CONTRACT – SHANER-2024.1.SC.1**

**Westmoreland County Housing Authority** is requesting construction bids for the referenced project through sealed bids which will be received by the **Westmoreland County Housing Authority**, until **May 29, 2024 at 10:00 A.M. (eastern standard time)**. Bids shall be deposited at the Administrative Office of the Westmoreland County Housing Authority, 167 South Greengate Road, Greensburg PA 15601. Bids received will then be opened publically.

A **Pre-Bid Meeting** is scheduled for **May 10, 2024 at 10:00 A.M. (eastern standard time)**. Meeting location will be at the **Shaner Housing Site - 57 Marley Court, Irwin, PA 15642**. Attendance is not mandatory, but highly recommended.

Electronic Bid Documents are available for downloading at [www.wchaonline.com](http://www.wchaonline.com). Bidders are required to register online at the [www.wchaonline.com](http://www.wchaonline.com) to view bid documents. Plan holders proposing to bid shall also register their intent to submit a bid with **Westmoreland County Housing Associates, Inc.** via email to [lindam@wchaonline.com](mailto:lindam@wchaonline.com) and [eriks@wchaonline.com](mailto:eriks@wchaonline.com) in accordance with the bid requirements.

Tribune Review - Advertisement Dates: May 4<sup>th</sup> and May 8<sup>th</sup>, 2024  
Pittsburgh Courier – May 8<sup>th</sup>, 2024  
Mon-Valley Independent – May 8<sup>th</sup>, 2024

#### **Westmoreland County Housing Authority.**

By: Michael L. Washowich, Executive Director

Proposals shall be submitted in sealed envelopes containing the bid proposal and shall be clearly marked with the Bidder's name, the Contract Number and Project Title. A certified bid bond for the amount of 10% of the total bid shall be required. Bonds are to be issued by a surety licensed to do business in the Commonwealth of Pennsylvania.

All contractors must adhere to Act 127 of 2012 (Public Works Employment Verification Act).

The Pennsylvania Prevailing wage requirements will apply to this Contract.

**Westmoreland County Housing Authority** reserves the right to reject any and all Bids or parts thereof or items therein, to waive any defects or irregularities in the Bids, and to accept the Bid which is in their best interest.

WESTMORELAND COUNTY HOUSING AUTHORITY

**SHANER HOUSING – SANITARY SEWER EXTENSION & WWTP DECOMMISSIONING**

**Located At  
MARS HILL ROAD, OGGS LANE, MARLEY COURT  
SEWICKLEY TOWNSHIP - WESTMORELAND COUNTY, PA.**

**SITE CONSTRUCTION CONTRACT – SHANER-2024.1.SC.1**

FORM OF PROPOSAL

DEPOSIT AND OPENING OF BIDS

Westmoreland County Housing Authority is requesting construction bids for the referenced project through sealed bids which will be received by the Westmoreland County Housing Authority, until May 29, 2024 at 10:00 A.M. (eastern standard time). Bids shall be deposited at the Administrative Office of the Westmoreland County Housing Authority, 167 South Greengate Road, Greensburg PA 15601. Bids received will then be opened publicly.

IMPORTANT - Be sure to show figures in ink or typewritten, sign the bid form, and attach as a proposal guaranty a certified check drawn by the depositor to the Westmoreland County Housing Authority, or a bid bond executed by the Bidder and a surety company, in the amount of at least ten percent (10%) of the total bid.

**CONTRACT - SHANER-2024.1.SC.1**

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

Contract . Shaner-2024.1.SC.1 Bid of hereinafter called "Bidder" organized and existing under the laws of the State of \_\_\_\_\_

doing business as \_\_\_\_\_(Corporation, Partnership, Limited Partnership, Sole Proprietor, Etc.), located at

\_\_\_\_\_  
Physical Business Address

to furnish all labor, equipment, and materials and to perform all work in a substantial and workmanlike manner, in accordance with the Contract Documents provided.

This bid must be filled in by the Bidder, in ink or typewritten, and any omission of bid prices, where a bid is made, will be sufficient to cause rejection of the bid as informal. The Owner reserves the right to reject any and all bids, and to waive any informalities, defects, or irregularities in the bids.

In accordance with the advertisement of the Westmoreland County Housing Authority inviting bids for and in conformity with the Contract Documents on file at the office of Owner, and the supplements and revisions attached hereto and made a part hereof, the Bidder hereby certifies that the Bidder is the only person(s) interested

in this bid as principal(s); that it is made without collusion with any persons, firm, or corporation; that an examination has been made of the Contract Documents, and same person(s) has(have) had sufficient time to investigate and is(are) satisfied as to the character of the Contract, that the Bidder proposes to furnish and deliver the necessary services required for Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning to the Westmoreland County Housing Authority.

It is further proposed to execute the Contract, including the bonds, in accordance with the requirements of the Contract Documents, to begin work on the date specified in the Notice to Proceed, and to substantially complete the work within NINETY (90) calendar days.

It is understood that if the work is not completed within the time specified on the Notice to Proceed, or such extensions thereof as may be granted in accordance with the Specifications, the Contractor shall pay the Westmoreland County Housing Authority liquidated damages in the amount of one hundred dollars (\$100.00) for each and every consecutive calendar day thereafter, until the work shall be completed and accepted.

Enclosed is a depositor's check certified by (name of bank of deposit) or a bid bond executed by the Bidder and (name of surety) \_\_\_\_\_

in the amount of at least ten percent (10%) of the total amount bid, made payable to the Westmoreland County Housing Authority as a proposal guaranty which, it is understood, will be forfeited in case the Contractor fails to execute and return the Contract in accordance with the requirements of the Specifications.

TO BE FILLED IN IF ADDENDA ARE ISSUED:

The Bidder acknowledges the receipt of Addenda hereinafter enumerated, which have been issued during the period of bidding, and agrees that said Addenda shall become a part of this Contract. The Bidder shall list below the numbers and issuing dates of the Addenda received:

ADDENDUM NO. \_\_\_\_\_ ADDENDUM NO. \_\_\_\_

ISSUING DATE \_\_\_\_\_ ISSUING DATE \_\_\_\_

BID PROPOSAL:

The Bidder agrees to perform all of the construction work described and detailed in the Contract Specifications and Drawings for the lump sum of :

\_\_\_\_\_ Dollars. (\$)\_\_\_\_\_. (Bid to be rounded to nearest

dollar amount.)

*Bid Amount shall be illustrated in words and figures. The amount shown in words shall govern over figures if a discrepancy exists.*

As previously stated in the Information for Bidders, Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning shall be awarded to the lowest bid submitted by a responsible Bidder, as determined by the Owner, provided such bid falls within the financing ability of the Owner.

Bidder by submission of the above bid amount represents the project scope of work and bid documents have been thoroughly reviewed and evaluated including additional requests related to the interpretation or clarification of the design intent of the bid documents and acknowledgment of

Addendum(s), if applicable. Each prospective bidder must review each site and assert they have performed their due diligence with reviewing existing site conditions for establishing quantities of work in preparing their bids. Bidder represents that it has the knowledge, skill, labor, equipment and expertise to perform the work described and illustrated within the Contract Documents; that it understands that it must make reasonable inferences to determine portions of the work not illustrated within the Contract Documents that would insure a complete project meeting as a minimum industry standards for the particular assignment. Bidder further acknowledges the bid amount represents all costs for such inferences in its bid; and, that Bidder is not relying on representations from the Contract Documents for the purpose of determining the means, methods, sequences of procedures of performing the work.

Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or other entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that he will retain such certifications in his files; and that he will forward a notice to his proposed subcontractors as provided in the Instructions to Bidders.

The Owner reserves the right to reject any and all bids and to waive any informality in the bidding and Bidder understands and agrees to this right and reservation by submitting the above bid.

The Owner reserves the right to evaluate and hold all bids and bid securities for a period of Ninety (90) calendar days following the date of public opening; Bidder understands and agrees to this right and reservation by submitting the above bid. Owner plans to conduct a pre-award meeting with the lowest responsible bidder to review construction means and methods, construction details, sequencing, etc. If an agreement of understanding cannot be reached between the owner and bidder on specific construction means and methods, construction detailing, product applications, materials of construction the owner may elect to reject the lowest bid.

Upon acceptance of this bid at any time before this bid is withdrawn, the undersigned agrees to execute and deliver a Contract in the prescribed form and furnished the required bonds and Insurance Certificates within ten (10) days after the Notice of Award.

**WESTMORELAND COUNTY HOUSING AUTHORITY**  
**Contract-SHANER-2024.1.SC.1: Gravity Sanitary Sewer & WWTP Decommissioning**  
**BID SCHEDULE**

Item No.	Description	Quantity	Unit Price	Item Cost
1	Furnish and install 8" SDR 35 gravity sewer pipe in areas using excavated material back-fill. Includes trench excavation, pipe, pipe bedding, and suitable excavated back-fill. Does not include restoration. (refer to Bid Item 6)			
	a 0'-6' depth	1192 L.F.	_____	_____
	b 6'-8' depth	350 L.F.	_____	_____
	c 8'-12' depth	595 L.F.	_____	_____
2	Standard Manhole, 0'-6' depth			
	a 0'-6'	8 EA	_____	_____
	b Extra Depth	26 V.F.	_____	_____
3	Standard Manhole Frame and Cover	4 EA	_____	_____
4	Watertight Manhole Frame and Cover	4 EA	_____	_____
5	Wye Connection to New Sewer	5 EA.	_____	_____
6	Furnish and lay 6" sewer service laterals. Includes trench excavation, pipe, endcap, ground stake, pipe bedding, and backfill. Does not include restoration (refer to Bid Item 6).			
	a Suitable Excavated Backfill - Open cut outside of limits of roadways	50 L.F.	_____	_____
	WWTP Removal/Backfill/Restoration	1 L.S.	_____	_____
7	Restoration			
	a Unpaved Local Area (Grass & Mulch) Sewer Line	6100 S.Y.	_____	_____
8	Erosion & Sedimentation Control	1 L.S.	_____	_____
9	Concrete Encasement / Stream Crossing (includes stream protection, pump bypass, E&S controls, restoration. (Refer to contract specifications for DEP requirements during construction.	2 L.S.	_____	_____
10	Connection to Existing Sewer Line	2 L.S.	_____	_____
11	Tree Clearing	1 L.S.	_____	_____

<b>TOTAL BASE BID AMOUNT =</b>
--------------------------------

Construction Company \_\_\_\_\_  
Print Name \_\_\_\_\_  
Title \_\_\_\_\_  
Date \_\_\_\_\_



BID EXECUTION:

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

Business Type \_\_\_\_\_ (Tax Filing Status)

Business Physical Address \_\_\_\_\_

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

Business E.I.N. \_\_\_\_\_

By \_\_\_\_\_

(Signature of person authorized to sign bid) (Blue Ink)

Title \_\_\_\_\_

Corporate Seal:

Bid Submission Date: \_\_\_\_\_, 2024

SECTION 004113

NON-COLLUSION AFFIDAVIT

CONTRACT- Shaner-2024.1.SC.1. : Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning

STATE OF \_\_\_\_\_:  
S.S

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

I state that I am \_\_\_\_\_(Title) of

\_\_\_\_\_ (Name of Firm)

being first duly sworn, deposes and says that I am authorized to make this affidavit on behalf of my firm, and its owners, directors, and, officers. I am the person responsible in my firm for the price(s) and the amount of this bid.

I state that:

The party making the foregoing proposal or bid, that such proposal or bid is genuine and not conclusive or; that said bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidder or person to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or of any other bidder, to fix overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the Housing Authority or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

By:

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

\_\_\_\_\_  
(Signatory's Name)

\_\_\_\_\_  
(Signatory's Title)

SWORN TO AND SUBSCRIBED BEFORE ME THIS

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

(Notary Public)

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

SECTION 00 41 13.02 BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned \_\_\_\_\_  
\_\_\_\_\_ as Principal, and  
\_\_\_\_\_ as Surety, are hereby held and firmly bound unto  
\_\_\_\_\_ as Owner in the penal sum of  
\_\_\_\_\_ dollars (\$ \_\_\_\_\_) for payment of which,  
well  
and truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns.  
Signed, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas the Principal has submitted to the Owner a certain bid, attached hereto, and hereby made a part hereof, to enter into a Contract in writing for the  
\_\_\_\_\_.

NOW THEREFORE,

- If said bid shall be rejected, or in the alternate,
- If said bid shall be accepted and the Principal shall execute and deliver a Contract in the form of Contract attached hereto (properly completed in accordance with said bid) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the Agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligation of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

In Presence of:

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Witness

By:

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

\_\_\_\_\_  
Surety Name

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

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

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the Commonwealth of Pennsylvania.

SECTION 004113.03 STATEMENT OF BIDDER'S QUALIFICATIONS

CONTRACT- Shaner-2024.1.SC.1. : Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning

All questions must be answered. The data given must be clear and comprehensive. This statement must be notarized.

- Name of bidder \_\_\_\_\_
- Business address \_\_\_\_\_
- When organized \_\_\_\_\_
- Where incorporated \_\_\_\_\_
- How many years have you been engaged in the contracting business under your present firm or trade name?  
\_\_\_\_\_
- Financial statement: (To be provided if requested by Delmont Borough)
- Contracts now on hand, gross amount \$ \_\_\_\_\_
- Type of Business Organization \_\_\_\_\_
- Number of Full Time Employees: \_\_\_\_\_
- Have you ever refused to sign a contract at your original bid price? \_\_\_\_\_
- Have you ever defaulted on a contract? \_\_\_\_\_
- Last Contract where Liquidated Damages were assessed: \_\_\_\_\_  
\_\_\_\_\_ How Many Days Assessed \_\_\_\_\_
- Will you, upon request, furnish any other information that the Local Authority may require? \_\_\_\_\_
- Does your company have a fully staffed office within 50 miles of the job site. Yes \_\_\_\_\_, No \_\_\_\_\_
- Is your company capable of securing and providing payment and performance bonds to Delmont Borough.  
Yes \_\_\_\_\_ No \_\_\_\_\_

The undersigned hereby authorizes and requests any person to furnish any information requested by the Local Authority in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 202\_\_.

\_\_\_\_\_  
(Name of Bidder)

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

SECTION 00 52 13 CONTRACT  
AGREEMENT BETWEEN OWNER AND CONTRACTOR

**THIS AGREEMENT**, made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ by  
and between Westmoreland County Housing Authority hereinafter called “Owner” and  
\_\_\_\_\_, doing business as (an individual)  
or (a partnership) or (a corporation), hereinafter called “Contractor.”

**WITNESSETH:** That for and in consideration of the payments and agreements hereinafter mentioned:

1. The Contractor will commence and complete the construction of CONTRACT Shaner-2024.1.SC.1: Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning
2. The Contractor will furnish all of the material, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the project described herein.
3. The Contractor will commence the work required by the Contract Documents within ten calendar days after the date of the Notice to Proceed, and will complete the same within 90 days unless the period for completion is extended otherwise by the Contract Documents.
4. The Contractor agrees to perform all of the work described in Contract Documents for the sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_).
5. The term “Contract Documents” means and includes the following:
  - o The project specifications
  - o General conditions
  - o Special/Supplemental conditions
  - o Technical Specifications
  - o Construction drawings.
6. The Owner will pay to the Contractor, in the manner and at such times as set forth in the General Conditions, such amounts as required by the Contract Documents.
7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

**IN WITNESS WHEREOF**, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in four (4) copies, each of which shall be deemed an original on the date first above written.

OWNER: \_\_\_\_\_

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

Name \_\_\_\_\_  
Please Type

Title \_\_\_\_\_

SEAL

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

Name \_\_\_\_\_  
Please Type

Title \_\_\_\_\_

---

---

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

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

Name \_\_\_\_\_  
Please Type

Title \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

SEAL

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

Name \_\_\_\_\_  
Please Type

Title \_\_\_\_\_

SECTION 00 60 00 PERFORMANCE BOND

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

KNOW ALL BY THESE PRESENTS THAT \_\_\_\_\_, (Contractor), (Full Name and Business Address), hereinafter called Principal, and

\_\_\_\_\_, a Bonding Company, a corporation duly organized under the laws of the State of \_\_\_\_\_, hereinafter called Surety, are held and firmly bound unto Westmoreland County Housing Authority, as Obligee, in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_),

{100% of Contract Price}, for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated \_\_\_\_\_, \_\_\_\_\_, 202\_\_ in accordance with drawings and specifications assembled by Westmoreland County Housing Authority, 167 South Greengate Road, Greensburg, PA. 15601, which contract is by reference made a part hereof referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract then this obligation shall be null and void; otherwise it shall remain in full force and effect. The Surety hereby waives notice of any alteration of extension provided the same is within the scope of the contract. Whenever Contractor shall be, and is declared by Owner to be default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default or shall promptly:

- 1.) Complete the Contract in accordance with its terms and conditions; or
- 2.) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the Owner and the Surety jointly of the lowest responsive, responsible bidder, arrange for a contract between such bidder and the Owner and make available as work progress (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other cost and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount property paid by Owner to Contractor. No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner or successors of the Owner.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ 202\_\_.

\_\_\_\_\_  
(Principal Name)                      (Seal)

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



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

By: \_\_\_\_\_  
(Principle Title)

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

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

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

By: \_\_\_\_\_  
(Attorney-In-Fact)

SECTION 00 61 00 LABOR AND MATERIAL PAYMENT BOND

**CONTRACT PA 2023.02 GC. : Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning**

BOND NO. \_\_\_\_\_ KNOW

ALL BY THESE PRESENTS THAT :

\_\_\_\_\_, CONTRACTOR, hereinafter referred to as Principal, and \_\_\_\_\_, a Bonding Company, a corporation duly organized under the laws of the State of \_\_\_\_\_, as Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of \_\_\_\_\_, [Contract Sum x 100%]. Dollars (\$\_\_\_\_\_), for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated \_\_\_\_\_20\_\_ entered into a contract with Delmont Borough, for construction of Contract Shaner-2024.1.SC.1 Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning in accordance with drawings and specifications assembled by Westmoreland County Housing Authority – 167 South Greengate Road, Greensburg, PA. 15601, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, 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, subject, however, to the following conditions:

A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the Contract.

The above-named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

No suit or action shall be commenced hereunder by any claimant:

- a.) Unless claimant, other than one having a direct contract with the Principal, shall have written notice to any two of the following: the Principal, the Owner, or the surety above named, within ninety (90) days after such claimant did or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be personally served or served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal at any place the Principal maintains an office or conducts its business.

- b.) After the expiration of one (1) year following the date on which the last of the labor was performed or material was supplied by the party bringing suit.
- c.) Other than in a court of competent jurisdiction for the county or district in which the construction contract was to be performed.

The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereinunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ 202\_\_

\_\_\_\_\_  
 (Principal Name) (Seal)

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

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

By: \_\_\_\_\_  
 (Principle Title)

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

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

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

By: \_\_\_\_\_  
 (Attorney-In-Fact)

SECTION 00 62 00 MAINTENANCE BOND

**CONTRACT- Shaner-2024.1.SC.1 : Shaner Housing Sanitary Sewer Extension  
& WWTP Decommissioning**

KNOW ALL BY THESE PRESENTS THAT we, the undersigned \_\_\_\_\_  
\_\_\_\_\_ as PRINCIPAL, and \_\_\_\_\_  
\_\_\_\_\_, a corporation organized and existing under the laws of the state of \_\_\_\_\_  
\_\_\_\_\_, as SURETY, and just sum of \_\_\_\_\_

DOLLARS (\$ \_\_\_\_\_),

lawful money of the United States of America, to pay to the said \_\_\_\_\_ to  
which payment well and truly be made and done, we bind ourselves, our heirs, executors, administrators, successors,  
and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounded Principal, entered into a Contract with the said WESTMORELAND COUNTY HOUSING AUTHORITY dated this \_\_\_\_\_ day of 2024 , for the

CONTRACT- Shaner-2024.1.SC.1. : Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning

upon certain terms and conditions mentioned in the said Contract, a copy of which is hereto attached, and made apart of hereof; and

WHEREAS, IT IS ONE OF THE CONDITIONS of said Contract that these presents be executed on or before the final acceptance of the Principal work to be performed under said Contract.

NOW, THEREFORE, the conditions of this obligation is such that if the above bounded PRINCIPAL shall remedy without cost to the said WESTMORELAND COUNTY HOUSING AUTHORITY any defect which may develop during a period of **EIGHTEEN (18) MONTHS** from the date of completion and acceptance of the work performed under said Contract, provided such defects, in the judgment of \_\_\_\_\_ of its successor having jurisdiction in the premises, are caused by defective or inferior materials or workmanship, then this obligation shall be void, otherwise, it shall be and remain in full force and effect.

IN WITNESS WHEREOF, the said PRINCIPAL AND SURETY have duly executed this Bond under Seal the day and year first above written.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ 202\_\_

\_\_\_\_\_  
(Principal Name) (Seal)

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

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

By: \_\_\_\_\_  
(Principle Title)



\_\_\_\_\_

(Surety Name)

\_\_\_\_\_

\_\_\_\_\_

(Surety Address)

\_\_\_\_\_

(Witness)

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

(Attorney-In-Fact)

SECTION 00630 CONTRACTOR'S CERTIFICATE & RELEASE OF LIENS

PROJECT: Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning

Contract: Shaner-2024.1.SC.1

From \_\_\_\_\_ to: Westmoreland County Housing Authority  
(Contractor) (Owner)

REFERENCE: contract entered into the \_\_\_ day of \_\_\_\_\_, 202\_\_, between the above parties referenced above for the Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning

The undersigned hereby certifies that there is due from and payable by Westmoreland County Housing Authority, (Owner) to the Contractor, the balance of \$ \_\_\_\_\_ pursuant to the Contract and duly approved Change Orders and modifications.

The undersigned certifies that all work required under this contract has been performed in accordance with the terms thereof, and that there are no unpaid claims for materials, supplies, or equipment and no claims of laborers or mechanics for unpaid wages arising out of the performance of this Contract.

That upon receipt of the final payment stated in Paragraph 1 hereof, the undersigned does hereby release the Owner Property Owner from any and all claims arising under or by virtue of this Contract; provided, however, that if for any reason the (Owner) does not pay in the full amount stated in Paragraph 1 hereof, the unpaid amount will become the amount which the Contractor has not released.

\_\_\_\_\_  
(Contractor)

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

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

\_\_\_\_\_  
(Date)

(To be notarized on page 2)

ACKNOWLEDGEMENT

State of \_\_\_\_\_ }

County of \_\_\_\_\_ }

Signed and sworn before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Notary Public My Commission Expires: \_\_\_\_\_

SECTION 00640 SURETY STATEMENT FOR CONTRACTOR RELEASE OF LIENS

PROJECT: Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning

Contract: Shaner-2024.1.SC.1

In accordance with the provisions of the above Contract dated \_\_\_\_\_, 20\_\_\_\_ between the Westmoreland County Housing Authority and \_\_\_\_\_[Contractor], of

\_\_\_\_\_  
\_\_\_\_\_[Contractor Business Address] the  
\_\_\_\_\_[Surety Company] of said  
\_\_\_\_\_[Contractor]

providing surety on the bond of \_\_\_\_\_[Contractor], after a careful examination of the books and records of said contractor or after receipt of an affidavit from Contractor, which examination or affidavit satisfies this company that all claims for labor, material and equipment rental have been satisfactorily settled, except such as are included in a list attached hereto, hereby approves of the final payment of the said

\_\_\_\_\_[Contractor] , and by these presents witnesseth that payment to the contractor of the final estimate shall not relieve the Surety Company of any of its obligations to **Westmoreland County Housing Authority** or have any claim for labor and material furnished as set forth in the said Surety Company's Bond.

IN WITNESSTH WHEREOF, the said Surety Company has hereunto set its hand and seal this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Corporate Seal

IN WITNESSTH WHEREOF, the said Surety Company has herunto set its hand and seal this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

(Corporate Seal)

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



POWER OF ATTORNEY MUST BE ATTACHED

ACKNOWLEDGEMENT

State of \_\_\_\_\_ }

County of \_\_\_\_\_ }

Signed and sworn before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Notary Public My Commission Expires: \_\_\_\_\_

SECTION 00 65 00 CERTIFICATION OF BIDDER

PROJECT: Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning

Contract: Shaner-2024.1.SC.1

Owner: **Westmoreland County Housing Authority,**

The undersigned hereby certifies that he/she and/or his/her authorized representative has thoroughly reviewed and evaluated the Contract Documents to determine whether he/she needs clarification of the Contract Documents or additional interpretation of the intent of the Contract Documents to determine the bid and that he/she has requested any needed clarification prior to submitting the bid; that he/she has visited the job site and that he/she fully understands the scope of work and the conditions affecting the work; that he/she has taken field measurements and fully understands the nature of the Project and the quantities of labor and materials that are required.

Additionally, he/she certifies that he/she understands the scope of the required work and that his price includes all of the labor and materials required to complete the Project as contemplated by the Construction Documents.

Additionally, he/she certifies that he/she has read and fully understands the requirements of specifications sections "GENERAL CONDITIONS", "SUPPLEMENTARY CONDITIONS", and "SCOPE OF WORK" as well as all other sections that have or may have an influence upon the work.

NAME OF BIDDER \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

CITY, STATE \_\_\_\_\_ ZIP \_\_\_\_\_

AUTHORIZED SIGNATURE \_\_\_\_\_

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

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

## STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



Copyright© 2018

National Society of Professional Engineers  
1420 King Street, Alexandria, VA 22314-2794  
(703) 684-2882  
[www.nspe.org](http://www.nspe.org)

American Council of Engineering Companies  
1015 15th Street N.W., Washington, DC 20005  
(202) 347-7474  
[www.acec.org](http://www.acec.org)

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

The copyright for this EJCDC document is owned jointly by the three sponsoring organizations listed above. The National Society of Professional Engineers is the Copyright Administrator for the EJCDC documents; please direct all inquiries regarding EJCDC copyrights to NSPE.

NOTE: EJCDC publications may be purchased at [www.ejcdc.org](http://www.ejcdc.org), or from any of the sponsoring organizations above.

# GUIDELINES FOR USE OF EJCDC® C-700, STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

## 1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), is the foundation document for the EJCDC Construction Series. The General Conditions define the basic rights, responsibilities, risk allocations, and contractual relationship of the Owner and Contractor, and establish how the Contract is to be administered.

## 2.0 OTHER DOCUMENTS

EJCDC documents are intended to be used as a system and changes in one EJCDC document may require a corresponding change in other documents. Other EJCDC documents may also serve as a reference to provide insight or guidance for the preparation of this document.

These General Conditions have been prepared for use with either EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price), or EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus-Fee) (2018 Editions). The provisions of the General Conditions and the Agreement are interrelated, and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018).

The full EJCDC Construction series of documents is discussed in the EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

## 3.0 ORGANIZATION OF INFORMATION

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

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

## 4.0 EDITING THIS DOCUMENT

Remove these Guidelines for Use. Some users may also prefer to remove the two cover pages.

Although it is permissible to revise the Standard EJCDC Text of C-700 (the content beginning at page 1 and continuing to the end), it is common practice to leave the Standard EJCDC Text of C-700 intact and unaltered, with modifications and supplementation of C-700's provisions set forth in EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018). If the Standard Text itself is revised, the

user must comply with the terms of the License Agreement, Paragraph 4.0, Document-Specific Provisions, concerning the tracking or highlighting of revisions. The following is a summary of the relevant License Agreement provisions:

1. The term "Standard EJCDC Text" for C-700 refers to all text prepared by EJCDC in the main body of the document. Document covers, logos, footers, instructions, or copyright notices are not Standard EJCDC Text for this purpose.
2. During the drafting or negotiating process for C-700, it is important that the two contracting parties are both aware of any changes that have been made to the Standard EJCDC Text. Thus, if a draft or version of C-700 purports to be or appears to be an EJCDC document, the user must plainly show all changes to the Standard EJCDC Text, using "Track Changes" (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions.
3. If C-700 has been revised or altered and is subsequently presented to third parties (such as potential bidders, grant agencies, lenders, or sureties) as an EJCDC document, then the changes to the Standard EJCDC Text must be shown, or the third parties must receive access to a version that shows the changes.
4. Once the document is ready to be finalized (and if applicable executed by the contracting parties), it is no longer necessary to continue to show changes to the Standard EJCDC Text. The user may produce a final version of the document in a format in which all changes are accepted, and the document at that point does not need to include any "Track Changes," redline/strikeout, highlighting, or other indication of additions and deletions to the Standard EJCDC Text.

## 5.0 LICENSE AGREEMENT

This document is subject to the terms and conditions of the License Agreement, 2018 EJCDC® Construction Series Documents. A copy of the License Agreement was furnished at the time of purchase of this document, and is available for review at [www.ejcdc.org](http://www.ejcdc.org) and the websites of EJCDC's sponsoring organizations.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

## TABLE OF CONTENTS

	Page
Article 1—Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology.....	6
Article 2—Preliminary Matters.....	7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance.....	7
2.02 Copies of Documents.....	7
2.03 Before Starting Construction.....	7
2.04 Preconstruction Conference; Designation of Authorized Representatives.....	8
2.05 Acceptance of Schedules.....	8
2.06 Electronic Transmittals.....	8
Article 3—Contract Documents: Intent, Requirements, Reuse.....	9
3.01 Intent.....	9
3.02 Reference Standards.....	9
3.03 Reporting and Resolving Discrepancies.....	10
3.04 Requirements of the Contract Documents.....	10
3.05 Reuse of Documents.....	11
Article 4—Commencement and Progress of the Work.....	11
4.01 Commencement of Contract Times; Notice to Proceed.....	11
4.02 Starting the Work.....	11
4.03 Reference Points.....	11
4.04 Progress Schedule.....	12
4.05 Delays in Contractor’s Progress.....	12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions.....	13
5.01 Availability of Lands.....	13
5.02 Use of Site and Other Areas.....	14
5.03 Subsurface and Physical Conditions.....	15
5.04 Differing Subsurface or Physical Conditions.....	16

5.05	Underground Facilities.....	17
5.06	Hazardous Environmental Conditions at Site .....	19
Article 6—Bonds and Insurance.....		21
6.01	Performance, Payment, and Other Bonds.....	21
6.02	Insurance—General Provisions.....	22
6.03	Contractor’s Insurance.....	24
6.04	Builder’s Risk and Other Property Insurance.....	25
6.05	Property Losses; Subrogation .....	25
6.06	Receipt and Application of Property Insurance Proceeds .....	27
Article 7—Contractor’s Responsibilities .....		27
7.01	Contractor’s Means and Methods of Construction .....	27
7.02	Supervision and Superintendence .....	27
7.03	Labor; Working Hours .....	27
7.04	Services, Materials, and Equipment .....	28
7.05	“Or Equals”.....	28
7.06	Substitutes .....	29
7.07	Concerning Subcontractors and Suppliers.....	31
7.08	Patent Fees and Royalties.....	32
7.09	Permits.....	33
7.10	Taxes .....	33
7.11	Laws and Regulations.....	33
7.12	Record Documents.....	33
7.13	Safety and Protection .....	34
7.14	Hazard Communication Programs .....	35
7.15	Emergencies.....	35
7.16	Submittals .....	35
7.17	Contractor’s General Warranty and Guarantee .....	38
7.18	Indemnification.....	39
7.19	Delegation of Professional Design Services .....	39
Article 8—Other Work at the Site.....		40
8.01	Other Work .....	40
8.02	Coordination .....	41
8.03	Legal Relationships.....	41



Article 9—Owner’s Responsibilities .....	42
9.01 Communications to Contractor .....	42
9.02 Replacement of Engineer .....	42
9.03 Furnish Data .....	42
9.04 Pay When Due.....	42
9.05 Lands and Easements; Reports, Tests, and Drawings.....	43
9.06 Insurance.....	43
9.07 Change Orders .....	43
9.08 Inspections, Tests, and Approvals.....	43
9.09 Limitations on Owner’s Responsibilities .....	43
9.10 Undisclosed Hazardous Environmental Condition.....	43
9.11 Evidence of Financial Arrangements.....	43
9.12 Safety Programs .....	43
Article 10—Engineer’s Status During Construction .....	44
10.01 Owner’s Representative.....	44
10.02 Visits to Site.....	44
10.03 Resident Project Representative.....	44
10.04 Engineer’s Authority .....	44
10.05 Determinations for Unit Price Work .....	45
10.06 Decisions on Requirements of Contract Documents and Acceptability of Work .....	45
10.07 Limitations on Engineer’s Authority and Responsibilities .....	45
10.08 Compliance with Safety Program.....	45
Article 11—Changes to the Contract .....	46
11.01 Amending and Supplementing the Contract .....	46
11.02 Change Orders .....	46
11.03 Work Change Directives.....	46
11.04 Field Orders.....	47
11.05 Owner-Authorized Changes in the Work .....	47
11.06 Unauthorized Changes in the Work.....	47
11.07 Change of Contract Price .....	47
11.08 Change of Contract Times.....	49
11.09 Change Proposals.....	49
11.10 Notification to Surety.....	50

Article 12—Claims.....	50
12.01    Claims.....	50
Article 13—Cost of the Work; Allowances; Unit Price Work .....	51
13.01    Cost of the Work.....	51
13.02    Allowances .....	55
13.03    Unit Price Work.....	55
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work .....	56
14.01    Access to Work.....	56
14.02    Tests, Inspections, and Approvals.....	56
14.03    Defective Work .....	57
14.04    Acceptance of Defective Work.....	58
14.05    Uncovering Work .....	58
14.06    Owner May Stop the Work .....	58
14.07    Owner May Correct Defective Work.....	59
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period .....	59
15.01    Progress Payments.....	59
15.02    Contractor’s Warranty of Title .....	62
15.03    Substantial Completion.....	62
15.04    Partial Use or Occupancy .....	63
15.05    Final Inspection .....	64
15.06    Final Payment.....	64
15.07    Waiver of Claims .....	65
15.08    Correction Period .....	66
Article 16—Suspension of Work and Termination .....	67
16.01    Owner May Suspend Work .....	67
16.02    Owner May Terminate for Cause.....	67
16.03    Owner May Terminate for Convenience.....	68
16.04    Contractor May Stop Work or Terminate .....	68
Article 17—Final Resolution of Disputes .....	69
17.01    Methods and Procedures.....	69
Article 18—Miscellaneous .....	69
18.01    Giving Notice.....	69
18.02    Computation of Times.....	69

18.03	Cumulative Remedies .....	70
18.04	Limitation of Damages .....	70
18.05	No Waiver .....	70
18.06	Survival of Obligations .....	70
18.07	Controlling Law .....	70
18.08	Assignment of Contract.....	70
18.09	Successors and Assigns .....	70
18.10	Headings.....	70

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

## ARTICLE 1—DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

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

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
  - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
  - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
  12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
  13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
  14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
  15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
  16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
  17. *Cost of the Work*—See Paragraph 13.01 for definition.
  18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
  19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
  20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
  21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
  - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
  - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
  - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
  - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
  - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.



## 1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
1. does not conform to the Contract Documents;
  2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
  3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2—PRELIMINARY MATTERS

### 2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

### 2.02 *Copies of Documents*

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

### 2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
  - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
  - 2. a preliminary Schedule of Submittals; and
  - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.05 *Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

## ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will 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.
- G. Nothing in the Contract Documents creates:
  - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
  - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

### 3.02 *Reference Standards*

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

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies*

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

#### B. *Resolving Discrepancies*

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

### 3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

### 3.05 *Reuse of Documents*

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

## ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

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

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

### 4.02 *Starting the Work*

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

### 4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

#### 4.04 *Progress Schedule*

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

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

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
  - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  - 2. Abnormal weather conditions;
  - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
  - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
  2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
  3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
  2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
  3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
  4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
  5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

## ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

### 5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.



- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

## 5.02 *Use of Site and Other Areas*

### A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
  2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
  - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

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

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
  2. is of such a nature as to require a change in the Drawings or Specifications;
  3. differs materially from that shown or indicated in the Contract Documents; or
  4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
  - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
  - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
  - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
  - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
  2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
  4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
  5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
  2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
  3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
  4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
  - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
  - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
  3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
  4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

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

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

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

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 6—BONDS AND INSURANCE

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

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or



Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

#### 6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
  - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
  - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

#### 6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
  1. include at least the specific coverages required;
  2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
  3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
  4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
  5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
  1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
  2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
  3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

#### 6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

#### 6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
  2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

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

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

### ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

#### 7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

#### 7.02 *Supervision and Superintendence*

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

#### 7.03 *Labor; Working Hours*

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

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

#### 7.04 *Services, Materials, and Equipment*

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

#### 7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
      - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
  - 3) has a proven record of performance and availability of responsive service; and
  - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
  - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

#### 7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
  2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.



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

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

#### 7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

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

#### 7.09 *Permits*

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

#### 7.10 *Taxes*

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

#### 7.11 *Laws and Regulations*

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

#### 7.12 *Record Documents*

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

### 7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
  - 1. all persons on the Site or who may be affected by the Work;
  - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

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

#### 7.14 *Hazard Communication Programs*

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

#### 7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

#### 7.16 *Submittals*

##### A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:
  - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determine and verify:
    - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
    - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
    - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
  - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

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

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

*D. Resubmittal Procedures for Shop Drawings and Samples*

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

*E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
  - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
  - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
  - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.



- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
  2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
  2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
1. Observations by Engineer;
  2. Recommendation by Engineer or payment by Owner of any progress or final payment;
  3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  4. Use or occupancy of the Work or any part thereof by Owner;
  5. Any review and approval of a Shop Drawing or Sample submittal;
  6. The issuance of a notice of acceptability by Engineer;
  7. The end of the correction period established in Paragraph 15.08;
  8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

#### 7.18 *Indemnification*

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

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

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
  - 1. Checking for conformance with the requirements of this Paragraph 7.19;
  - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
  - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

## ARTICLE 8—OTHER WORK AT THE SITE

### 8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

#### 8.02 *Coordination*

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

#### 8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
  - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
  - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

## ARTICLE 9—OWNER'S RESPONSIBILITIES

### 9.01 *Communications to Contractor*

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

### 9.02 *Replacement of Engineer*

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

### 9.03 *Furnish Data*

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

### 9.04 *Pay When Due*

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

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
  - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
  - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
  - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

## ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

### 10.01 *Owner's Representative*

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

### 10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### 10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

### 10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

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



## ARTICLE 11—CHANGES TO THE CONTRACT

### 11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

### 11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
  - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
  - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
  - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
  - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

### 11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
  - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
  - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

#### 11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

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

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

#### 11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
  2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
  3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
  2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
    - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
    - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
    - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
    - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
    - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
    - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

#### 11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

#### 11.09 *Change Proposals*

A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

#### B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
  - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
  - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

#### 11.10 *Notification to Surety*

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

### ARTICLE 12—CLAIMS

#### 12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
  1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
  2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
  3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
  4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
  - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
  - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
  - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

### 13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
  - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
  2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
  3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
  4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
  5. Other costs consisting of 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, 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.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.



- g. The cost of utilities, fuel, and sanitary facilities at the Site.
  - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
  - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
  - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
  - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
  - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
  - 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. Expenses incurred in preparing and advancing Claims.
  - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
    - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
    - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
      - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
      - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
  - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

### 13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
  2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

### 13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
  - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
  - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
  2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
  3. by manufacturers of equipment furnished under the Contract Documents;
  4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
  5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

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

#### 14.03 *Defective Work*

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

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

#### 14.04 *Acceptance of Defective Work*

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

#### 14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
  1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
  2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

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

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
  - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
  - 2. 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 must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
  - a. the Work has progressed to the point indicated;
  - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
  - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
  - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
  - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. to supervise, direct, or control the Work;
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
  - a. the Work is defective, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
  - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

*D. Payment Becomes Due*

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

*E. Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
  - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;



- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
  - c. Contractor has failed to provide and maintain required bonds or insurance;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
  - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
  - f. The Work is defective, requiring correction or replacement;
  - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - h. The Contract Price has been reduced by Change Orders;
  - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
  - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
  - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
  3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

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

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

#### 15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

#### 15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

#### 15.05 *Final Inspection*

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

#### 15.06 *Final Payment*

##### A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
  - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

#### 15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

#### 15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such adjacent areas;
  - 2. correct such defective Work;
  - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

## ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

### 16.01 *Owner May Suspend Work*

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

### 16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
  - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
  - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
  - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
  - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
  - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
  - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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

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

#### 16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
  - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
  - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

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

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 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 contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

## ARTICLE 17—FINAL RESOLUTION OF DISPUTES

### 17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
  2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
  2. agree with the other party to submit the dispute to another dispute resolution process; or
  3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## ARTICLE 18—MISCELLANEOUS

### 18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
  2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
  3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

### 18.02 *Computation of Times*

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



18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

## SUPPLEMENTARY CONDITIONS

These Supplemental General Conditions amend or supplement the Standard General Conditions of the Contract and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented shall remain in full force and effect.

---

### ARTICLE 2 – PRELIMINARY MATTERS

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

#### A. Refer to General Conditions and Front End Documents

#### *SC-2.03 Before Starting Construction*

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

4. **an anticipated construction schedule for all work within PennDOT Right-of-way.**

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

#### *SC-5.03 Subsurface and Physical Conditions*

A. This Contract contains information for mines. Geotechnical Baseline Report (“GBR”), identified as follows:

1. Available Mapping: National Mine Map Repository mapping has been made available. Refer to <https://www.minemaps.psu.edu/> for more information.
2. Report dated 1985 by the Commonwealth of Pennsylvania entitled: “COAL RESOURCES OF WESTMORELAND COUNTY, PENNSYLVANIA” is available above to find published coal croplines, mined-out areas, and structure contours. The OWNER and ENGINEER make no guarantee of the published information and the CONTRACTOR shall hold OWNER and ENGINEER harmless.

A. Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the Technical Data contained in such public reports and drawings “*for information only*”, but such reports and drawings are not Contract Documents. Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.
4. The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations (referred to here in the Supplementary Conditions as “Baseline Conditions”). These may include ground, geological, groundwater, and other subsurface geotechnical conditions, and baselines of anticipated Underground Facilities or subsurface structures.

5. The descriptions of subsurface conditions provided in the GBR are based on geotechnical investigations, laboratory tests, interpretation, interpolation, extrapolation, and analyses. Neither Owner, Engineer, nor any geotechnical or other consultant warrants or guarantees that actual subsurface conditions will be as described in the GBR, nor is the GBR intended to warrant or guarantee the use of specific means or methods of construction.
6. The behavior of the ground during construction depends substantially upon the Contractor's selected means, methods, techniques, sequences, and procedures of construction. If ground behavior conditions are baselined in the GBR, they are based on stated assumptions regarding construction means and methods.
7. The GBR shall not reduce or relieve Contractor of its responsibility for the planning, selection, and implementation of safety precautions and programs incident to Contractor's means, methods, techniques, sequences, and procedures of construction, or to the Work.

SC 5.04 Differing Subsurface or Physical Conditions

- A. Notice: If Contractor believes that any subsurface condition that is uncovered or revealed at the Site:
1. differs materially from conditions shown or indicated in the GBR; or
  2. differs materially from conditions shown or indicated in the GDR, to the extent the GBR is inapplicable; or
  3. differs materially from conditions shown or indicated in Contract Documents other than the GBR or GDR, to the extent the GBR and GDR are inapplicable; or
  4. to the extent the GBR and GDR are inapplicable, is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
  5. to the extent the GBR and GDR are inapplicable, is of such a nature as to require a change in the Drawings or Specifications; or
  6. to the extent the GBR and GDR are inapplicable, is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

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

- C. Owner's Statement to Contractor Regarding Site Condition:

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

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

*SC-5.06 Hazardous Environmental Conditions*

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

**ARTICLE 6 – BONDS AND INSURANCE**

*SC-6.02 Insurance—General Provisions*

- A. This condition supplements the insurance requirements set forth in the General Conditions.
- B. Provide insurance from an insurance company or companies licensed to conduct business in the Commonwealth of Pennsylvania.
- C. Provide the following types of insurance:
1. General Liability
  2. Automobile Liability
  3. Worker's Compensation
  4. Employer's Liability

5. **Builders Risk** - Property Insurance: Builders Risk All Risk. Only applicable to project involving structures.
- D. Liability insurance shall include all major divisions of coverage and be on a comprehensive basis including:
1. Premises - Operation including explosion-collapse-underground (X-C-U)
  2. Completed Operations
  3. Contractual - including specified provision for Contractor's obligations under Article 24 of the General Conditions.
  4. Owned, non-owned, and hired motor vehicles
  5. Broad form coverage for property damage
- E. Required insurance shall be written for not less than the following limits of liability or as required by law, whichever is greater.
1. Workmen's compensation - Statutory
  2. Employer's liability - \$500,000
  3. Comprehensive general liability
    - a. Bodily injury - \$1,000,000 each person; \$2,000,000 each occurrence
    - b. Personal injury - \$1,000,000 each person; \$2,000,000 aggregate; \$2,000,000 general aggregate
    - c. Property damage - \$1,000,000 each occurrence; \$2,000,000 aggregate
    - d. Premises operation (including X-C-U) - same limits as above
    - e. Completed operations - same limits as above
      - (1) Completed operations insurance shall remain in force for at least ninety days following final acceptance of work by Owner.
  4. Automobile Liability
    - a. Bodily injury - \$500,000 each person; \$1,000,000 each occurrence
    - b. Property damage - \$500,000 each occurrence
    - c. Combined single limit - \$1,000,000
  5. Excess Liability - \$2,000,000 each occurrence.
  6. Contractual Liability - same limits as above.
- F. **Contractor's protective liability and all-risk insurance shall name Westmoreland County Housing Authority, Morris Knowles & Associates, Municipal Authority of Westmoreland County and Gibson Thomas Engineering as Additional-Insured.**
- G. Certificate of Insurance: The Contractor shall submit, as directed by the Notice of Intent to Award, four (4) copies of the Certificate of Insurance. The certificates are to be completed in each and every category by the Contractor's insurance company(s) and signed by an authorized agent(s) of the insurance company(s). The Contractor shall not commence any work under this Contract until such Certificate of Insurance is in the hands of and approved by the Owner.
- H. Public Liability and Property Damage Insurance: The Contractor shall take out and maintain, during the life of this contract, sufficient comprehensive public liability and property damage insurance as will protect him and any subcontractor performing work covered by this contract, from claims for damage for personal injury, including accidental death, as well as from claims for property damages, which may arise from operations under this contract whether such operations be by himself or by any subcontractor or by anyone directly and indirectly employed by either of them. The property damage insurance shall cover both above ground and underground structures. Property damage liability coverage is to include C (collapse) U

(underground) X (explosion) hazard insurance policies. The amounts of such insurance shall be as follows:

1. Comprehensive General Liability and Property Damage: The Contractor shall carry the Comprehensive Form of General Liability and Property Damage Insurance during the life of the Contract covering all risks itemized in the form for Certificate of Insurance provided for in this Contract. The limits shall be not less than \$1,000,000 Combined Single Limit.

The Contractor shall likewise take out and maintain either as separate policies or as a coverage included in said Public Liability and Property Damage Insurance during the life of this contract, similar Public Liability and Property Damage Insurance in similar amounts in favor of the Owner (“Westmoreland County Housing Authority”), Engineer (“Morris Knowles and Associates, Inc.”), (Municipal Authority of Westmoreland County), and (Gibson Thomas Engineering) or political sub-division within the bounds of which the contract work is to be performed.

2. Comprehensive Automobile Liability and Property Damage: The Contractor shall carry the Comprehensive Form of Automobile Liability and Property Damage Insurance during the life of the Contract Certificate of Insurance provided for in this Contract and (a) Contractor’s own automotive equipment (b) hired and non-owned vehicles. The limits shall be not less than \$1,000,000 Combined Single Limit.
3. Umbrella and/or Excess Liability: The Contractor shall carry Umbrella and/or Excess Liability Insurance during the life of the Contract covering all risks above the limits shown above. The limit shall be not less than \$2,000,000.

4. Indemnification:

- a. Contractor shall indemnify and hold harmless the Owner, its agents, employees, workmen and servants from and against all claims, damages, or losses and expenses including Attorney’s fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (a) 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 (b) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, anyone for whose acts of them may be liable, regardless of whether or not it is caused in part by the negligence of a party indemnified hereunder.

- b. In any and all claims against the Owner or any of its agents or employees of the Contractor, Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under subparagraph (1) 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 of any Subcontractor under Workmen’s Compensation Acts, disability benefit acts or other employee acts.

- c. Any provision of this subparagraph (1) in respect of indemnification which is prohibited or unenforceable by law in the State in which the work, or other performance described in this contract, is cited shall be ineffective to this extent of such prohibition or un-enforceability and shall not invalidate the remaining provisions of the subparagraph (1) or this agreement.

5. Workmen’s Compensation Insurance: The Contractor shall carry Workmen’s Compensation Insurance during the life of the Contract to insure his statutory liability to his employees in the state or states in which the work under this Contract is to be performed, plus \$100,000 Employer’s Liability coverage and in case any work is sublet,

the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded the Contractor.

6. In case of any class of employees engaged in hazardous work under this contract at the site of the project is not protected under Workmen's Compensation Statute, the Contractor shall provide adequate insurance coverage for the protection of his employees not otherwise protected. Proof to be provided as requested by the Owner.

#### *SC-7.02 Labor; Working Hours*

Paragraph 7.02.B of the General Conditions restricts Contractor to working during "regular hours" Monday through Friday, and no work is permitted on "legal holidays."

- A. Unless given written authorization to the Contractor(s) or required by an unforeseen circumstances the Contractor(s) shall set and maintain a regular work schedule not to exceed 40 working hours per week.
  1. Contractor shall furnish a written schedule as required by the General Conditions and Technical Specifications Division 1.
  2. Failure to maintain a regular schedule may result in back charging of the Contractor(s) for additional administrative or inspection expense caused by his irregular working hours.

#### SC-7.12 Safety and Protection

##### Federal Occupational Safety and Health Act of 1970 O.S.H.A.

- A. All work under this Contract and these Contract Documents shall meet or exceed the minimum standards and requirements of the U.S. Department of Labor, Occupational Safety and Health Administration's Occupational Safety and Health Regulations for Construction and Occupational Safety and Health Standards.

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

#### *SC-10.03 Project Representative*

- B. The Resident Project Representative (RPR) will be Engineer's, Owner's or Municipal Authority's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.
  1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
  2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
  3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
  4. Liaison:
    - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
    - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

- c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
6. Shop Drawings and Samples:
  - a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
  - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
  - c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.
7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
8. Review of Work and Rejection of Defective Work:
  - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
  - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
9. Inspections, Tests, and System Start-ups:
  - a. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
10. Records:
  - a. Prepare a daily or weekly report recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
  - b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
  - c. Maintain records for use in preparing Project documentation.
11. Reports:
  - a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.



- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
  - c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.
12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.
14. Completion:
- a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
  - b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
  - c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.
- C. The RPR shall not:
- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
  - 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
  - 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
  - 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.
  - 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
  - 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
  - 7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
  - 8. Authorize Owner to occupy the Project in whole or in part.

## ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

- A. Paragraph 17.01.B of the General Conditions provides that for any dispute subject to final resolution under Article 17, Owner or Contractor may invoke the dispute resolution procedure called for in the Supplementary Conditions. Paragraph SC-17.02 is the location to identify any such primary dispute resolution procedure. If no procedure is identified here in the Supplementary Conditions, and the parties do not agree to a specific procedure, then the default resolution procedure will be litigation—the pursuit of rights in a court of competent jurisdiction.
- B. SC-17.02 Arbitration

- A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of the Commonwealth of Pennsylvania, and/or County of Fayette, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.
- C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer’s consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
  - 1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
  - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.
- E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

*SC-17.03 Attorneys’ Fees*

- A. In most jurisdictions in the United States, as a general matter each party to a dispute is responsible for its own attorneys’ fees, unless an express agreement provides to the contrary. Some legal authorities believe that this general rule encourages claims and disputes, because claimants have little concern that they will be forced to pay for the opposing party’s fees if the claim fails. Other authorities take the opposite view—that the enticing prospect of not only prevailing but also of having one’s own fees paid by the opponent would encourage overly aggressive pursuit of claims (or overzealous defense against valid claims).

**ARTICLE 18 – MISCELLANEOUS**

18.09 Project Funding

- A. Contractor shall note this Contract is to be funded in part by a grant entitled “Dirt, Gravel and Low Volume Road Maintenance Grant” administered by the Westmoreland Conservation District.

18.10 Wage Rates

- A. Pennsylvania Prevailing Wage Rates are required under this Contract. Refer requirements and rates appended at the end of this Section.

## 18.12 REMEDIES

- A. All claims, counter claims, disputes, and other matters in question between the Owner and the Contractor arising under or relating to, or arising in connection with this Contract, its breach, or termination thereof will be decided by a court of competent jurisdiction within the State and County in which the project is located.
- B. The Contractor shall not cause a delay of work, but shall maintain the progress schedule during all disputes or disagreements with the Owner. No work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Contractor and the Owner may otherwise agree in writing.

## 18.13 CONTRACT PROGRESS PAYMENTS

- A. The following supersedes the section of the General Conditions regarding payment time to the Contractor. The Owner will, within forty-five (45) days of the presentation to him of an approved partial payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate less the retainage.
- B. The Owner will retain a portion of the amount due the Contractor to insure the proper performance of the Contract. The sum or sums withheld by the Owner will be ten percent (10%) of the amount due the Contractor until fifty percent (50%) of the Contract is satisfactorily completed. Once the Contract is fifty percent (50%) completed, one-half (1/2) of the amount retained will be returned to the Contractor.

The sum or sums withheld by the Owner from the Contractor after the Contract is fifty percent (50%) completed and satisfactory to the Engineer will not exceed five percent (5%) of the amount due the Contractor on the work. Subsequently, by the time the work is substantially completed, the Owner will hold no more than five percent (5%) of the original Contract amount.

- C. 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 (1½) the amount of any possible liability may be withheld until such time as a final resolution is agreed to by parties directly or indirectly involved, unless the Contractor causing the additional claim furnished a bond satisfactory to the Owner to indemnify the Owner against the claim.
- D. The word “may” utilized in Article 19.2 is determined to be optional on the part of the Owner. The Owner may consider requests for payment for materials stored at or near the site as are in the best interests of the Owner.
- E. The Contractor shall note progress payment requests on lump sum Contracts shall be based upon the approved project cost breakdown supplied under Article 3 of the General Conditions.
- F. Requests for payment for materials delivered to the site, but not incorporated in the work, shall be subject to the following payment limitations:
  - 1. The submitted invoice shall be compared to the approved equipment price breakdown submitted by the Contractor.
  - 2. Payment made shall be either the invoice amount or sixty percent (60%) of the equipment price breakdown, whichever is less.

SECTION 00 72 00 - SPECIAL CONDITIONS

PART 1 – GENERAL

1.1 TIME FOR COMPLETION:

The work shall be commenced at the time stipulated in the Notice to Proceed to the Contractor and shall be fully completed within NINETY (90) consecutive calendar days thereafter. Contract period may be extended due to weather conditions by mutual agreement between Owner and Contractor.

1.2 LIQUIDATED DAMAGES:

- a. As actual damages for any delay in completion are impossible of determination, the Contractor and his Sureties shall be liable for and shall pay to the Owner the sums hereinafter stipulated as fixed, agreed and liquidated damages for each calendar day of delay until the work is completed or accepted:

\$ 100.00 per calendar day applicable to all work, all contracts.

- b. The Owner may accept any part of the work if there has been such a degree of completion as will, in its opinion make such part reasonably safe, fit, and convenient for the use and accommodation for which it was intended.

It is the obligation of the Contractors each to coordinate their own work with that of each other. The Owner is not responsible for the coordination of the work of any Contractor. If there is unexcused delay in completing the work of the general construction, the Owner shall determine to what extent such delay, or any portion thereof, is chargeable to each such contractor. Liquidated damages in the full amount stated herein shall be assessed against each contractor to the extent he is responsible for such delay as determined by the Owner.

1.3 COMMUNICATIONS:

- a. All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.
- b. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the Office of the Contractor stated on the signature page of the Contract (or at such other office as he may from time to time designate in writing to the Owner or deposited in the U.S. Mail in a sealed envelope, or if delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such an office).
- c. All papers required to be delivered to the Owner, unless otherwise specified in writing to the Contractor, documents shall be delivered to the Westmoreland County Housing Authority, 167 South Greengate Road, Greensburg PA 15601 and any notice to or demand upon the Owner shall be sufficiently given if so delivered or deposited in the U.S. Mail in a sealed envelope, postage pre-paid, or delivered with the charges pre-paid to any telegraph company for transmission to the said Owner, at such address as, or to such other representatives of the Owner or to such address as the Owner may subsequently specify in writing to the Contractor for such purposes.

- d. Any such notice shall be deemed to have been given as of the time of actual delivery; or in the case of mailing, when the same should have been received in due course of the post; or, in the case of telegrams, at the time of actual receipt, as the case may be.

1.4 JOB OFFICES:

- a. The Contractor and his subcontractors shall maintain such offices and storage facilities on the site as may be necessary in the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the site. The Owner shall be consulted with regard to locations.

1.5 MINIMUM RATES OF PAY:

- a. A schedule of the minimum rates of pay applicable to this Contract is attached.
- b. No overtime work or weekend work shall be performed without the permission of Owner.
- c. All Contractors when first entering the project shall identify themselves with the project manager or maintenance supervisor.

1.6 CHANGE ORDERS:

- a. Any additions and/or deletions in scope of work which would constitute an increase in the contract amount must be initiated by the Owner. Contractors proceeding with extra work items without formal written approval of the Owner is strictly prohibited and contractors will take the risk on nonpayment for these extras, if he proceeds without written approval.
- b. The Contractor or Subcontractor is prohibited from placing a lien on the Owner's property.

1.7 PERFORMANCE, LABOR AND MATERIAL PAYMENT BONDS:

- a. The company providing the required Performance and Labor and Material Payment Bonds must be listed in U.S. Treasury Circular No. 570 as a surety approved to issue bonds securing Government contracts in the Commonwealth of Pennsylvania.
- b. Upon a successful bidder's failure or refusal to execute and deliver to the Owner, the contract agreement and/or a required performance bond, payment bond or any other applicable bond, and insurance certificate within a period of 10 days of written notification of the acceptance of the successful bidder's bid and the award of the contract, the successful bidder shall forfeit its bid security to the Owner as liquidated damages.

1.8 SALES AND USE TAX:

- a. The contractor agrees to assign and transfer to the Owner all its rights to sales and use tax which may be refunded as a result of a claim for refund for materials purchased in connection with this Contract. The Contractor further agrees that it will not file a claim for refund for any sales or use tax which is the subject of this agreement. The Contractor agrees to include this language in any contracts with subcontractors.

1.9 GENERAL CONTRACTOR – PROJECT SUPERINTENDENT :

- a. Each prime contractor shall assign and designate an on site full time superintendent person as the "Quality Control Inspector". This person shall be in site during all working hours and be responsible to monitor and control quality of installations. The Quality Inspector shall provide daily written reports as to the progress of the job, listing such items as the location and description of work on a particular day, the results of the QC inspector's surveillance, and the results of any tests performed. Also document any verbal information given or received, discrepancies in the work or in the plans and specifications, or manpower usage, delays in the contractor's progress and safety problems.

1.10 BID GUARANTY

- a. Each prime contractor shall submit with his bid a bid guaranty in an amount not less than 10% of the total bid.

**END OF SECTION**

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

Project Name:	Shaner Housing Sanitary Sewer Extension & WWTP Decommissioning
General Description:	Construction of approximately 2200lf of 8" sanitary sewer and connect to an existing sewage system and the decommissioning, removal and ground restoration of a small flow sewage treatment plant.
Project Locality	Sewickley Township
Awarding Agency:	Westmoreland County Housing Authority
Contract Award Date:	5/29/2024
Serial Number:	24-04216
Project Classification:	Building/Heavy/Highway
Determination Date:	4/25/2024
Assigned Field Office:	Pittsburgh
Field Office Phone Number:	(412)565-5300
Toll Free Phone Number:	(877)504-8354
Project County:	Westmoreland County

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

<b>Project: 24-04216 - Building</b>	<b>Effective Date</b>	<b>Expiration Date</b>	<b>Hourly Rate</b>	<b>Fringe Benefits</b>	<b>Total</b>
Asbestos & Insulation Workers	8/1/2022		\$41.40	\$28.51	\$69.91
Asbestos & Insulation Workers	8/1/2023		\$42.40	\$29.01	\$71.41
Boilermakers	6/1/2016		\$40.90	\$27.61	\$68.51
Bricklayer	12/1/2022		\$36.55	\$24.71	\$61.26
Carpenters - Piledriver/Welder	1/1/2023		\$40.63	\$21.22	\$61.85
Carpenters - Piledriver/Welder	1/1/2024		\$42.13	\$21.97	\$64.10
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	6/1/2023		\$39.69	\$19.93	\$59.62
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	6/1/2023		\$33.07	\$23.59	\$56.66
Drywall Finisher	6/1/2022		\$32.00	\$21.89	\$53.89
Drywall Finisher	6/1/2023		\$32.39	\$23.75	\$56.14
Drywall Finisher	6/1/2024		\$34.01	\$24.88	\$58.89
Electricians & Telecommunications Installation Technician	12/22/2023		\$48.61	\$31.80	\$80.41
Electricians & Telecommunications Installation Technician	12/27/2024		\$51.76	\$31.80	\$83.56
Electricians & Telecommunications Installation Technician	12/26/2025		\$55.06	\$31.80	\$86.86
Elevator Constructor	1/1/2023		\$56.14	\$42.83	\$98.97
Elevator Constructor	1/1/2024		\$58.55	\$43.87	\$102.42
Glazier	9/1/2021		\$32.61	\$27.19	\$59.80
Glazier	9/1/2023		\$35.65	\$30.05	\$65.70
Iron Workers	6/1/2022		\$38.39	\$34.27	\$72.66
Iron Workers	6/1/2023		\$38.89	\$35.02	\$73.91
Laborers (Class 01 - See notes)	1/1/2023		\$25.82	\$19.46	\$45.28
Laborers (Class 01 - See notes)	1/1/2024		\$26.82	\$19.46	\$46.28
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)	1/1/2023		\$25.97	\$19.46	\$45.43
Laborers (Class 02 - See notes)	1/1/2024		\$26.97	\$19.46	\$46.43
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)	1/1/2023		\$28.97	\$19.46	\$48.43
Laborers (Class 03 - See notes)	1/1/2024		\$29.97	\$19.46	\$49.43
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
Laborers (Class 04 - See notes)	1/1/2021		\$23.57	\$19.32	\$42.89
Landscape Laborer (Skilled)	1/1/2023		\$23.79	\$18.28	\$42.07
Landscape Laborer (Skilled)	1/1/2024		\$24.79	\$18.53	\$43.32



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

<b>Project: 24-04216 - Building</b>	<b>Effective Date</b>	<b>Expiration Date</b>	<b>Hourly Rate</b>	<b>Fringe Benefits</b>	<b>Total</b>
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)	1/1/2023		\$24.09	\$18.28	\$42.37
Landscape Laborer (Tractor Operator)	1/1/2024		\$25.09	\$18.53	\$43.62
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	1/1/2023		\$23.37	\$18.28	\$41.65
Landscape Laborer	1/1/2024		\$24.37	\$18.53	\$42.90
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)	6/1/2022		\$38.89	\$23.69	\$62.58
Operators (Class 01 - see notes)	6/1/2023		\$40.69	\$23.89	\$64.58
Operators (Class 01 - see notes)	6/1/2024		\$41.69	\$24.39	\$66.08
Operators (Class 02 -see notes)	6/1/2022		\$32.82	\$23.69	\$56.51
Operators (Class 02 -see notes)	6/1/2023		\$34.62	\$23.89	\$58.51
Operators (Class 02 -see notes)	6/1/2024		\$35.62	\$24.39	\$60.01
Operators (Class 03 - See notes)	6/1/2022		\$30.03	\$23.69	\$53.72
Operators (Class 03 - See notes)	6/1/2023		\$31.83	\$23.89	\$55.72
Operators (Class 03 - See notes)	6/1/2024		\$32.83	\$24.39	\$57.22
Painters Class 6 (see notes)	6/1/2022		\$29.50	\$22.82	\$52.32
Painters Class 6 (see notes)	6/1/2023		\$30.56	\$24.01	\$54.57
Painters Class 6 (see notes)	6/1/2024		\$32.14	\$24.93	\$57.07
Painters Class 6 (see notes)	6/1/2025		\$34.16	\$25.81	\$59.97
Pile Driver Divers (Building, Heavy, Highway)	1/1/2023		\$58.70	\$21.22	\$79.92
Pile Driver Divers (Building, Heavy, Highway)	1/1/2024		\$60.95	\$21.97	\$82.92
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	1/1/2023		\$39.13	\$21.22	\$60.35
Piledrivers	1/1/2024		\$40.63	\$21.97	\$62.60
Piledrivers	1/1/2025		\$41.88	\$22.72	\$64.60
Piledrivers	1/1/2026		\$43.13	\$23.47	\$66.60
Plasterers	6/1/2022		\$31.44	\$19.74	\$51.18
Plasterers	6/1/2023		\$32.14	\$20.54	\$52.68
Plumbers and Steamfitters	6/1/2023		\$38.57	\$26.26	\$64.83
Pointers, Caulkers, Cleaners	12/1/2022		\$35.47	\$20.88	\$56.35
Roofers	6/1/2022		\$36.04	\$19.13	\$55.17
Roofers	6/1/2023		\$37.00	\$19.92	\$56.92
Sheet Metal Workers	7/1/2022		\$39.50	\$31.43	\$70.93
Sheet Metal Workers	8/1/2023		\$41.00	\$32.94	\$73.94
Sign Makers and Hangars	7/15/2023		\$31.76	\$24.63	\$56.39
Sprinklerfitters	4/1/2023		\$44.33	\$28.04	\$72.37
Sprinklerfitters	4/1/2024		\$46.45	\$28.62	\$75.07
Steamfitters	6/1/2022		\$44.15	\$27.32	\$71.47

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

<b>Project: 24-04216 - Building</b>	<b>Effective Date</b>	<b>Expiration Date</b>	<b>Hourly Rate</b>	<b>Fringe Benefits</b>	<b>Total</b>
Steamfitters	6/1/2023		\$46.10	\$28.37	\$74.47
Stone Masons	12/1/2022		\$38.56	\$23.61	\$62.17
Terrazzo Finisher	12/1/2022		\$36.13	\$18.03	\$54.16
Terrazzo Mechanics	12/1/2022		\$35.49	\$20.32	\$55.81
Tile Finisher	12/1/2022		\$28.76	\$17.34	\$46.10
Tile Setter	12/1/2022		\$35.64	\$21.81	\$57.45
Truckdriver class 1(see notes)	1/1/2023		\$33.18	\$22.21	\$55.39
Truckdriver class 1(see notes)	1/1/2024		\$34.93	\$22.71	\$57.64
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)	1/1/2023		\$33.64	\$22.52	\$56.16
Truckdriver class 2 (see notes)	1/1/2024		\$35.39	\$23.02	\$58.41
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
Truckdriver class 3 (see notes)	1/1/2016		\$28.23	\$16.98	\$45.21
Window Film / Tint Installer	10/1/2019		\$25.00	\$2.63	\$27.63

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

<b>Project: 24-04216 - Heavy/Highway</b>	<b>Effective Date</b>	<b>Expiration Date</b>	<b>Hourly Rate</b>	<b>Fringe Benefits</b>	<b>Total</b>
Carpenter	1/1/2023		\$38.60	\$20.59	\$59.19
Carpenter	1/1/2024		\$40.10	\$21.34	\$61.44
Carpenter	1/1/2025		\$41.35	\$22.09	\$63.44
Carpenter	1/1/2026		\$42.60	\$22.84	\$65.44
Carpenter Welder	1/1/2023		\$40.10	\$20.59	\$60.69
Carpenter Welder	1/1/2024		\$41.60	\$21.34	\$62.94
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	1/1/2023		\$40.63	\$21.22	\$61.85
Carpenters - Piledriver/Welder	1/1/2024		\$42.13	\$21.97	\$64.10
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	1/1/2023		\$34.14	\$25.05	\$59.19
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	5/27/2019		\$47.38	\$26.30	\$73.68
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2020		\$37.29	\$32.87	\$70.16
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2023		\$38.89	\$35.02	\$73.91
Laborers (Class 01 - See notes)	1/1/2023		\$29.95	\$25.50	\$55.45
Laborers (Class 01 - See notes)	1/1/2024		\$32.20	\$25.50	\$57.70
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)	1/1/2023		\$30.11	\$25.50	\$55.61
Laborers (Class 02 - See notes)	1/1/2024		\$32.36	\$25.50	\$57.86
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)	1/1/2023		\$30.50	\$25.50	\$56.00
Laborers (Class 03 - See notes)	1/1/2024		\$32.75	\$25.50	\$58.25
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)	1/1/2023		\$30.95	\$25.50	\$56.45
Laborers (Class 04 - See notes)	1/1/2024		\$33.20	\$25.50	\$58.70
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)	1/1/2023		\$31.36	\$25.50	\$56.86
Laborers (Class 05 - See notes)	1/1/2024		\$33.61	\$25.50	\$59.11
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)	1/1/2023		\$28.20	\$25.50	\$53.70
Laborers (Class 06 - See notes)	1/1/2024		\$30.45	\$25.50	\$55.95
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

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

<b>Project: 24-04216 - Heavy/Highway</b>	<b>Effective Date</b>	<b>Expiration Date</b>	<b>Hourly Rate</b>	<b>Fringe Benefits</b>	<b>Total</b>
Laborers (Class 07 - See notes)	1/1/2023		\$30.95	\$25.50	\$56.45
Laborers (Class 07 - See notes)	1/1/2024		\$33.20	\$25.50	\$58.70
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)	1/1/2023		\$32.45	\$25.50	\$57.95
Laborers (Class 08 - See notes)	1/1/2024		\$34.70	\$25.50	\$60.20
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	6/1/2023		\$45.50	\$23.72	\$69.22
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)	1/1/2023		\$36.79	\$23.58	\$60.37
Operators (Class 01 - see notes)	1/1/2024		\$38.59	\$24.03	\$62.62
Operators (Class 01 - see notes)	1/1/2025		\$40.39	\$24.23	\$64.62
Operators (Class 02 -see notes)	1/1/2023		\$36.53	\$23.58	\$60.11
Operators (Class 02 -see notes)	1/1/2024		\$38.33	\$24.03	\$62.36
Operators (Class 02 -see notes)	1/1/2025		\$40.13	\$24.23	\$64.36
Operators (Class 03 - See notes)	1/1/2023		\$32.88	\$23.58	\$56.46
Operators (Class 03 - See notes)	1/1/2024		\$34.68	\$24.03	\$58.71
Operators (Class 03 - See notes)	1/1/2025		\$36.48	\$24.23	\$60.71
Operators (Class 04 - See notes)	1/1/2023		\$32.42	\$23.58	\$56.00
Operators (Class 04 - See notes)	1/1/2024		\$34.22	\$24.03	\$58.25
Operators (Class 04 - See notes)	1/1/2025		\$36.02	\$24.23	\$60.25
Operators (Class 05 - See notes)	1/1/2023		\$32.17	\$23.58	\$55.75
Operators (Class 05 - See notes)	1/1/2024		\$33.97	\$24.03	\$58.00
Operators (Class 05 - See notes)	1/1/2025		\$35.77	\$24.23	\$60.00
Operators Class 1-A	1/1/2023		\$39.79	\$23.58	\$63.37
Operators Class 1-A	1/1/2024		\$41.59	\$24.03	\$65.62
Operators Class 1-A	1/1/2025		\$43.39	\$24.23	\$67.62
Operators Class 1-B	1/1/2023		\$38.79	\$23.58	\$62.37
Operators Class 1-B	1/1/2024		\$40.59	\$24.03	\$64.62
Operators Class 1-B	1/1/2025		\$42.39	\$24.23	\$66.62
Painters Class 1 (see notes)	6/1/2022		\$34.45	\$22.82	\$57.27
Painters Class 2 (see notes)	6/1/2023		\$36.01	\$24.01	\$60.02
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)	6/1/2023		\$38.33	\$24.01	\$62.34
Painters Class 3 (see notes)	6/1/2024		\$40.66	\$24.93	\$65.59
Painters Class 3 (see notes)	6/1/2025		\$43.69	\$25.81	\$69.50
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)	1/1/2023		\$58.70	\$21.22	\$79.92
Pile Driver Divers (Building, Heavy, Highway)	1/1/2024		\$60.95	\$21.97	\$82.92
Pile Driver Divers (Building, Heavy, Highway)	1/1/2025		\$62.82	\$22.72	\$85.54

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

<b>Project: 24-04216 - Heavy/Highway</b>	<b>Effective Date</b>	<b>Expiration Date</b>	<b>Hourly Rate</b>	<b>Fringe Benefits</b>	<b>Total</b>
Pile Driver Divers (Building, Heavy, Highway)	1/1/2026		\$64.70	\$23.47	\$88.17
Piledrivers	1/1/2023		\$39.13	\$21.22	\$60.35
Piledrivers	1/1/2024		\$40.63	\$21.97	\$62.60
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)	1/1/2023		\$33.18	\$22.21	\$55.39
Truckdriver class 1(see notes)	1/1/2024		\$34.93	\$22.71	\$57.64
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)	1/1/2023		\$33.64	\$22.52	\$56.16
Truckdriver class 2 (see notes)	1/1/2024		\$35.39	\$23.02	\$58.41
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
Truckdriver class 3 (see notes)	1/1/2019		\$29.59	\$19.82	\$49.41

SECTION 01100

SUMMARY OF WORK – SITE WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Refer to Contract Drawings.

1.2 PROJECT DESCRIPTION

- A. The Project consists of demolition and decommissioning an existing 0.008MGD wastewater treatment plant, new 2300 LF 8" SDR-35 sanitary sewer, pre-cast manholes and connections to existing manholes along with site restoration.

Base Bid includes but not limited to the bid schedule A included in the bid schedule and all incidentals required to complete the work on Lump Sum Bid.

- B. Each prospective bidder must review the site and assert that they have performed their due diligence with reviewing existing site conditions for establishing quantities of work in preparing their bids.

GENERAL CONDITIONS OF THE CONTRACT

- A. The "General Conditions of the Contract" bound herewith are a part of the Specifications for all construction and shall apply to each subheading of the Specifications.
- B. All Contractors will be held to have examined all "Instructions to Bidders", "Conditions of Contract" which apply to all branches of the Work and all Contractors will be bound by the provisions contained therein.

EXAMINATION OF THE SITE AND PLANS

i. IMPORTANT NOTICE:

Before submitting their bid prices, the Contractor shall visit the project site to compare their bid with the requirements set forth within Contract Bid Documents and note anything which will affect the proposed work. FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR FROM PROVIDING PRICES BASED ON COMPLETE AND APPROVED SERVICE AND INSTALLATION WORK. The Contractor shall verify all material quantities contained in the specifications at the site.

- ii. Contractors shall contact Mr. Erik Spiegel – WCHA Director of A&E Services to arrange site inspections. Contact information is: 724-832-7248 ext. 3056 and 724 640-4596 Cell.

PRE-BID CONFERENCE

- iii. A Pre-Bid Conference will be held prior to bidding.

b. PRE-AWARD CONFERENCE

- i. Prior to award of the Contract, a site meeting will be held at the site covering planning, scheduling, means and methods for constructing the Project and to address any questions,

issues, raised or identified during the bid phase related to any contract document discrepancies that may exist.

- ii. The Pre-Award Conference will be scheduled with the lowest responsible bidder prior to the awarding of the contract. Attendance at the conference is mandatory and will be limited to: Owner, Contractor & Superintendent. The conference is intended to clarify and review HUD documentation, WCHA documentation associated with payment requests, certified payrolls, submittals, schedules,
- iii. The Contractor shall furnish to the Owner a list of proposed subcontractors, suppliers, and manufacturers for approval prior to the Pre-Award Conference.

c. WORK SEQUENCE

- i. The Work shall be scheduled and conducted in cooperation with the Owner to provide the least possible interference to the activities of the Owner's personnel and the tenants.
- ii. Subcontractors (if applicable) shall submit to the General Contractor information of his or her respective work sequencing and schedule for coordination. General contractor to compile each contractor's information into a comprehensive construction schedule and submit to Owner within 14 days of start of construction.
- iii. Work sequence is to take into consideration seasonal weather conditions for work items to be performed.

d. WCHA DISCLAIMER FOR EXTRA COSTS

- i. The Westmoreland County Housing Authority (WCHA) or the Engineer/Engineer will not be responsible for added Contractor's costs resulting from failure or delay to obtain any or all material on a timely basis, necessary to complete the work as specified.
- ii. Any scope changes involving extra costs will be deemed valid only by an agreement in writing signed by the WCHA and the Engineer authorizing such changes or extra in advance of work being executed by the Contractor.
- iii. Material and labor needed to complete each phase of work to ensure the complete and satisfactory installation of the entire job and permit operation of essential systems, shall be planned and executed without additional charges to the WCHA.

e. PERMITS, APPROVALS, INSPECTIONS ETC.

- i. The Owner will obtain the required environmental permits.
- ii. The Owner will coordinate and pay for all required municipal inspections.

f. CONTRACTOR USE OF PREMISES

- i. General: Limit use of the premises to construction activities in areas indicated; allow for Owner and tenant occupancy and use by the public.
  - 1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.

2. Keep roadways, driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and the tenants at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

g. PROTECTION OF WORK

- i. Material and work in progress shall be protected at all times from damage by persons or weather and all damaged items made good before final acceptance, without additional cost to the WCHA.
- ii. Any material lost or stolen from the job site shall be made good by the Contractor at his expense. It shall be the Contractor's responsibility to provide suitable storage for all material stockpiled for use on this project.
- iii. Contractor shall take all precautions to avoid damage to existing facilities. Contractor will restore all damaged items to their original condition or better at his expense.

h. OWNER OCCUPANCY

- i. Full Owner/tenant Occupancy: The Owner/tenant will occupy the site and existing WWTP during the entire construction period. Cooperate with the Owner/tenant during construction operations to minimize conflicts and facilitate Owner/tenant usage. Perform the Work so as not to interfere with the WWTP operations.

i. BARRICADES, BARRIERS, AND PROTECTION

- i. The Contractor shall erect and maintain any and all necessary railings, fences, temporary roofs and enclosures or other construction for purposes of protecting the buildings and/or personnel and the public during and after working hours. Warning lights or lanterns shall be supplied, maintained and kept operative at all times that any hazard exists.
- ii. The Contractor shall maintain a work site area that complies with all applicable OSHA regulations.

j. GENERAL DIRECTIONS

- i. The Contractor shall examine all requirements related to his work and be fully informed as to the extent of his contract plans.
- ii. The Contractor shall make a maximum effort to protect the comfort and safety of the tenants and to not cause unreasonable inconvenience to the same.
- iii. The Contractor shall maintain clean work conditions as required in the specifications and shall expedite removal of all rubbish, surplus material and trash.
- iv. The Contractor shall be required to dispose of all refuse in a timely manner and utilize his own containers. Do not use the existing tenants' dumpster containers for rubbish disposal. The Contractor shall at his expense make provisions for timely rubbish/trash removal as a result of work on this project. Contractor shall maintain clean working conditions at all times during construction to avoid injuries to maintenance personnel or tenants. Site cleanup shall be done at the end of each workday.



k. COORDINATION WITH MAINTENANCE/ SERVICE PERSONNEL/TENANTS/REFUSE PICK UP

- i. Contractor shall insure that full coordination and cooperation with maintenance and service personnel in order to permit operation of essential systems and services are maintained during the course of work on this Project. The WCHA shall not be liable for extra costs due to the Contractor's disregard for this requirement.

l. ELECTRICAL SERVICE DURING CONSTRUCTION

- i. The Contractor may not use electrical receptacles from common areas for work on this Project.

m. STANDARD OF QUALITY

- i. The various materials and products specified in the specifications by name or description are given to establish a standard of quality and of cost for bid purposes. It is not the intent to limit the acceptance to any one material or product specified but rather to name or describe it as the absolute minimum standard that is desired and acceptable. A material or product of lesser quality would not be acceptable. Where proprietary names are used, whether or not followed by the words "or equivalent", they shall be subject to equals only as approved by the Engineer.

n. COMPLETION DATE

- i. The Contractor shall commence work under this contract within 10 days after receiving "Notice to Proceed" by the Owner. The completion time for all work is ninety (90) calendar days from the date of "Notice to Proceed".
- ii. Scheduling of all work shall be done through the Project Office. During the Pre-Award Conference, contractor work will be discussed and clarified. It is hereby made clear that time is of the essence for the completion of the Work on this Project and it will take the cooperation of the contractors and all parties involved to expedite the completion.

o. DRAWINGS AND SPECIFICATIONS

- i. The Engineer will furnish to the Contractor upon request two (2) copies of drawings and one copy of the specifications without charge.

p. SUBMITTALS

- i. The Contractor shall submit samples and shop drawings of pertinent material to be furnished for approval by the Owner or Engineer. Approved samples shall be standard for materials furnished. Submit three (3) copies of all shop drawings for conformance, or, an electric submittal will be submitted for electronic signatures for conformance.
- ii. All submittals must be reviewed, stamped approved, and signed by the Contractor before submission to the Engineer's or Engineer's office for review. No submittal will be reviewed by the Owner or Engineer without this approval.

q. PRODUCT DELIVERY, STORAGE AND HANDLING

- i. The material used shall be delivered to the job site in original unopened packages with contents legibly indicated. Any materials stored on site shall be kept dry and protected from damage until ready for use.

r. JOB OFFICES

- i. The Contractor and his subcontractors may maintain an office, storage, and toilet facilities on the site as may be necessary in the proper conduct of the Work. These shall be located so as to cause no interference to any work to be performed on the site. The WCHA shall approve locations.
- ii. Upon completion of the Project, or as directed by the WCHA or Engineer/Engineer, the Contractor shall remove all such temporary structures and facilities from the site, same to become his property, and leave the premises in the condition required by the Contract.

s. GUARANTEE

- i. The Contractor shall be responsible for submitting to the Owner at completion all manufactures guarantee certificates required and contractor guarantees for all general workmanship and materials against defects for a period of one year from date of completion.

t. STATE WAGE PRE-EMPTION

- i. Any State wage rate that exceeds the corresponding Federal wage rate as contained within these specifications is inapplicable and shall not be enforced.

u. OWNER'S PROTECTION

- i. The Contractor shall protect the local authority against any and all claims arising out of the performance of the contract, including damages to tenant owned items.

v. REQUIRED INSURANCE COVERAGE

- i. All Contractors and subcontractors shall submit to the WCHA, with other contract documents, Certificates of Insurance for required coverage as stated in the General Conditions.

w. LIQUIDATED DAMAGES

- i. Liquidated damages for failure to complete the contract on time: For each calendar day as specified in the Contract, that any Work remains uncompleted after the contract time (including all extensions and adjustments as provided in Clause 33 of the General Conditions of the Contract), the sum specified as liquidated damages will be deducted from any money due or to become due the Contractor or his surety. Such deducted sums shall not be deducted as a penalty but shall be considered, as liquidation of a reasonable portion of damages that will be incurred by the Owner should the Contractor fail to complete the Work in the time provided in his contract. The Liquidated Damages assessment for this Contract shall be One Hundred Dollars (\$100.00) per day.

- ii. Permitting the Contractor to continue and finish the Work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of his rights under the Contract.

x. AS-BUILT DRAWINGS

- i. Each Contractor shall maintain and document construction changes, etc. on site working copy of drawings. A final "as-built" set of drawings is to be provided to the WCHA at completion of Work at no additional cost to the owner.

y. INSTALLATION OF MATERIALS

- i. All materials and means and methods shall be installed in strict accordance with the manufacturer's printed installation instructions and construction details, unless otherwise directed in writing by the Owner or Engineer.

z. LIMITATION OF LIABILITY

- i. Bidder is skilled and experienced in the use and interpretation of drawings and specifications. He has carefully reviewed the drawings and specifications for this Project and found them free of ambiguities and sufficient for bid purposes. Further, he has carefully examined the site of the work and, from his own observations, has satisfied himself as to the nature and location of the work, the character, quality, and quantity of materials, and the difficulties likely to be encountered and other items, which may affect the performance of the work.

Contractor has based their bid solely on these documents and observations and has not relied in any way on any explanation or interpretation, oral or written, from any other source. Therefore, the bidder agrees to limit the liability of the Owner and Consulting Engineer/Engineer for his professional negligence, errors, or omissions, to a total aggregated liability to him of \$25,000. However, bidder in no way assumes liability for the negligence, errors, or omissions of the Owner or Consulting Engineer/Engineer.

aa. SAFETY

- i. Contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. Job-Site Safety shall be the sole responsibility of the General Contractor. All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe work environment for the facility's occupants including residents, staff, and visitors.
- ii. Contractor shall install all required safety control measures to meet OSHA Requirements.
- iii. Material Safety Data Sheets (MSDS) must be located on the site at all times.

bb. WORKMANSHIP & QUALITY ASSURANCE

- i. All work shall be of the highest quality and in strict conformance with the manufacturer's published specifications and to the WCHA satisfaction.
- ii. A quality control / site supervisor shall be on the job site at all times during construction and when subcontractors will be on site.

cc. WARRANTY

- i. General Construction and Material warranties not covered by a specific manufactureres warranty shall cover a period of one year from the established date of substantial completion.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Not applicable).

END OF SECTION

SECTION 01250

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. General Conditions will govern over the administration of Contract Modifications with this specification intended to further clarify proposed procedures associated with Contract Modifications should changes be warranted.

1.2 MINOR CHANGES IN THE WORK

- A. Owner and/or Engineer/Engineer may issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time. Directives given to contractor will be documented on a regular basis within the weekly Job Conference Meeting Minutes, and/ or Construction Correspondences.

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Owner - Construction Inspector or Director of A&E Services will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Owner are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within five (5) business days after receipt of Proposal Request, Contractor shall submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include overhead and profit as separate line items.

- e. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
  3. Owner will evaluate Contractor's proposal against an Independent Cost Estimate generated by Engineer and will issue an SF-30 Change Order Form if change order proposal is accepted.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Owner.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  4. Include costs of labor and supervision directly attributable to the change.
  5. Include overhead and profit as separate line items.
  6. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

#### 1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Change Order Proposal will be transmitted on an SF-30 Contract Form, signed by the WCHA-Contracting Officer. The WCHA-Contracting Officer is the only entity of the WCHA who can approve a contract change order.

END OF SECTION

Section 01300  
SUBMITTALS

Part 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other pertinent Sections, apply to this Section.

1.2 SCOPE

- A. Contractor upon notice of award shall proceed to prepare submittals described herewithin and in accordance with the General Conditions and revise and resubmit as necessary to achieve compliance with the contract requirements. Owner recommends to Contractor to start the submittal process as soon as the notice of award is issued, which is prior to the issuance of a Notice to Proceed.
- B. The following submittals required to be submitted shall be sent to the WCHA - Owner, attention Mr. Erik Spiegel, Director of A&E Services, 154 South Greengate Road, Greensburg, PA. 15601 by the Contractor with a letter of transmittal identifying each item.
- C. Submittal(s) and associated data must be reviewed and "stamped" approved prior to submittal to the Owner to insure that all data is complete, accurate and complies with the requirements of this project. Any data that is submitted without the Contractor's review and "Stamp" will be rejected in total, without review by the Owner, and returned to the Contractor for re-submittal. Delays in project completion as a result of non-compliance with this requirement will be the responsibility of the Contractor, and any costs or penalties incurred as a result of same shall be borne by the Contractor.
- D. Satisfactory review by the Owner must be obtained prior to release for order or fabrication unless specifically approved otherwise by the Owner in writing. Failure to comply will result in rejection of any material or equipment not completely in conformance with the Contract Documents.

1.3 SUMMARY

- |                                    |   |
|------------------------------------|---|
| A. Submittal Procedures            | F. Samples                                  |
| B. Construction Progress Schedules | G. Manufacturer's Installation Instructions |
| C. Proposed Products List          | H. Manufacturer's Certificates              |
| D. Shop Drawings                   |   |
| E. Product Data                    |   |

#### 1.4 SUBMITTAL PROCEDURES

- A. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- B. Identify Project, Contractor, Subcontractor or Supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- C. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- D. Schedule submittals as required to expedite the Project, and deliver to the Owner of record.
- E. Identify variations from Contract Documents and Product or system limitations, which may be detrimental to successful performance of the completed Work.
- F. Provide space for the Owner of Record review stamps.
- G. When material is re-submitted, identify all changes made since previous submission.
- H. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions.
- I. Submittals not requested will not be recognized or processed.
- J. Coordination: Contractor shall coordinate the preparation and processing of submittals with performance of construction activities.
  - i. Prior to each submittal, Contractor shall review and coordinate all aspects of each item being submitted. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity, before submission to Owner or Engineer.
  - ii. Contractor shall stamp, sign and/or initial all submittals certifying that he or she has reviewed and verified the products submitted meet or exceed the project specifications.
  - iii. Retain subparagraph and associated subparagraph below if one submittal has an impact on another submittal. Submittals that require concurrent review should be so indicated in those Sections.
  - iv. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
  - v. Owner or Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.



- K. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- i. Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if coordination with multiple submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
  - ii. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - iii. Resubmittal Review: Allow 15 days for review of each resubmittal.
- L. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- M. Coordinate first paragraph and subparagraph below with office policy. Marking numerous copies of submittals can be time consuming.
- N. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- i. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- O. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form.
- P. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- i. Note date and content of previous submittal.
  - ii. Note date and content of revision in label or title block and clearly indicate extent of revision.
- Q. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, and installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- R. Use for Construction: Use only final submittals with mark indicating "Approved" taken by Engineer.
- T. Upon substantial completion of the Project, and prior to final payment, submit the following data in accordance with the General Conditions as modified by the Supplemental Conditions:
- 1. Bound copies of all guarantees/warranties. (3 Copies)
  - 2. Bound copies of all maintenance manuals. (3-Copies)
  - 3. Corrected, as-installed, reproducible plans. (1-Copy )
- Note: Electronic Format copies, if available, is recommended and requested.

All shall be submitted in accordance with the General Conditions of the Contract as modified by the Supplemental Conditions.

## PART 2 - PRODUCTS

- A. General: Prepare and submit Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Manufacturer's catalog cuts.
    - e. Wiring diagrams showing factory-installed wiring.
    - f. Printed performance curves.
    - g. Operational range diagrams.
    - h. Compliance with specified referenced standards.
    - i. Testing by recognized testing agency.
  - 4. Number of Copies: Submit three copies of Product Data, unless otherwise indicated. Engineer will return two copies. Mark up and retain one returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
  - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    - f. Shopwork manufacturing instructions.
    - g. Templates and patterns.
    - h. Schedules.
    - i. Notation of coordination requirements.
    - j. Notation of dimensions established by field measurement.
    - k. Relationship to adjoining construction clearly indicated.

- l. Seal and signature of professional engineer if specified.
  - m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.

### PART 3-EXECUTION

#### 3.1 INSTRUCTION OF WCHA MAINTENANCE PERSONNEL

- A. General: Instruct the WCHA – Maintenance personnel in the correct and safe means of maintaining materials, and of operating and maintaining equipment and related systems.
  - 1. Arrange for each installer of Work requiring continuing maintenance or operation to meet with Owners personnel at Project Site to provide basic instructions needed for operation and maintenance of Work. Include instruction by manufacturer's representatives where installers are not expert in the procedures.
  - 2. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, emergency procedures, cleaning and similar procedures, and facilities.
  - 3. Review maintenance and operations in relation with applicable Warranties and Guarantees, agreements to maintain bonds, and similar continuing commitments.
- B. Schedule instructions through the WCHA -Construction Inspector or Director of A/E Services.

#### 3.2 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial Construction Managers schedule in duplicate within seven (7) days and/or as requested by WCHA – Director of A/E Services, after the date of Notice to Proceed (NTP).
- B. Revise and re-submit as requested.
- C. Submit updated schedules with each Application for Payment, identifying and highlighting changes since previous version.
- D. Submit a Gantt chart (readable by Microsoft Project 2000) with separate line for each major section of Work or operation, identifying first day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner.

3.3 PROPOSED PRODUCTS LIST

- A. Within fifteen (15) days and/or as requested by Owner, after date of Notice To Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

3.4 MANUFACTURER CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer to the Owner (3 copies).
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits and certifications as appropriate. (3 copies)
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Owner. (3 copies).

END SECTION

## SECTION 01420 REFERENCES

### PART 1 - GENERAL

#### 1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey action on Contractor's submittals, applications, and requests.
- C. "Directed": A command or instruction by Owner and/or Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

#### 1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
  - 1. Where copies of standards are needed to perform a required construction activity, obtain copies

directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

IAPMO International Association of Plumbing and Mechanical Officials

ICC International Code Council

ICC-ES ICC Evaluation Service, Inc.

UBC Uniform Building Code  
(See ICC)

- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE Army Corps of Engineers

CPSC Consumer Product Safety Commission

DOC Department of Commerce

DOD Department of Defense

DOE Department of Energy

EPA Environmental Protection Agency

HUD Department of Housing and Urban Development

NIST National Institute of Standards and Technology

OSHA Occupational Safety & Health Administration

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

- ADAAG      Americans with Disabilities Act (ADA)  
              Engineerural Barriers Act (ABA)  
              Accessibility Guidelines for Buildings and Facilities  
              Available from U.S. Access Board
- CFR         Code of Federal Regulations  
              Available from Government Printing Office
- FED-STD    Federal Standard  
              (See FS)
- FS          Federal Specification  
              Available from Department of Defense Single Stock Point
- UFAS        Uniform Federal Accessibility Standards  
              Available from Access Board

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

## SECTION 01500

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Section:
  - 1. Contract Drawings and Contract Specifications, including General, Supplemental, and Special Conditions and Division 1 Various Sections for limitations on work restrictions and utility interruptions.

##### 1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated.
- B. Water and Sewer Service from Existing System: Water is available from fire hydrant with approval from the Municipal Authority of Westmoreland County. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is not available for use.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Plan of Construction: Contractor shall indicate in a narrative format a plan to address electrical needs, temporary sanitary facilities, any applicable temporary facilities, utility hookups, staging areas, storage needs etc. .

##### 1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Coordinate with WCHA – Construction Inspector concerning the scheduling of owner and/or municipal inspections required by authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.



## 1.5 PROJECT CONDITIONS

- A. Contractor shall coordinate with WCHA – Construction Inspector concerning the location of temporary facilities and use of WCHA – Facilities. WCHA reserves to right to make final determinations on selected location of temporary facilities and use limitations of WCHA facilities.
- B. Contractor shall take notice WCHA will endeavor to provide temporary power if capacity is available. If WCHA determines Temporary Electric services cannot be provided Contractor shall provide other means of energizing its equipment, at no additional cost to the owner.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Work Zone Fencing Enclosure shall be installed around cranes, equipment staging areas, where WCHA residents and general public can be injured by falling debris, construction equipment, materials, etc. Fencing shall be constructed of Portable Chain-Link Fencing: PVC – Fencing of sufficient structural integrity to keep persons from entering the restricted work zones.

### 2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Not Required for the Contract. Contractor field office requests will be a formal written request for allowing a field office at no additional cost to the owner.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
- C. Sanitary Facility: Contractor shall provide a commercially constructed restroom “Port-a-john” for use by employees. Facilities shall be kept odor free, secure and emptied on a weekly basis.

### 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
  - 1. Locate facilities to limit site disturbance and as agreed upon by WCHA – Construction Inspector.

- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Toilets: Use of Owner's existing toilet facilities will not be permitted.
- B. Electric Power Service: Connect to Owner's existing electric power service if capacity is available. Maintain equipment in a condition acceptable to Owner. Coordinate with WCHA-Inspector

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  - 1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
  - 2. Maintain support facilities until Engineer schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Parking: Use of on-street parking will need to be used by construction personnel.
- C. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
  - 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
  - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  - 3. Maintain and touchup signs so they are legible at all times.
- D. Waste Disposal Facilities: Contractor shall remove and dispose of all waste materials daily from each site.
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction, equipment, staging areas, storage areas. Provide secured entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction or WCHA – field directives for erecting structurally adequate barricades, including warning signs and lighting.
- D. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

### 3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.

### 3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION

## SECTION 01600

### PRODUCT REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Section:
  - 1. 01330 Submittals
  - 2. General Conditions
  - 3. Technical Division Specifications

##### 1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

### 1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Owner or Engineer Action: If necessary, Owner or Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Contractor will be notified of conformance or rejection of proposed comparable product request within [14] days of receipt of request, or [7] days of receipt of additional information or documentation, whichever is later.
    - a. Use product specified if Owner or Engineer does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

### 1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

### 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
  - 1. Store products to allow for inspection and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.

3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

## 1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  3. Refer to Divisions 2 through 16. Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

## PART 2 - PRODUCTS

### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
  1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Engineer will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  3. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.
    - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
  4. Manufacturers:
    - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.
    - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
  5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Engineer's sample", provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.



1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 1 Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Owner will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Owner or Engineer may return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
  5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION

## SECTION 01700

### CUTTING AND PATCHING

#### 1. GENERAL:

##### 1.1 SUMMARY

A. This Section establishes general requirements pertaining to cutting, excavating, coring, fitting, and patching of the Contracted Work in existing or new WCHA facilities (structures) required to:

1. Saw cut and excavate the limits of disturbance identified in the contract drawings including: roadway, concrete walkways, curbs, patios ...
2. Uncover work to provide for removal, installing, inspecting, or both, of ill-timed work;
3. Remove and replace work not conforming to requirements of the Contract Documents; and
4. Remove and replace defective work.

##### B. RELATED WORK:

1. Documents affecting Works of this Contract include, but are not necessarily limited to, the GENERAL CONDITIONS, DIVISION 1 -GENERAL REQUIREMENTS and other Sections of the Project Manual.
2. In addition to other specified requirements, the CONTRACTOR shall, upon the OWNER'S or Engineer's request, uncover work to provide for inspection by the Owner or Engineer of uncovered work and remove samples of installed materials for testing.
3. Do not cut or alter Work performed under separate Contracts without the Owner's or Engineer's written permission.

##### 1.2 SUBMITTALS

##### A. Request For Owner's or Engineer's Consent:

1. Prior to cutting which effects structural safety, submit written request to the Owner or Engineer's for permission to proceed with cutting.
2. Submit, to the Owner and/or Engineer, for approval, the method(s) of cutting and patching, and protection plan for each. Submit structural calculation, prepared by a Pennsylvania State licensed Engineer, as directed by the Owner or Engineer.

3. Submit all Shop Drawings or submittals as required by other Sections of the Project Manual.
4. Should conditions of the Work or schedule indicate a required change of materials or methods for cutting and patching, so notify the Owner or Engineer/Engineer and secure written permission prior to proceeding.

### 1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.
- B. The safety provisions of applicable laws, building and construction codes shall be observed. PA One Call shall be performed before any excavation is performed.
- C. For each finish surface condition prepare a representative mock-up area which shall be completely cleaned and finished for review by Owner or Engineer/Engineer. Approval shall be obtained before proceeding with additional cutting and patching work.
- D. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity.
- E. Obtain approval of the cutting and patching proposal before cutting and patching any structural elements.
- F. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
- G. Obtain approval of the cutting and patching proposal before cutting and patching any operating elements.
- H. If no deposition of existing detail of existing improvements or conditions is made on the Drawings or in the Project Manual, it shall be the Contractor's responsibilities to provide necessary site investigations including testing, potholes, exposure, etc. to obtain site information at no additional cost to the WCHA . Contractor shall submit site information as part of the submittal. Contractor shall repair all testholes, exposures, etc. as part of the Contract.
- I. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Owner's or Engineer's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace work cut and patched in a visually unsatisfactory manner.

## 2. PRODUCTS :

### 2.1 MATERIALS

- A. General: Use materials that are identical to existing materials. If identical materials are not available, or existing materials do not meet codes or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials. Submit method of repair including lapping, splicing and joining of new and existing materials.
- B. For replacement of items removed, use materials complying with pertinent Sections this Project Manual.

## 3. EXECUTION :

### 3.1 SURFACE CONDITIONS

- 1. Inspect existing conditions, including elements subject to movement or damage prior to the Bid, during cutting, excavating, patching, and backfilling.
- 2. Identify all existing utilities, protect and maintain service to occupied areas in accordance with GENERAL REQUIREMENTS.
- 3. Obtain required shear tests for existing [concrete] [brick] materials.] (If applicable)
- 4. Obtain required weldability test on existing steel. (If applicable)]
- 5. Unless specified otherwise, inspect and determine location of existing rebars in masonry and/or concrete walls or flooring prior to cutting.
- 6. After uncovering the work, inspect conditions affecting installation of new work.
- 7. If uncovered conditions are not as anticipated, immediately notify in writing the Owner or the Engineer/Engineer secure needed directions.
- 8. Do not proceed until unsatisfactory conditions are corrected.

### 3.2 PREPARATION PRIOR TO CUTTING

Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the work. Provide duplicate copy of shoring permit and plan to the Owner or Engineer prior to start of Contracted Work.

### 3.3 PERFORMANCE

1. Perform cutting and demolition by methods, which will prevent damage to other portions of the Contracted Work and provide proper surfaces to receive a proper installation of repair and new work.
2. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes noted in the Technical Sections of the Project Manual.
3. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible, review proposed procedures with the original installer. If CONTRACTOR does not concur with the original installer's recommendations, CONTRACTOR shall notify the Owner and/or Engineer and request instructions.
4. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Impact tools are not to be used in the building. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
5. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces, or spaces.
6. Cut through concrete and masonry using a cutting machine such as a diamond tipped or carborundum saw or diamond core drill. Use methods or locations that could avoid cutting the rebars. All cut rebars, approved by the Owner or Engineer shall be rounded off any sharp edges and dabbed with a coat of protective coating against rusting.
7. Unless specified otherwise, all cut floor or roof ledgers and blockings shall be repaired, spliced and installed with approved steel connectors. If necessary, install new double wooden ledgers or blocking without additional cost to the WCHA.
8. Unless specified otherwise, all cut ceiling framing members shall be repaired or replaced with new framing members to the satisfaction of the Owner or Engineer. Re-install all ceiling, mechanical grills, and lighting fixtures affected by the cutting and repairs.
9. Unless specified otherwise, all existing masonry walls shall be removed to the nearest grout joint. All removed masonry units shall be protected, salvaged and reused.
10. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
11. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
12. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
13. All existing masonry wall shall be repointed and regouted to the nearest wythe joint to match existing.

14. Restore all building insulation and fireproofing to match existing thickness and conditions.
15. Restore complete [caulking], [sealer], [waterproofing] etc. to achieve maximum performance as required at no additional cost to the WCHA.

### 3.3 CLEANING

1. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

### 3.5 TESTING

Arrange with local authorized agencies and test all existing utility services, mechanical and plumbing systems, fire and life systems affected by the cutting and patching.

END OF SECTION

SECTION 01770  
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

This section includes administration and procedural requirements for contract closeout, including but not limited to, the following:

- A. Requirements preparatory to final inspection.
- B. Final inspection.
- C. Warranties
- D. Acceptance of the Work and final payment.

1.2 REQUIREMENTS PREPARATORY TO FINAL INSPECTION

- A. The Contractor shall request a final inspection to determine the state of completion of the Work after the following has been completed:
  - 1. Prepare a list of items to be completed and corrected (contractor generated - punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
  - 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  - 8. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  - 9. Complete final cleaning requirements, including touchup painting.
  - 10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. The request for final inspection shall be made in writing, addressed to the Owner and/or Engineer, at least seven days in advance of the requested date of the preliminary inspection.

- C. The Owner and/or Engineer / Engineer will perform the final inspection within three days of the requested date.

### 1.3 FINAL INSPECTION

- A. When all requirements of the above list have been completed, the Contractor shall request the final inspection to determine eligibility for issuance of the Certificate of Substantial Completion.
- B. The request shall be made in writing, addressed to the Owner and/or Engineer, at least seven days in advance of the requested date of the final inspection. The owner and / or Engineer will endeavor to perform said inspection within 3 days of the requested date.
- C. The Contractor shall be represented by its principal superintendent and such Subcontractors and Suppliers as may be necessary to verify the completion of the Work including punch list items.
- D. Depending on the extensiveness of the punch list items, certain elements of the Work may be scheduled separately for final inspection at appointed times.
- E. If the Work has been substantially completed in accordance with the Contract Documents, and only minor corrective measures are required, the Owner will proceed to issue a Certificate of Substantial Completion, based upon the Contractor's assurance that remaining corrective measures will be completed within the shortest practicable time period usually 30 days. A Final Inspection punch list will be attached to the Certificate of Substantial Completion. A fixed schedule for such corrective measures shall be submitted to the Owner, for approval.
- F. If the Work has not been substantially completed in accordance with the Contract Documents, and corrective measures are still required, a new punch list will be prepared
- G. The date of the Certificate of Substantial Completion will establish the completion date of the Work, or portions thereof as specifically referenced in the Certificate, and for determining liquidated damages and start of warranty periods.

### 1.4 WARRANTIES

- A. Contractor shall deliver to the Owner a contractors warranty in a form of a Maintenance Bond covering the remaining materials and workmanship for a period of 12 months starting on the date of substantial completion.

### 1.5 ACCEPTANCE OF THE WORK AND FINAL PAYMENT

- A. Upon completion and acceptance of the Substantial Completion punch list items, the Owner will formally accept the Work.
- B. Acceptance of the Work will be made in accordance with the General Conditions. Final payment will be made in accordance with of the General Conditions.



## PART 2 – PRODUCTS

### 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

B.

## PART 3 – EXECUTION

### 3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

- a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
- b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
- c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
- d. Remove tools, construction equipment, machinery, and surplus material from Project site.
- e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
- g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

- h. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
- i. Leave Project clean and ready for occupancy.

END OF SECTION

## SECTION 01781

### PROJECT RECORD DOCUMENTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.
- B. Related Sections:
  - 1. General, Supplemental and Special Conditions
  - 2. Divisions 2 through 16 Sections for specific requirements for project record documents of the Work in those Sections.

##### 1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit ONE set of marked-up record prints.
  - 2. Number of Copies: Submit copies of record Drawings as follows:
    - a. Final Submittal: Submit ONE paper copy or PDF electronic files of marked-up record prints.
- B. Record Product Data: Submit one paper bound copy and one PDF electronic file copy of each submittal.

#### PART 2 - PRODUCTS

##### 2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.
  - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
  - b. Record data as soon as possible after obtaining it.
  - c. Record and check the markup before enclosing concealed installations.
2. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
  3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Owner representative. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
  1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

## 2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  4. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as ONE paper copy, or scanned PDF electronic file(s) of marked up paper copy of Specifications.

## 2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

3. Note related Change Orders, record Specifications,] and record Drawings where applicable.
- B. Format: Submit record Specifications as ONE paper copy, or scanned PDF electronic file(s) of marked up paper copy of Specifications.

#### 2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit record Specifications as ONE paper copy, or scanned PDF electronic file(s) of marked up paper copy of Specifications.

### PART 3 - EXECUTION

#### 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents Owners representative reference during normal working hours.

END OF SECTION

## SECTION 02 4119 01 – WWTP / DECOMMISSIONING

### PART 1 – GENERAL

#### 1.01 SCOPE:

- A. This section covers the demolition of the structures and appurtenances of the existing wastewater treatment plant screening facility which are to be removed as a result of the construction of the new facilities as shown on the Drawings.
- B. All existing sewers and WWTP facilities are to remain in operation during the construction of the new facilities as outlined on the Drawings. When the Engineer determines the new facilities to be operational, the Contractor shall remove from service existing facilities. After the wastewater flow has been permanently rerouted through the new facilities, the Contractor shall be responsible for dewatering and demolishing the existing facilities as specified herein and as shown on the Drawings. The final surfaces shall be raised to grade with clean fill, compacted. Unless otherwise indicated on the Drawings, plant roadways shall be covered with 6" Type "A" aggregate, and all other areas shall be restored with 6" top soil and sod.
- C. All treatment tanks must be pumped out. Wastewater and sludge must then be disposed of at an approved disposal site (permitted by the PaDEP), either a municipal sewage treatment plan, a landfill, or sludge disposal site.

#### 1.02 RELATED SECTIONS

- A. Temporary facilities, such as fences, barricades, warning lights, signs, and other temporary safety measures.
- B. Dust control as specified in Temporary Controls
- C. Selective demolition and removal of existing buildings, structures and facilities are specified in Section 02 41 19 Selective Structure Demolition.
- D. Removal of vegetation and tress is specified in Clearing and Grubbing.

#### 1.03 MEASUREMENT OF PAYMENT

- A. Measurement & Payment
  - 1. Demolition, utility coordination for disconnects including cut/cap, debris removal, backfill, restoration, and all incidentals will be measured for payment on a lump sum basis, acceptably performed and completed.

#### 1.04.1 REFERENCES

- A. American National Standards Institute (ANSI)
  - 1. ANSI A10.6

#### 1.05 DESCRIPTION

- A. Demolition as follows;
  - 1. Structures, steel, aluminium, metals, shall be completely removed.

2. Utility services to facilities to be removed or demolished shall be disconnected, cut and capped. Contractor shall be required to contact and schedule utility shut offs at no additional cost to Owner.
3. All existing sewers and plant operations are to remain in operation during the construction of the sanitary sewer project as outlined in the drawings. When the engineer determines the new sewer system are operational and tested accordingly, the contractor shall at that time perform connection of the existing sewer to the new sanitary sewer.
4. After wastewater flow has been permanently rerouted through the new facilities the contractor shall be responsible for dewatering and demolishing the existing WWTP as specified herein and as shown on the drawings. The final surfaces shall be raised to grade with clean fill, compacted and seeded.

## 1.06 EXECUTION

DEMOLITION SCHEDULE: Equipment scheduled for demolition includes but is not necessarily limited to the following items. See the Drawings for additional requirements.

Contractor shall:

- A. **EXISTING SCREENS:** Remove the existing screens one at a time as addressed in the construction sequencing as shown on the Drawings. Each screen box shall be isolated and the screen removed along with other items within the screen box including ladders and cages, concrete platforms, and other obstructions to the installation of the new screen. The concrete slabs over the screen boxes shall be saw cut and removed to allow the installation of the new screens and covers. The existing access hatches over the screen boxes shall be removed.
- B. **SCREEN CAGE AND PLASTIC DRAPES:** Remove the existing cages and plastic drapes which surround the screens. Remove the frame which supports the drapes.
- C. **EXISTING CONVEYOR AND WASHER/COMPACTOR:** Remove the existing auger conveyor and washer/compactor and replace it with the specified Sluice (SLC01) and Washing Compactor (WCP01). Remove existing water and drain piping.
- D. **EXISTING ELECTRICAL CONDUIT AND DEVICES:** Remove all electrical switches, devices, conduit and wiring associated with the existing screens, conveyor and washer/compactor including the main control panel and local control panels and disconnect switches. Conduit and wiring to the main control panel shall be removed back and to the main disconnect to which it is connected.
- E. **EXISTING GATES, SCREENS, LADDERS, ENCLOSURES, BAR SCREENS, DIFFUSERS, ODOR SYSTEMS, MISC PIPING, ETC:** As shown on the Drawings, remove the existing items and all incidentals.

## 1.07 DISPOSAL

- A. Contractor shall be responsible for removal and disposal of all equipment scheduled for demolition. The Owner shall be contacted and offered any equipment prior to disposal. Equipment to be retained by the Owner shall be removed and placed at a designated area on site for removal by the Owner. Disposal of concrete and debris from units which are to be removed completely shall be the responsibility of the Contractor at no additional cost to the Owner.

**END OF SECTION 02 4119 01**

## SECTION 02 4119 - SELECTIVE DEMOLITION

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Section provides a description of the over excavation to remove overburden below the proposed grade and the backfilling and compaction to bring the site up to finished subgrade.
- B. Work shall be conducted in accordance with the Drawings, General Conditions, and the requirements of this Section.
- C. Work Included: Excavate, backfill, compact, and grade the site to the elevations shown on the Drawings, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents.
- D. Basis of Contract: All excavation under this contract is unclassified and all materials encountered regardless of type and hardness, shall be removed to required lines and depths. There will be no additional compensation to the Contractor because of subsurface conditions and materials encountered.

Excavation for this project shall be considered unclassified and shall include all types of earth and soil, pebbles, boulders, and bedrock; municipal trash, rubbish and garbage; and all types of debris of the construction industry such as wood, stone, concrete, plaster, brick, mortar, steel and iron shapes, pipe, wire, asphalt materials, paper and glass.

All such materials encountered which are identified by this paragraph as unclassified shall be removed to the required widths and depths to create a finished product as shown and/or noted on the Drawings and as written in the specifications. No additional compensation shall be made to the Contractor for this unclassified excavation.

- E. Precautions: Existing monuments, bench marks, or other markers must not be damaged. Suitable protection must be provided where required before starting work. Any damage to original condition must be restored or repaired as directed at no additional cost. Before starting work, any trees or shrubs shown or designated to be saved must be protected by boxing or wire fencing, staked securely in place or by other approved means, and maintained until completion of work, or until removal is directed by the Owner and/or the Architect or Engineer.

#### 1.02 QUALITY CONTROL

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity, and numbers to accomplish the work of this Section in a timely manner.
- C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the Geotechnical Engineer, if required.

#### DISPOSITION OF UTILITIES

- A. Rules and regulations of the various utility companies and other authorities having jurisdiction over such work shall be observed in the performance of all excavating, backfilling and rough grading. The Contractor shall comply with the requirements of PA Act 287 of 1974, as amended by PA Act 121 of 2008, and notify the Pennsylvania One Call System (1-800-242-1776) not less than three working days prior to performing earthwork operations.
- B. Active utilities shown on the Drawings shall be adequately protected and shall be removed or relocated only as indicated or specified.



- C. The Architect/Engineer and the Owner shall be notified immediately, should active utilities not indicated on the Drawings be encountered. Such utilities shall be adequately protected, supported or relocated as directed by the Engineer and the Owner.
- D. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
- E. Do not proceed with permanent relocation of utilities until written instructions are received from the Architect/Engineer or the Owner.

## PART 2 – PRODUCTS

### 2.01 SOIL MATERIALS

- A. Clean Earth Backfill:
  - 1. On site excavated material free of vegetation, lumber, metal and refuse; and free of rocks or similar hard objects larger than one (1) inch in greatest dimension, shall be used as clean earth backfill as approved by the Geotechnical Engineer. Rock to soil ratio shall not exceed one (1) part rock to three (3) parts soil.
- B. Aggregate Backfill:
  - 1. AASHTO No. 57 Type C or better Coarse Aggregate conforming to PENNSYLVANIA DEPARTMENT OF TRANSPORTATION Section 703.2.
- C. Selected Compacted Fill:
  - 1. Imported: Granular material free from organic material, well graded, varying from coarse to fine with sufficient fines to fill coarse voids. The liquid limit shall not exceed 40% moisture, and the plasticity index of the material passing the No. 40 mesh sieve shall not exceed 10. The particle size shall not exceed three (3) inches and not more than 35% shall pass the No. 200 mesh sieve.
- D. Pea Gravel:
  - 1. Clean naturally rounded aggregate with particle size not less than 1/8-inch or more than 3/4-inch in diameter.

### 2.02 TOPSOIL

- A. Where and if shown on the Drawings or otherwise required, provide topsoil consisting of friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoil, roots, heavy or stiff clay, stones larger than 2 inches in greatest dimension, noxious weeds, sticks, brush, litter, and other deleterious matter.
- B. Obtain topsoil from sources within the project limits, or provide imported topsoil obtained from sources outside the project limits, or from both sources.

### 2.03 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect/Engineer and the Owner.

## PART 3 – EXECUTION

### 3.01 EXCAVATION AND APPROVAL OF BEARING STRATA

- A. The Construction Limits for a trench excavation shall be as follows:
  - 1. The bottom of a trench for pipe shall be 6 inches deeper than the required invert elevation of the pipe, the depth being measured from the mean surface of the rock. The width below top of pipes shall not be more than 24 inches greater than the width external diameter of pipe.
  - 2. The measurement between vertical side surfaces of a trench in rock above the top of pipe shall be limited as follows:
    - a. Depth of Rock, 1 foot to 10 feet - 24 inches greater than the width the external diameter of the pipe.
    - b. Depth of Rock, 10 feet to 15 feet - 36 inches greater than the width of the external diameter of the pipe.

- c. Depth of Rock, over 15 feet - 48 inches greater than the width of the external diameter of the pipe.
  - 3. Unless directed by the Geotechnical Engineer or the Owner to go beyond the above limits, the Contractor will not receive additional compensation for excavation beyond said limits. None of the above provisions shall be construed to relieve the bidder of its responsibility to make a careful personal examination of the site in order to satisfy itself as to the nature and location of the work required, the configuration of the ground, the soil and rock conditions and the character, quality and quantity of the materials.
- B. Excavated materials to be used for backfill or other purposes shall be piled away from the edge of the excavation, a sufficient distance to prevent overloading the bank, and graded in such a way as to prevent surface water from entering the excavated area. Excess material from excavation neither suitable nor required for backfill or other purposes shall be hauled from the site as excavated. Such waste excavation shall be disposed of as directed by the Owner. Contractor's attention is also drawn to provisions in the Special Requirements regarding soil erosion and sedimentation control.
- C. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.
- D. Excavation of rock:
  - 1. Where rocks, boulders, granite, or similar material is encountered, and where such material cannot be removed or excavated by conventional earth moving or ripping equipment, take required steps to proceed with the general grading operations of the Work, and remove or excavate such material by means which will neither cause additional cost to the Owner nor endanger buildings or structures whether on or off the site.
- E. Cutting of Pavement:
  - 1. When cutting of paved surfaces is required, the surface shall be machine cut in a neat, uniform manner. No paving shall be broken except that which has been previously cut. Edges of the cut pavement shall be protected during excavation and construction. Any edges which become broken shall be squared prior to pavement replacement.
- F. Unauthorized excavation:
  - 1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Engineer.
  - 2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the Engineer.
- G. Stability of excavations:
  - 1. Slope side of excavations to 2:1 or flatter, unless otherwise directed by the Engineer.
  - 2. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
  - 3. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- H. Shoring and bracing:
  - 1. Provide materials for shoring and bracing as may be necessary for safety of personnel, protection of work, and compliance with requirements of governmental agencies having jurisdiction.
  - 2. Maintain shoring and bracing in excavations regardless of the time period excavations will be open.
  - 3. Carry shoring and bracing down as excavation progresses.
- I. Excavating for pavements:
  - 1. Cut surface under pavements to comply with cross sections, elevations, and grades.
- J. Cold weather protection:
  - 1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

### 3.02 FILL MATERIALS - GENERAL

- A. Approval: All fill material shall be subject to the approval of the Geotechnical Engineer and the Owner.

- B. Notification: The Geotechnical Engineer and the Owner shall be notified at least seven (7) working days in advance of intention to import material to the site. The borrow source shall be designated, so that the Geotechnical Engineer and the Owner may inspect the borrow area and perform the necessary tests to be assured of the quality of the material.
- C. Unsuitable Backfill Material. Where backfill is determined to be unsuitable as a result of the Contractors method of operation or construction, the unsuitable material shall be removed and replaced with suitable or select material at the Contractors expense.

### 3.03 FILLING, BACKFILLING, AND ROUGH GRADING

- A. Excavations and areas to be filled must be cleaned of all topsoil, vegetable matter, refuse and debris before placing any fill or backfill.
- B. Placing and compacting:
  - 1. Place backfill and fill materials in layers not more than 8" in loose depth.
  - 2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
  - 3. Compact each layer to require percentage of maximum density for area.
  - 4. Do not place backfill or fill material on surfaces that are muddy, frozen, or containing frost or ice.
  - 5. Place backfill and fill materials evenly to required elevations.
- C. Fill or backfill may not be done over frozen subgrade nor may any frozen material be used in fill or backfill.
  - 1. Areas to be paved shall be graded to the depth required for the placing of paving material.
  - 2. Compaction: After grading, subgrade surfaces shall be compacted to the depth and percentage of maximum dry density specified for each class of area in Paragraph 3.04, COMPACTION.
- D. Each layer must be moistened or aerated as necessary to provide optimum moisture content. Each layer must be compacted to required percentage of maximum dry density specified for each class of area in Paragraph 3.04, COMPACTION.
- E. At the end of each working day the fill surfaces shall be sealed by rolling to promote surface runoff and graded to prevent ponding of water.
- F. Any excavations improperly backfilled, or where settlement occurs, shall be opened to the depth required for proper compaction, then refilled in lifts and compacted in accordance with Paragraph 3.04, COMPACTION.
- F. Where wood sheet piling, form work, bracing or shoring is used, it shall be removed as the work progresses and the voids left shall be backfilled with 2,500 psi concrete below the top of foundations. Above the level, the backfill shall be as described above.
- H. Where additional soil is deposited upon the site to reach required subgrade beneath terrace - entrance platforms or paving and where trenches are overfilled under other contracts, these areas shall be compacted and rolled with a power roller or pneumatic tamper as specified above.
- I. Grading:
  - 1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
  - 2. Smooth the finished surfaces within specified tolerance.
  - 3. Compact with uniform levels or slopes between points where elevations are shown on the Drawings, or between such points and existing grades.
  - 4. Where a change or slope is indicated on the Drawings, construct a rolled transition section having a minimum radius of approximately 8 feet 0 inches, unless adjacent construction will not permit such a transition, or if such a transition defeats positive control or drainage.
  - 5. Finish the surfaces to be free from irregular surface changes and shape the surface of areas scheduled to be under pavement to line, grade, and cross-section, with finished surface not more than 0.05 ft. above or below the required subgrade elevations.
  - 6. Upon completion of work under this specification, rough grading as required by specification for subgrade for bituminous paving shall be completed. Hauling or moving of equipment shall not be allowed over the finished subgrade.

- J. Additional earth for backfill required in excess of acceptable material from excavations on the site, to raise or change the exterior or interior subgrade to the required elevations shown on the Drawings, shall be provided by the Contractor from a source approved by the Geotechnical Engineer and the Owner at no additional cost to the Owner.

### 3.04 COMPACTION

- A. General: Compaction control shall be exercised during construction to provide no less than the minimum percentage of density specified for each class of area indicated below:
  - 1. Percentage of Maximum Density Requirements: Soils shall be compacted to not less than the following percentages of maximum dry density as determined in accordance with ASTM D698:
    - a. Subgrade and/or final materials shall be compacted to 95% of maximum dry density at +/- 5% of optimum moisture.

### 3.05 MOISTURE CONTROL

- A. When subgrade or fill materials must be moisture conditioned before compaction, water shall be applied uniformly to surface, scarify and mix by discing or harrowing before compacting. If soil is too wet to achieve proper compaction, it must be scarified and air dried before compacting, or it must be removed and replaced.
- B. Soil material too wet for proper compaction which has been removed, may be stockpiled or spread and allowed to dry. Material may be reused when moisture content has been lowered sufficiently to allow proper compaction.
- C. Soil material which has been stockpiled for future incorporation into the project shall be protected from becoming saturated. Stockpiled fill in a loose and/or unprotected condition which becomes too wet for use shall be spread and allowed to dry until suitable for use or replaced with borrow fill material at no additional cost to the Owner.
- D. Compaction shall be accomplished by approved compaction equipment of a weight and type suited to the soil being compacted. Each layer shall be compacted to not less than the percentage of maximum dry density specified above, in Paragraph 3.04, COMPACTION.

### 3.06 QUALITY CONTROL AND QUALITY ASSURANCE

- A. Quality Control Tests. The Contractor shall perform all necessary quality control tests and procedures for the performance of the work in accordance with the contract documents and for producing end results which are specified. The Contractor shall maintain clear and orderly record of such tests and procedures and make them available for field review and approval of the Geotechnical Engineer and the Owner. The Base Bid shall include the cost of all quality control tests.
- B. The Contractor shall submit its plan for Quality Control testing to the Geotechnical Engineer and the Owner for review and comments.
- C. Quality control tests shall include tests on fill material, optimum moisture content and maximum density, field density tests, testing and inspection of subgrades and fill layers and other applicable tests. The testing agency must be acceptable to the Geotechnical Engineer and the Owner.
- D. Handwritten copies of the field test report shall be provided to the Contractor. They should be given to the Contractor within two (2) hours of completion of the work, but in no event shall the technician leave the site without providing the Contractor with a copy of the tests results. This shall include relative density, % moisture, plan location, elevation, comments and any other relevant data. Comments shall include any condition that might have an adverse effect on the operations, including weather, drainage, etc.
- E. The Contractor shall consult the Geotechnical Engineer on any problems that arise during construction. Copies of the daily in-place soil density tests shall be received by the Geotechnical Engineer from the Contractor through the testing agency within twenty-four (24) hours of the time the tests are made.

- F. The Contractor shall test and approve each subgrade and each fill layer before proceeding to the next layer. Any area which does not meet density, % moisture or other requirements at any time shall be suitably reworked and retested by the Contractor at its own expense.

Quality Assurance Tests: The Geotechnical Engineer and/or the Owner will perform quality assurance tests deemed necessary for the assurance of the Geotechnical Engineer and/or the Owner. This does not relieve the Contractor of its responsibilities in Paragraphs A through F above, and other responsibilities. The Owner will bear the cost of quality assurance tests.

- H. The Contractor shall provide the Geotechnical Engineer with a copy of the daily tests results within twenty-four (24) hours of the tests. The Geotechnical Engineer shall confirm the daily activity report and provide comment to the Contractor and the Bureau of Construction's Inspector Supervisor assigned to the project, within twenty-four (24) hours.

### 3.07 SHORING AND PROTECTION

- A. The Contractor shall provide and maintain sheathing, shoring, and bracing as necessary to protect this project and adjacent structures or conditions. Restoration of damaged areas to original condition is the Contractor's responsibility.
- B. It is also the Contractor's responsibility to remove temporary sheathing, shoring, bracing, and protection when no longer required by adjacent conditions and completion of construction or backfill and rough grading as determined and approved by the Geotechnical Engineer and the Owner.
- C. Protection of persons and property:
  - 1. Barricade open holes and depressions occurring as part of the Work, post warning lights on property adjacent to or with public access.
  - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
  - 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlements, lateral movement, washout, and other hazards created by operations under this Section.
- D. Dewatering:
  - 1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains, and other approved methods.
  - 2. Keep trenches, excavations and site construction area free from water.
- E. Use means necessary to prevent dust from becoming a nuisance to the public, to neighbors, and to other work being performed on or near by the site.
- F. Maintain access to adjacent area at all times.

### 3.08 PUMPING AND DRAINAGE

- A. The Contractor shall pump out or otherwise remove any water which may be found in the excavation, and shall provide drainage ditches, underdrains, flumes, well points, and pumping equipment, suction and discharge lines, as necessary to keep the excavation entirely clear of water while the foundations are being built or other operations are being performed requiring a dry condition.

### 3.09 UNDERPINNING

- A. Unless otherwise indicated on Drawings, the Contractor shall provide necessary underpinning which meets with the approval of the Geotechnical Engineer and the Owner.

### 3.10 SUBSURFACE INFORMATION

- A. Any available data concerning subsurface materials or conditions which is based upon soundings, test pits or test borings, has been included in the Drawings.

### 3.11 DISTURBED AREAS

- A. The Contractor shall restore to the condition prior to execution of the contract paving, retaining walls, lawn, roadways, walkways, parking areas, and similar items disturbed by work of this contract Section.

3.12 CLEANUP

- A. Any paved area (either new or existing) over which hauling operations or other moving equipment are conducted shall be kept clean and any soil or other material which may be brought upon the paved surfaces shall be removed promptly by the Contractor. Upon completion of rough grading all debris must be cleared away and removed from the site.

END OF SECTION 02 41 19

## **SECTION 03 3001 - CAST-IN-PLACE CONCRETE - EXTERIOR**

### **PART 1 – GENERAL**

#### **1.01 SCOPE**

- A. Work shall be conducted in accordance with the Drawings, General Conditions, and the requirements of this Section.
- B. This section covers materials, mixing, forming, placing, and curing of all cast-in-place concrete, including reinforcement.
- C. Concrete Sealant, refer 03 3000 Section 3.11

#### **1.02 GENERAL REQUIREMENTS**

- A. The Contractor shall coordinate his work with the work of other trades to provide anchors, sleeves, conduits, and other openings or materials to be installed prior to the concrete placement.
  - 1. Should equipment or pipe not be delivered to the site in sufficient time for incorporation into the concrete, the Contractor may provide an opening for later incorporation of such equipment, provided written permission is obtained from the Engineer at the time of the request.
- B. Shop Drawings showing all of the necessary dimensions for the fabrication and placement of reinforcing steel and accessories, without reference to the Project Drawings, shall be submitted for approval in accordance with these Specifications.
  - 1. At the discretion of the Engineer, additional Shop Drawings for formwork may be required when safety considerations are involved.
- C. The Contractor shall adhere to ACI 304-73, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete" and ACI 318-83, "Building Code Requirements for Reinforced Concrete," in executing the requirements of this section. Additional code requirements shall be followed for concrete construction not covered within the above referenced Code:
  - 1. Current "Manual of Standard Practice for Detailing Reinforced Concrete Structures" (ACI 315).
  - 2. Current "Recommended Practice for Measuring, Mixing and Placing Concrete" (ACI 304).
  - 3. All matters in connection with concrete work, not otherwise specified shall conform to the applicable section of the Pennsylvania Department of Transportation Pub. 408.

#### **1.03 STORAGE OF MATERIALS**

- A. The cement shall be stored in weather-tight bins or a building that will protect it from dampness and in such a manner as to permit easy access for suitable inspection and identification of each carload or equivalent. The cement shall not be stored in excess of eight (8) bags high and shall be covered with tarpaulins. When permission is given by the Engineer to temporarily store cement in the open, a platform and adequate waterproof covering shall be provided.
- B. Aggregate stockpiles shall be arranged and used in a manner to avoid excessive segregation or contamination with other materials or with other sizes of like aggregates. To insure that this condition is met, any test for determining the conformation to the requirements for cleanliness and grading shall be performed on samples secured from the aggregates at the point of batching. Stockpiles shall be built in successive horizontal layers not exceeding four feet (4') in thickness, with each layer completed before the next one is started. Frozen or partially

frozen aggregates shall not be used.

- C. Sand shall be allowed to drain until it has reached a uniform moisture content before it is used.
- D. Admixtures shall be stored in such a manner as to avoid contamination or damage. For those used in the form of suspensions or non-stable solutions, suitable agitating equipment shall be provided to ensure a uniform distribution of the ingredients. Liquid admixtures shall be protected from freezing and other temperature changes that would adversely affect their characteristics.

#### 1.04 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.
- B. Concrete - Slab-on-Fill or Grade:
  - 1. Basis of Measurement: Per contract bid of lump sum
  - 2. Basis of Payment: Includes concrete, placement accessories, consolidating, leveling, troweling, and curing.
- C. Concrete - Miscellaneous Locations:
  - 1. Basis of Measurement: Per contract bid of lump sum
  - 2. Basis of Payment: Includes concrete, placement accessories, consolidating, leveling, troweling, and curing.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Cement
  - 1. Portland Cement Type I or Type III conforming to ASTM Designation C-150.
  - 2. Cement shall only be delivered in approved bags or barrels with the brand, type, and name of the manufacturer clearly marked thereon or may be delivered in bulk in a manner approved by the Engineer. A bag of cement shall contain ninety-four pounds (94 lbs) net. A barrel of cement shall contain three hundred and seventy-six pounds (376 lbs) net. Information as to the brand, type, and manufacturer must be provided in shipping invoices accompanying bulk cement. Cement which has been retrieved or reclaimed from used bags shall not be used.
- B. Aggregate
  - 1. Concrete aggregate shall conform to the specifications for Concrete Aggregate, ASTM Designation C-33.
    - a. Fine Aggregate: Natural, artificial, or manufactured sand will be acceptable.
    - b. Coarse Aggregate: Coarse aggregate shall be crushed stone or gravel.
      - 1) The maximum size of the aggregate shall be no larger than one-fifth (1/5) of the narrowest dimension between the sides of the forms within which the concrete is to be cast, nor larger than three-quarters (3/4) of the minimum clear spacing between the reinforcing bars and the forms. For unreinforced slabs, the maximum size of the aggregate shall not be larger than one-third (1/3) of the slab thickness. These requirements may be waived if, in the opinion of the Engineer, the mixture possesses sufficient workability that the concrete can be placed without



honeycombs or voids.

- 2) In general, the maximum size of aggregate to be used in the various items of concrete work shall be in accordance with the following table, but shall not exceed the limitations of the above paragraph.

Range for Maximum Size of Aggregates\* in Inches

Minimum Dimension of Section in Inches	Reinforced Walls, Beams, and Columns	Unreinforced Walls	Heavily Reinforced Slabs	Lightly Reinforced or Unreinforced Slabs	All Other Construction
2-1/2 - 5	2 T- 3/4	3/4	3/4 - 1	3/4 - 1.5	3/4 - 1
6 -11	3/4 -1.5	1.5	1.5	1.5 - 3	1.5
12 - 29	1.5 -3	3	1.5 - 3	3	3
30 or more	1.5 -3	6	1.5 - 3	3 - 6	3 - 6

\* Based on square sieve openings

C. Water

1. Water shall be tasteless, odorless, colorless, free from injurious amounts of sewage, oil, acid, alkali, organic matter, and other deleterious substances, and shall be suitable for human consumption.

D. Admixtures

1. Water-Reducing – “Eucon WR 75” by the Euclid Chemical Company, “Pozzolith 200N” by Master Builders or “Plastocrete 160” by Sika Chemical Corporation. The admixture shall conform to ASTM C-494, Type A and shall contain not more than one percent (1%) chloride ions.
2. High-Range Water Reducing (Super Plasticizer) – “Eucon Super 37” by the Euclid Chemical Company or “Sikament” by Sika Chemical Corporation. The admixture shall conform to ASTM C-494, Type F or G and shall contain not more than one percent (1%) chloride ions.
3. Non-Corrosive Accelerator – “Accelguard” by the Euclid Chemical Company or “Darex Set Accelerator” by W. R. Grace & Company. The admixture shall conform to ASTM C-494, Type C or E, and have long term test data proving its noncorrosive effect on metal decks and reinforcing steel.
4. Water Reducing, Retarding – “Eucon Retarder 75” by the Euclid Chemical Company, “Pozzolith 100R” by Master Builders or “Plastiment” by Sika Chemical Corporation. The admixture shall conform to ASTM 495, Type D, and shall not contain more than one percent (1%) chloride ions.
5. Air Entraining - Conform to ASTM C-260.
6. Calcium Chloride - Not permitted.

PART 3 – EXECUTION

3.01 MIXES

- A. All mix designs shall be proportioned in accordance with Section 4.3 (Field Experience and/or Trial Mixtures) of ACI 318-83.
- B. Concrete for all parts of the work shall be homogenous and, when hardened, shall have the required strength, resistance to deterioration, durability, and other specified properties. Three types of concrete are designated as follows:
  1. Type A: (Air entrainment is optional) - For interior slabs on grade, footings, foundations, and thrust blocks protected against cyclical freezing and thawing.

2. Type B: (Air entrainment is required) - For exterior slabs on grade, stream encasements, endwalls, headwalls, basement walls, retaining walls, and beams subjected to cyclical freezing and thawing and placement in very wet conditions.
3. Type C: (Air entrainment is optional) - For all other concrete use.

B. The required concrete strength  $f_c'$  shall be as follows:

Type	Compressive (psi)			Flexural (psi)		
	3 Days	7 Days	28 Days	3 Days	7 Days	28 Days
A	-	2750	3300	-	500	600
B	-	3330	4000	-	500	600
C	-	1500	2000	-	350	400

High Early Strength - Concrete shall achieve 7 and 28-day strengths for the type intended, at 3 and 7 days respectively.

- D. Concrete subjected to destructive exposure, such as freezing and thawing, severe weathering, or chemicals, shall contain entrained air as required by these Specifications. For all such concrete, the water-cement ratio shall not exceed 0.53 (6.0 gallons per sack of cement). The water-cement ratio for concrete subjected to deicers shall not exceed 0.45 (5.1 gallons per sack of cement).
- E. The slump of concrete of normal weight, as determined by "Method of Test for Slump of Portland Cement Concrete" (ASTM C-143), shall be in accordance with Table 1 unless the HRWR admixture (Super Plasticizer) is used. Water, in excess of that included in the approved mix design, may not be added at the plant or in the field.

**Table 1 – Slump of Concrete of Normal Weight**

Type of Construction	Slump in Inches	
	Hand Placed	Vibrator Used
Reinforced Footings	2 to 5	1 to 3
Plain Footings and Substructure Walls	1 to 4	1 to 3
Slabs, Beams, and Reinforced Walls	2 to 5	1 to 4
All Other Placements	1 to 3	1 to 2

The maximum slump of concrete containing the HRWR admixture (Super Plasticizer) shall be eight inches (8") unless otherwise approved by the Engineer.

- F. The air content of air-entrained concrete shall conform to Table 2. The air content shall be determined in accordance with ASTM C-173 (Volumetric Method) or ASTM C-231 (Pressure Method).

**Table 2 – Total Air Content for Various Sizes of Coarse Aggregates**

Nominal Maximum Size of Coarse Aggregates in Inches	Total Air Content Percent by Volume
2 or smaller	5 to 9
3/4	4 to 8
1	3.5 to 6.5
1-1/2 or larger	3 to 6

- G. Admixtures shall be used as follows:
1. Any concrete may contain the specified water-reducing admixture (Type A) or the specified HRWR admixture (Super Plasticizer, Type F or G) when approved by the Engineer.
  2. When increased workability, pumpability, lower water-cement ratio, or higher ultimate and/or early strengths are required, the HRWR admixture (Super Plasticizer) may be used

when approved by the Engineer.

3. All thin slabs (8" thick or less) placed below 50°F shall contain the specified non-corrosive accelerator when approved by the Engineer.
4. When high temperatures, humidity, and/or placing conditions dictate, the Engineer may require a change to the specified water-reducing, retarding formulation (Type D) in lieu of the water-reducing admixture (Type A).
5. All concrete required to be air entrained shall contain an approved air-entraining admixture.
6. All Class B Concrete shall contain a water reducing, retarding admixture as specified in Section 3A.4, D(4).

H. Calcium chloride shall not be permitted.

I. The proportion of ingredients shall be selected to produce:

1. Proper placability, durability, strength, and other required properties.
2. A mixture that will work readily into the corners and angles of the forms and around reinforcement by the methods of placing and consolidation employed on the work, but without permitting the materials to segregate or excessive free water to collect on the surface.

J. The mix designs shall be proportioned in accordance with Section 4.3 (Field Experience and/or Trial Mixtures) of ACI 318-83. If the proposed mix is based on previous field experience, the mix and supporting data shall be submitted to the Engineer for approval. Otherwise, the mix design shall be prepared in accordance with trial batches (Section 4.3) by an independent laboratory engaged by the Contractor. The tests shall be made in accordance with the following procedures:

1. Concrete trial mixtures having proportions and consistency suitable for the work shall be made using at least three (3) different water-cement ratios which will produce a range of strengths encompassing those required for the work. Trial mixes shall be designed to produce the maximum allowable slump.
2. The proportions of ingredients shall be determined, and tests conducted, in accordance with the basic relationships and procedures outlined in "Recommended Practice for Selecting Proportions for Normal and Heavyweight Concrete," ACI 211.1.
3. For each water-cement ratio, at least three (3) specimens age to be tested shall be made and cured in accordance with "Method of Making and Curing Concrete Test Specimens in the Laboratory," ASTM C-192, and tested for strength at 28-days, or at any earlier or later age specified. The tests shall be conducted in accordance with "Method of Test for Compressive Strength of Cylindrical Concrete Specimens," ASTM C-39.
4. From the results of these tests, a curve shall be plotted showing the relationship between water-cement ratio and compressive strength. The water-cement ratio to be used in the proposed mix design shall be that which achieves an average strength 1200 psi above the specified strength,  $f'_c$ .

<b>Maximum Permissible Water-Cement Ratios, by Weight</b>			
<b>Type</b>	<b>Specified by 28-Day Compressive Strength in psi</b>	<b>Non-Air Entrained Concrete</b>	<b>Air Entrained Concrete</b>
A	3300	0.55	0.44
B	4000	-	0.35
C	2000	0.76	0.62

Concrete subjected to deicers shall have a maximum water-cement ratio of 0.45. If the concrete is designed to be watertight, it shall have a maximum water-cement ratio of 0.48.

K. The Contractor shall submit supporting data for his proposed mix design for approval.

### 3.02 MIXING CONCRETE

- A. General: Ready-mixed concrete shall be mixed and delivered in accordance with ASTM C-94, "Standard Specifications for Ready-Mixed Concrete," modified as follows:
1. During a continuous placement, the interval between loads shall not exceed twenty (20) minutes, or be so great that the concrete in place becomes partially hardened.
  2. Water used to flush the mixer or agitator between loads shall not become a part of the concrete in the work.
  3. Concrete shall be obtained from a batch plant currently approved by the Pennsylvania Department Of Transportation (PENNDOT).
  4. Truck mixers shall be the revolving drum type equipped with a water mixing tank. Only the prescribed amount of mixing water shall be placed in the tank for the batch type and size unless the tank is equipped with a device to allow the Engineer to read the amount of water added and his approval is given.
  5. The Contractor shall prepare delivery tickets for every ready-mixed concrete load delivered. If a laboratory representative is inspecting the batching operation, he shall prepare the ticket. Otherwise the batch plant operator shall prepare the ticket. Truck drivers shall deliver the tickets to the Engineer at the site at the time of delivery. The tickets shall contain the following information:
    - a. The number of yards delivered on the truck.
    - b. The quantities of materials in the batch.
    - c. The time at which the truck left the batching plant.
    - d. The time at which the cement was added.
    - e. The outdoor temperature in the shade.
    - f. The numerical sequence of the delivery.
    - g. The date.
- B. Batch Mixing at the Site:
1. The concrete shall be mixed in a batch mixer conforming to the requirements of the Mixer Manufacturers Bureau of the Associated General Contractors of America. The mixer shall bear a manufacturer's rating plate indicating the rated capacity and the recommended revolutions per minute and shall be operated in accordance with these recommendations. It shall be equipped with a suitable charging hopper, water storage tank, and a water-measuring device, it shall be capable of thoroughly mixing the aggregates, admixtures, cement, and water into a uniform mass within the specified mixing time, and it shall be capable of discharging the mix without segregation.
  2. All liquid admixtures shall be dispensed by means of an automatic dispenser or similar metering device. Powdered admixtures shall be weighed or measured by volume as recommended by the manufacturer. The accuracy of the measurement of any admixture shall be within  $\pm 3\%$  of the quantity used.
  3. The batch shall be charged into the mixer so that some water will enter in advance of the cement and aggregates. Water shall continue to flow for a period which may extend to the end of the first twenty-five percent (25%) of the specified mixing time. Controls shall be provided to ensure that no additional water may be added during mixing. The entire batch shall be discharged before the mixer is recharged.
  4. Each batch of two cubic yards (2 C.Y.) or less shall be mixed for not less than one and one-half ( $1 \frac{1}{2}$ ) minutes. The mixing time shall be increased fifteen (15) seconds for each additional cubic yard or fraction thereof.
  5. The mixer shall be clean and the pick-up and throw-over blades on the drum shall be replaced when they have lost ten percent (10%) of their original depth.
- C. Re-tempering and Changing Slump
1. The concrete shall be mixed only in quantities for immediate use. Concrete which has set shall not be re-tempered, but shall be discarded.
  2. The addition of water to increase the slump shall be prohibited. Ingredients shall be cooled before mixing, or well-crushed ice may be substituted for all or part of the mixing water if, due to high temperature, deemed necessary by the Engineer.

D. Cold Weather

1. To maintain the temperature of the concrete above the minimum placing temperature, the as-mixed temperature shall not be less than 55°F when the mean temperature falls below 40°F.
2. If the water or aggregate has been heated, the water shall be combined with the aggregate in the mixer before the cement is added. Cement shall not be added to the mixture of water and aggregate when the temperature of the mixture is greater than 100°F.

E. Hot Weather

1. The ingredients shall be cooled before mixing, if necessary, to maintain the temperature of the concrete below the maximum placement temperature of 90°F.

3.03 PLACING CONCRETE

A. General

1. The placement of the concrete shall be done in accordance with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," except as modified or revised by these Specifications.

B. Preparation Before Placing

1. Hardened concrete and foreign materials shall be removed from the inner surfaces of the conveying equipment.
2. Chutes shall be metal or metal-lined.
3. If two or more lengths of chute are used, they shall have approximately the same slope. Slopes shall neither exceed one vertical to two horizontal (1V:2H), nor be less than one vertical to three horizontal (1V:3H).
4. If the distance of the discharge end of the chute above the surface of the concrete is more than three (3) times the thickness of the layer being deposited, or more than four feet (4') total, a spout shall be used as practical. When operation is intermittent, the chute shall discharge into a hopper.
5. The chute shall be thoroughly cleaned before and after each run and the debris from any water used shall be discharged outside the forms.

C. Placing

1. The concrete shall be deposited continuously or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or places of weakness within the section.
2. If a section cannot be placed continuously, construction joints shall be located at approved points.
3. Placement shall be carried on at such a rate that the concrete which is being integrated with the fresh concrete is still plastic. Concrete which has partially hardened, or has been contaminated by foreign materials, shall not be deposited.
4. Concrete shall be deposited into the forms as nearly as practical in its final position to avoid re-handling.
5. Temporary spreaders in the forms shall be removed when the concrete placement has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval is obtained.
6. Forms for walls or thin sections of considerable height shall be provided with openings or other devices that will prevent the segregation and the accumulation of hardened concrete on the forms or on the metal reinforcement above the level of the concrete.
7. Before depositing new concrete on or against concrete which has hardened and to which it is to bond, the forms shall be retightened. The surface of the hardened concrete shall be roughened in a manner that will not leave loosened particles of aggregate or damaged concrete as the surface. It shall be thoroughly cleaned of foreign matter and laitance, and dampened with water. New concrete shall be placed after the bonding compound has

dried.

8. Where a smooth finish is required, the concrete shall be carefully placed and consolidated to assure a full surface of mortar against the form without the formation of excessive surface voids.
9. Mechanical vibrators shall have a minimum frequency of 8,000 vibrations per minute and be operated by competent workmen. Over-vibration and the use of vibrators to transport concrete within the forms shall not be allowed. Vibrators shall be inserted and withdrawn (approximately vertically) at many points from eighteen inches (18") to thirty inches (30") apart for five to ten (5-10) seconds duration. A spare vibrator shall be kept on the job site during all concrete placement operations.
10. The accumulation of water on the surface of the concrete due to water gain, segregation, or other causes during placement and consolidation shall be prevented as far as possible by adjustments in the mixture. A provision shall be made for the removal of such accumulated water so that under no circumstances will the concrete be finished with such "bleed water" on the surface.
11. Unless adequate protection is provided, or prior approval is obtained from the Engineer, concrete shall not be placed during rain, sleet, or snow.
12. Rainwater shall not be allowed to increase the mixing water, or to damage the surface finish.

#### D. Cold Weather Placing

1. Concrete shall be placed in cold weather in accordance with ACI 306, "Recommended Practice for Cold Weather Concrete," except as modified or revised below:
  - a. Before placing concrete during cold weather, the forms shall be free from frost and ice.
  - b. During those seasons of the year (after the first frost in the fall and until the daily mean temperature in the spring reaches 40°F for three (3) successive days) when freezing temperatures can be anticipated, the Contractor shall maintain facilities to keep the concrete from freezing for at least forty-eight (48) hours after placement.
  - c. When the daily mean temperature drops below 40°F for more than one (1) day, the concrete shall be maintained at a temperature of 55°F for a minimum of five (5) days. During this period, the concrete and adjacent form surfaces shall be kept moist at all times. When heating enclosures are to be provided, care shall be taken to provide adequate space around the outer edges and the top of the concrete structure to permit the circulation of the heater air so that neither freezing nor excessive heating of these extremities can occur. The method proposed for protection must have the approval of the Engineer, and all facilities for protection and heating must be on-hand before the concrete is placed.
  - d. A specified noncorrosive accelerator may be used when approved by the Engineer.
  - e. After the required protection period is over, the heat shall be removed gradually so that

a temperature differential of not more than 40°F will occur over the first twenty-four (24) hours.

- f. The forms shall not be removed from the concrete surfaces during the protection period stipulated above, nor shall the forms be removed for a period of three (3) days during those seasons of the year previously specified when the difference between the daily high and low temperatures may reasonably be expected to exceed 40°F.

E. Hot Weather Placing

1. Concrete shall be placed in hot weather in accordance with ACI 305, "Recommended Practice for Hot Weather Concreting," except as modified below:
  - a. At air temperatures of 90°F or above, the concrete shall be kept as cool as possible during placement. Exposed concrete surfaces shall be kept continuously moist by wet-curing for at least twenty-four (24) hours after the concrete has been placed. After the period of wet-curing, a suitable heat-reflecting plastic membrane or white-pigmented curing compound may be used.

3.04 REPAIR OF SURFACE DEFECTS

- A. After the forms have been removed, any concrete not formed as shown, or which shows a defective surface which cannot be properly repaired or patched, shall be removed. The adequacy of the surfaces will be governed by the judgement of the Engineer.
- B. All tie holes and repairable defective areas shall be patched immediately after form removal.
- C. All honeycombed and other defective concrete shall be removed to sound concrete, but in no case to a depth of less than one inch (1"). The area to be patched, and an area at least six inches (6") wide surrounding it, shall be dampened to prevent the absorption of water from the patching mortar. The bonding compound "Euco Weld" by the Euclid Chemical Company, or "Weldcrete" by Larson Products, or an approved equal shall be applied. The patching mortar shall be placed after the bonding compound has dried.
- D. The patching mixture shall be made of the same material and of approximately the same proportion as that used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than one part cement to two and one-half parts sand by damp, loose volume.
- E. The quantity of mixing water shall be no more than necessary for handling and placing. Patching mortar shall be mixed in advance and allowed to stand with frequent manipulation with a trowel, without the addition of water, until it has reached the stiffest consistency that will permit placement.
- F. Tie holes shall be cleaned, dampened, and filled solid with patching mortar.
- G. With prior approval of the Engineer as to the method and procedures, the compounds used for all structural repairs shall be "Euco Epoxy #456, #460, or #463" by the Euclid Chemical Company, "Colma Dur Mortar," "Skiadur Hi-Mod L.V.," or "Skiadur Hi-Mod" by Sika Chemical Corporation, or an approved equal.

3.05 FLATWORK

- A. Edge forms and intermediate screed strips shall be set accurately to produce the designed elevations and contours in the finished surface, and shall be sufficiently strong to support vibrating bridge screeds or roller pipe screeds if the nature of the finish specified requires the use of such equipment. The concrete surface shall be aligned to the contours of the screed strips by the use of strike-off templates or approved compacting type screeds.

- B. Concrete in slabs shall be thoroughly consolidated. Internal vibrations shall be used along the bulkheads of slabs on grade. The consolidation of slabs shall be obtained with vibrating bridge screeds, roller pipe screeds, or other approved means. The concrete to be consolidated shall be as dry as practicable and the surfaces shall not be manipulated prior to finishing operations.

### 3.06 CONCRETE FINISH

- A. All concrete surfaces shall be finished as specified as soon after placing the concrete as conditions will permit. The placement of concrete and the removal of forms shall be scheduled so that the finishing of surfaces can be completed as soon as possible without jeopardizing the structure. No cement plaster or cement brush coats will be acceptable.
- B. Formed concrete surfaces which are not exposed to view in the finished work shall be finished by removing the form ties below the surface of the concrete, pointing up, and rubbing down to remove fins and irregularities and leave a reasonably smooth surface.
- C. Formed concrete surfaces exposed to view in the finished work shall be finished by removing the forms as early as is practical, immediately removing the form ties to a depth of at least three-quarters of an inch (3/4") beneath the surface, pointing up the holes, filling all cavities and depressions with a cement mortar similar to that in the concrete, and finishing flush with a wood float or trowel.
- D. Cement mortar shall not be applied except to fill holes or cavities.
- E. Fins, form marks, projections, and uneven spots shall be removed by rubbing or grinding the surfaces. The entire surface of the concrete shall then be thoroughly drenched with water and rubbed with a carborundum brick or other approved abrasive until all fins, joint marks, and mortar spots have been eliminated and a smooth finish of uniform texture and appearance has been produced.
- F. Similar finishes on exterior exposed walls shall be carried one foot (1') below finished grade. All exposed concrete surfaces shall be required to present a smooth and uniform surface.
- G. Concrete for slabs shall be placed, consolidated, struck off, and leveled to established grade. After the surface has stiffened sufficiently to permit the operation and the water sheen has disappeared, the Contractor shall float the surface at least twice to a uniform sandy texture. Where required, the surface shall then be troweled, at least twice, to a smooth, hard, dense finish. The floating operation shall not begin until all excess water has been removed or evaporated.
- H. All interior floors and platforms exposed to view shall receive a steel trowel finish.
- I. All exterior slabs, sidewalks, etc. shall receive a broomed finish after the surface has received a float finish. The texture shall be as directed by the Engineer.

### 3.07 CURING AND PROTECTION

- A. Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures and maintained at a relatively constant temperature without drying for a period of seven (7) days, or for a longer time if necessary for the hydration of the cement and proper strength gain.
- B. Initial curings shall immediately follow the finish operation. The concrete shall be kept continuously moist for at least twenty-four (24) hours.
- C. Immediately following the initial curing and before the concrete has dried, additional curing shall be accomplished by one (1) of the following materials or methods:



1. Continuing the method used in the initial curing.
  2. Building paper or polyethylene sheeting as specified.
  3. Liquid membrane-curing compound, except on surfaces to receive coatings or additional lifts of concrete. Curing compounds conforming to "Specifications for Liquid Membrane-Forming Compounds for Curing Concrete" (ASTM C-309). Such compounds shall be applied in accordance with the recommendations of the manufacturer and shall not be used on any surfaces against which additional concrete or other cementitious finishing materials are to be bonded, or on surfaces on which such curing is prohibited by these Specifications.
- D. Final curing shall continue until the temperature of the air in contact with the concrete is above 50°F for seven (7) cumulative days.
- E. If high early strength concrete has been used, these temperatures need only to be maintained for three (3) days.
- F. Rapid drying at the end of the curing period shall be prevented.
- G. During the curing period, the concrete shall be protected from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration. All finished concrete surfaces shall be protected from damage caused by construction equipment, materials or methods, and by rain or running water. Self-supporting structures shall not be loaded in such a way to overstress the concrete.

### 3.08 FORMWORK

- A. All formwork shall be as required in ACI 347, "Recommended Practice for Concrete Formwork" except as modified below:
1. Forms shall conform to the shape, lines, grades, and dimensions of the concrete as called for in the Drawings. All lumber used for forms shall be thoroughly cleaned and treated with an approved form oil. Lumber forms used for exposed surfaces shall be dressed to a uniform thickness and be free from loose knots or other defects. For unexposed surfaces and rough work, undressed lumber free of nails and cleaned of hardened concrete or other foreign material may be used. Lumber once used in forms shall have any nails withdrawn and all surfaces to be in contact with the concrete shall be thoroughly cleaned before being used again. Forms for all exposed concrete shall be carefully built to produce the contour and design indicated. Care shall be taken to ensure that all form joints are vertical or horizontal. No sloping joints will be accepted.
- B. Form sheathing for exposed surfaces shall be composed of tongue and groove lumber, shiplap, plywood, concrete form board, or steel.
- C. Steel lining of wood lagging will not be permitted. When used, tongue and groove shiplap shall conform to the American Lumber Standards for No. 2 boards.
- D. Plywood used for sheathing or lining shall be Grade B-B, exterior or better, as described in the Commercial Standards of the Douglas Fir Plywood Association.
- E. The forms used shall produce a concrete surface with "abrupt" irregularities less than one-quarter inch (1/4") and gradual irregularities less than one-half inch (1/2") in five feet (5').
- F. Where circular or curved surfaces with radii greater than ten feet (10'0") will be exposed to view, the forms may be constructed of panels with a maximum width of twelve inches (12").
- G. For small radius curves of ten feet (10'0") or less, the forms shall be circular, conforming to the true shape of the structure.

- H. Forms shall be sufficiently tight to prevent the leakage of mortar. They shall be properly braced or tied together to maintain the desired position and shape during and after the placement of concrete, and so that they will not tremble or distort in a high wind.
- I. Embedded metal rods of a design approved by the Engineer shall be used for internal form-ties. They shall be so designed and arranged that when the forms are removed, no metal shall be within three-quarters of an inch (3/4") of any concrete surface. The ties used shall be manufactured in such a way that their installation will not necessitate a hole in the form larger than the tie-rod. Ordinary wire ties and ties that require removal from the concrete will not be permitted. Wall ties shall be submitted to the Engineer for approval prior to use on the job.
- J. Form surfaces shall be prepared as follows:
  - 1. Forms shall be sufficiently tight to prevent the leakage of grout or cement paste. Board forms whose joints have opened by the shrinkage of wood shall be swelled by wetting until closed before the concrete is placed.
  - 2. Plywood and other wood surfaces not subject to shrinkage shall be sealed against the absorption of moisture from concrete by either:
    - a. A field applied commercial form oil or sealer.
    - b. A factory applied nonabsorptive line. Excess oil sealers shall be removed prior to the placement of concrete.
  - 3. When steel forms are coated to prevent bonding with the concrete, it shall be done prior to placing reinforcing steel. Excess material shall not be allowed to stand in puddles in the forms, nor shall it be allowed to come in contact with the concrete or reinforcing against which fresh concrete will be placed.
  - 4. Where cast finishes are required, materials which will impart a stain to the concrete shall not be applied to the form surfaces. Where the finished surface is required to be painted, the material applied to the form surfaces shall be compatible with the type of paint to be used. All form surfaces shall be cleaned before reuse.
- K. No form or form support shall be removed from the formed surface for at least twenty-four (24) hours. Exposed surfaces shall receive moisture curing as soon as the fresh concrete will accept it without damage. The forms shall be removed in such a manner as to insure the complete safety of the structure. The responsibility for the removal of the forms shall be with the Contractor. However, the following minimum requirements shall be adhered to:
  - 1. In cold or inclement weather, the requirements for the removal of the forms shall be as stated in the article under "Placing Concrete in Cold Weather."
  - 2. Forms for supporting reinforced concrete roofs or floors shall not be removed, nor shall form supports be slackened for a period of 28-days, unless the Contractor can produce satisfactory evidence that the concrete has attained the specified 28-day strength characteristics.
  - 3. Portions of the structure subjected to construction loads or backfill shall have attained sufficient strength to withstand these loads, and the Contractor shall be required to produce evidence that such strength has been attained.
  - 4. No construction loads exceeding the structural design loads shall be supported upon any unshored portion of the structure under construction.
- L. Evidence that the concrete has attained sufficient strength for the above conditions shall consist of reports of compression tests made on job-cured cylinders.
- M. In case the Contractor shall remove any form or slacken any support before the above conditions have been met, the concrete elements may be condemned even though there is not an apparent defect.

### 3.09 REINFORCEMENT

- A. Reinforcing bars shall conform to the requirements of ASTM A-615 "Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement." All reinforcing bars shall be Grade 60 unless otherwise noted on the Drawings.
- B. Welded wire fabric for concrete reinforcement shall be electrically welded wire fabric of cold-drawn wire conforming to ASTM A-185, "Specification for Welded Steel Wire Fabric for Concrete Reinforcement."
- C. Reinforcement shall be accurately formed to the dimensions indicated on the Drawings. Stirrups and tie bars shall be bent around a pin having a diameter not less than two (2) times the minimum thickness of the bar except for hooks. Bends for other bars shall be made around a pin having a diameter not less than six (6) times the minimum thickness, except for bars larger than one inch (1"), in which case the bend shall be made around a pin of eight (8) bar diameter. All bars shall be bent cold.
- D. Bars used for concrete reinforcement shall meet the following requirements for fabricating tolerances:
  - 1. Sheared length:  $\pm 1$  inch
  - 2. Depth of truss bars:  $+0, -1/2$  inch
  - 3. Stirrups, ties, and spirals:  $\pm 2$  inch
  - 4. All other bends:  $\pm 2$  inch
- E. Metal reinforcement shall not be straightened or re-bent in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating the reinforcement will not be permitted.
- F. Metal reinforcement shall be accurately positioned in accordance with the information on the Drawings and it shall be secured against displacement by using annealed iron wire ties or suitable clips at intersections, and it shall be supported by concrete or metal supports, spacers, or metal hangers.
- G. Bars shall be placed to the following tolerances:
  - 1. Concrete cover to formed surfaces:  $\pm 1/4$  inch
  - 2. Minimum spacing between bars:  $\pm 1/4$  inch
  - 3. Top bars in slabs and beams:
    - a. Members 3 inches deep or less:  $\pm 1/4$  inch
    - b. Members more than 8 inches but not over 2 feet deep:  $\pm 2$  inch
  - 4. Crosswise of members: Spaced evenly with 2 inches
  - 5. Lengthwise of members:  $\pm 2$  inches
  - 6. 3-inch members more than 2 feet deep:  $\pm 1$  inch
- H. Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items. If the bars are moved more than one (1) bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be subject to the approval of the Engineer.

- I. If it is necessary to splice the reinforcement at points other than those shown on the Drawings, the character of the splice shall be determined by the Engineer. The overlap in splices shall be 40 bar diameter.
- J. Welded wire fabric shall be lapped at least one and one-half ( $1 \frac{1}{2}$ ) meshes plus the end extension of the wires, but not less than twelve inches (12") in structural slabs. It shall be lapped at least one half ( $1/2$ ) mesh plus the end extension of the wires, but not less than six inches (6") in slabs on the ground. All laps of wire mesh shall be securely tied together with No. 14 tie wire, one (1) tie for each two running feet (2'). Wires shall be staggered and tied in such a manner that they cannot slip. The mesh shall be extended across supporting beams and walls. Adequate support for the mesh shall be used during the placement of concrete so that the mesh is completely surrounded by concrete and not less than two inches (2") above the bottom of the slabs on the ground, or one-half inch ( $1/2$ ") above the formwork.
- K. Before being positioned, the metal reinforcement shall be free from loose mill and rust scale, and from coatings, including ice and form oil, that destroy or reduce the bond. Where there is a delay in depositing the concrete, the reinforcement shall be reinspected and cleaned where necessary.
- L. Unless permitted, the reinforcement shall not be bent after being partially embedded in hardened concrete.

### 3.10 JOINTS AND EMBEDDED ITEMS

#### A. Construction Joints

- 1. Joints shall be so made and located as to least impair the strength of the structure and shall be approved. In general, they shall be located as shown on the Drawings; however, if not shown, in no case shall construction joints be placed at intervals greater than twenty-five feet (25'). Joints shall be perpendicular to the main reinforcement.
- 2. All reinforcing steel and mesh shall be continued across construction joints not intended for expansion or contraction of the structure. Additional reinforcing shall be provided as directed by the Engineer.
- 3. The surface of the concrete at all joints shall be thoroughly cleaned and all laitance shall be removed.
- 4. For structural members, when required or permitted, bond shall be obtained by one of the following methods:
  - a. Use of the bonding compound "Euco Weld" by Euclid Chemical Company or "Weldcrete" by Larson Products.
  - b. Use of the surface retarder "Surface Retarder-F" by Sika Chemical Corporation, which delays but does not prevent the setting of surface mortar. Retarded mortar shall be moved within twenty-four (24) hours after placement to produce a rough exposed aggregate bonding surface.
  - c. By roughening the surface of the concrete in an approved manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface.

#### B. Expansion Joints

- 1. Expansion joint locations shall be as shown on the Drawings; however, if not shown, in no case shall expansion joints be placed at intervals greater than seventy-five feet (75').
- 2. Reinforcement or other embedded metal items bonded to concrete shall not be permitted to extend continuously through expansion joints.
- 3. Pre-molded expansion joint filler shall be of the size shown on the project drawings, and shall conform to "Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction," (ASTM D-1752).

C. Other Embedded Items

1. All sleeves, inserts, anchors, and embedded items with the exception of the railing posts required for adjoining work, or for its support, shall be placed prior to concreting.

D. Placing Embedded Items

1. Expansion joint material and 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.

3.11 CONCRETE SEALANT

A. This work shall consist of furnishing and application of concrete acrylic polymer upon all new concrete.

B. Sealant shall be Cure & Seal 25 UV EX by SPECICHEM, LLC or approved equal.

C. APPLICATION AND STANDARDDDS

1. Refer to Technical Data for more information.
2. Refer to Material and Safety Datasheet for more information.

**END OF SECTION 03 3001**

## **SECTION 03 41 00 – PRECAST STRUCTURAL CONCRETE**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes precast concrete units that are cast in other than their permanent location, by a manufacturer listed in PennDOT Bulletin 15.
- B. Shop drawings for all precast units shall be submitted to Owner or their designee for review.
- C. Work shall be conducted in accordance with the Drawings, General Conditions, and the requirements of this Section.

### **PART 2 PRODUCTS - PRECAST CONCRETE UNITS**

- A. Approved manufacturing plants may fabricate any of the following items:
  - 1. Concrete barrier
  - 2. Reinforced concrete manhole sections w/ protective Bitumastic Coating
  - 3. Eccentric precast manhole top units
  - 4. Inlet Boxes
  - 5. Concrete Top Units for Inlet Boxes
  - 6. Junction boxes
  - 7. Median barrier
  - 8. Endwalls
- B. Any precast concrete units not listed but are required for construction shall be approved by Owner or their designee.
- C. Material:
  - 1. Cement Concrete – PennDOT Pub. 408, Section 704, except Sections 704.1(d)3., 704.1(d)4., and 704.2(d). Requirements for remediation of a potential alkali-silica reaction do not apply for cement concrete used in the fabrication of precast concrete barrier that is to be used in temporary installations only, as specified in Section 627, and indicated as such, as specified in Section 714.6(d).
  - 2. Coarse Aggregate, Type A, No. 8, No. 57, or No. 67 - PennDOT Pub. 408, Section 703.2
  - 3. Fine Aggregate, Type A - PennDOT Pub. 408, Section 703.1
  - 4. Concrete Curing Material - PennDOT Pub. 408, Sections 711.1 and 711.2(a), Type 1-D, translucent with red fugitive dye.
  - 5. Reinforcement Steel - PennDOT Pub. 408, Section 709. Epoxy coated or galvanized reinforcement bars or epoxy coated or galvanized welded wire fabric are not required for the fabrication of precast concrete barrier that is to be used in temporary installations only, as specified in Section 627, and indicated as such, as specified in Section 714.6(d).
  - 6. Steel Anchor Bolts - PennDOT Pub. 408, Section 1105.2(c)
  - 7. Metal Units—Sections 605.2(a) and (b)
  - 8. Manhole Steps—Section 605.2(c)
  - 9. Protective Coating (Boiled Linseed Oil)—Section 503.2

**END OF SECTION**



## **SECTION 03 6001 – GROUTING**

### **PART ONE – GENERAL**

#### **1.01 SUMMARY**

- A. Section includes high strength, non-metallic, Portland cement based non shrink grout.
- B. Related Sections: Other specification sections which relate directly to the work of this section include the following:
  - Section 033000: Cast-In-Place Concrete
- C. Work shall be conducted in accordance with the Drawings, General Conditions, and the requirements of this Section.

#### **1.02 SUBMITTALS**

- A. Product Data: Submit manufacturer's product data and installation for each material and product used. Include manufacturer's Material Safety Data Sheets.

#### **1.03 REFERENCES**

- A. ASTM C 109: Compressive Strength of Hydraulic Mortars.
- B. ASTM C 191: Setting Time of Hydraulic Cement.
- C. ASTM C 827: Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.
- D. ASTM C 939: Flow of Grout for Preplaced – Aggregate Concrete (Flow Cone Method)
- E. ASTM C 1107: Packaged Dry, Hydraulic Cement Grout (Non-Shrink)
- F. ASTM C 488: Pull-Out Strength
- G. Army Corps of Engineers CRD – 621: Non-Shrink Grout

#### **1.04 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications: The manufacturer shall be a company with at least fifteen years of experience in the manufacture of pre-packaged cementitious repair materials.
- B. Installer's Qualifications: The contractor shall be qualified to perform the work specified by reason of experience.

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

- A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.
- B. Store products in a dry area. Protect from direct sunlight.
- C. Handle products in accordance with manufacturer's printed recommendations.

### **PART 2 – PRODUCTS**

#### **2.10 MATERIALS**

- A. High Strength, Non – Metallic, Portland Cement Based Non-Shrink Grout. Comply with the following:



1. Manufacturer: Precision Non-Shrink Grout (No. 1585-00), General Purpose Grout (No. 1585-01), as manufactured by the QUIKRETE® Companies or Equal.
2. Performance and Physical Properties at 73 degrees F and 50 percent relative humidity:
  - a. Non-Shrink Grout: Precision Non-Shrink Grout
    - 1) Compliance: ASTM C 1107; CRD 621
    - 2) Working Time, ASTM C: 25 minutes @ 50°F (10°C), 25 minutes @ 73°F (23°C), 15 minutes @ 90°F (32°C).
    - 3) Compressive Strength, ASTM C: 109 Modified
 

Plastic: 3000 psi (20.7 MPa) @ 24 hours, 9500 psi (65.5 Mpa) @ 3 days, 10,000 psi (68.9 MPa) @ 7 days, 14,000 psi (96.5 MPa) @ 28 days.

Flowable: 3000 psi (20.7 MPa) @ 24 hours, 9000 psi (62.1 MPa) @ 3 days, 9,500 psi (65.5 Ma) @ 7 days, 12,500 psi (86.2 MPa) @ 28 days.

Fluid: 2500 psi (17.2 MPa) @ 24 hours, 5000 psi (34.5 MPa) @ 3 days, 6000 psi (41.4 MPa) @ 7 days, 8000 psi (55.2 MPa) @ 28 days.
    - 4) Height Change, ASTM C 1090: 0 – 0.2% at 1, 3, 7 and 28 days
    - 5) Pull out Strength, ASTM C 488: 35,000 psi (241 MPa) (1 1/4" (31 mm) bolts embedded 9" (225 mm) deep in 3" (75 mm) hole in 2000 psi (13.8 MPa) concrete)
  - b. Non-Shrink Grout: General Purpose Non-Shrink Grout
    - 1) Compliance at 73°F (23°C): ASTM C 1107
    - 2) Working time at 73°F: > 10 min
    - 3) Compressive Strength, ASTM C 109 Modified:
 

Plastic: 3000 psi (20.7 MPa) @ 1 day, 9000 psi (62.0 MPa) @ 7 days, 10,000 psi (68.9 Mpa) @ 28 days.

Flowable: 3000 psi (20.7 Mpa) @ 1 day, 8000 psi (55.1 MPa) @ 7 days, 9,000 psi (62.0 MPa) @ 28 days.

Fluid: 2000 psi (13.8 MPa) @ 1 day, 6000 psi (41.3 MPa) @ 7 days, 8000 psi (55.1 MPa) @ 28 days.
    - 4) Height Change, ASTM C 1090: 0 – 0.2% at 1, 3, 7 and 28 days.

## PART 3 – EXECUTION

### 3.10 EXAMINATION

- A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas landscaping from contact due to mixing and handling of materials.

### 3.20 SURFACE PREPARATION

Comply with manufacturer's printed instructions and the following:

- A. Clean surface to receive grout of all materials including dust, oil, dirt, and grease or Efflorescence.

B. Dampen with clean water before patching and remove standing water.

### 3.30 FORMS

Comply with manufacturer's printed instructions and the following:

A. Forms must be water tight, strong, properly braced, and properly coated.

B. Allow a minimum clearance of 2 inches (50 mm) between forms and baseplate for grout entry.

C. Allow a minimum grout head of 6 inches (150 mm).

D. Slope form on placing side to assist in grout movement and to prevent trapping air.

E. Allow 1 inch (25mm) horizontal clearance and 1 inch (25 mm) vertical clearance for height above bottom of baseplate.

F. Provide venting of forms to avoid entrapment of air.

### 3.40 MIXING

Comply with manufacturer's printed instructions and the following:

A. Material should be mechanically mixed for a minimum of 5 minutes using a five gallon (19L) bucket with a ½" (12mm) drill and paddle mixer. For large grouting applications a standard mortar mixer should be used.

B. Add approximately 1 gallon + 3 pints (5.2L) of clean water for each 50lb (22.7 kg) bag to achieve a fluid consistency. For a Flowable consistency add about 1 Gallon + 1 Pint (4.3L). For a plastic approximately 1 Gallon (3.8L) is needed. Add the powder to the water and mix to a stiff gel-like consistency. Add water sparingly to reach the desired consistency. Do not exceed a flow of 20 seconds per ASTM C 939. Do not mix more material that can be placed in 15 minutes.

A. Do not re-temper with additional water.

### 3.40 APPLICATION

Comply with manufacturer's printed instructions and the following:

A. The area to be grouted should be thoroughly flushed and soaked with clean water prior to grouting. Leave no standing water.

B. Place the grout quickly and continuously use light rodding or strapping to eliminate air bubbles.

C. Grout temperature should be maintained from 50°F to 90°F (10°C - 32°C) to achieve specified results. Use cold water in hot weather or hot water in cold weather to achieve desired grout temperature. Do not use if temperature is expected to go below 32°F (0°C) within a 12 hour period.

### 3.50 CURING

- A. A damp cure of at least 3 days is necessary to control the Non-Shrink characteristics and maintain strength levels.

3.60

#### CLEANING

- A. Remove excess material before material cures. If material has cured, remove using mechanical methods that will not damage substrate.

**END OF SECTION**

## **SECTION 31 05 16 – AGGREGATES FOR EARTHWORK**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes aggregate materials for fill, drainage, and grading purposes.
- B. Work shall be conducted in accordance with the Drawings, General Conditions, Supplementary Conditions, and the requirements of this Section.

#### **1.02 MEASUREMENT AND PAYMENT**

Aggregate: Basis of Measurement: Refer to Contract Pricing.

Basis of Payment: Includes supplying aggregate materials, stockpiling.

#### **1.03 REFERENCES**

- A. American Association of State Highway and Transportation Officials (AASHTO).
  - 1. AASHTO 57.
  - 2. AASHTO 3.
  - 3. AASHTO 1.
- B. American Society for Testing and Materials (ASTM):
  - 1. ASTM D698.
- C. Pennsylvania Department of Transportation (PennDOT) Publication:
  - 1. 408 Specifications, latest edition.

#### **1.04 SUBMITTALS**

- A. Product Requirements: Submittal procedures.
- B. Materials Source: Submit name of imported materials suppliers.
- C. Submit test results of quality requirements in accordance with Section 703.2(c) of the PennDOT Publication 408 Specifications.

#### **1.05 QUALITY ASSURANCE**

- A. Maintain one copy of PennDOT Publication 408 standards on site.
- B. Perform Work in accordance with Commonwealth of Pennsylvania Department of Transportation's standards.
- C. Perform Work in accordance with ASTM standards.
- D. Perform Work in accordance with AASHTO standards.
- E. Geotechnical Engineer shall be on site during earthwork operations per the requirements of the geotechnical report.

PART 2 PRODUCTS

2.01 COARSE AGGREGATE MATERIALS

- A. Select Stone Fill:
  - 1. Materials: AASHTO #57, AASHTO #3, AASHTO #1.
  - 2. Applications:
    - a. Pipe bedding for perforated drainage pipe.
    - b. Filter aggregate.
  - 3. Quality: Stone shall be a coarse aggregate material and shall comply with AASHTO #57, AASHTO #3, AASHTO #1, and Section 703.2(c) of the PennDOT Publication 408 Specifications.
  
- B. Select Coarse Aggregate:
  - 1. Materials: PennDOT 2A, 6" x 0".
  - 2. Applications:
    - a. Compacted in areas of over excavation in load bearing areas.
    - b. Impervious Fill Material
    - c. Aggregate base course
  - 3. Quality: Crushed stone or gravel aggregate conforming to Select Coarse Aggregate, Section 703.3. Publication 408 Specifications, plus the following supplement to "Table C":

AASHTO NUMBER	TOTAL PERCENT PASSING													
	4"	3 1/2"	2 1/2"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#100	#200
6" x 0"	95-100				30-75		20-50		10-30			0-10		

2.02 SOURCE QUALITY CONTROL

- A. Quality Requirements: Testing and inspection services.
- B. When tests indicate materials do not meet specified requirements, the Contractor shall at their expense change material or material source and retest.
- C. Furnish materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 STOCKPILING

- A. All trades shall coordinate location of stockpile materials on site with all trades and in accordance with approved Erosion and Sedimentation Control Plan.
- B. Separate differing materials with dividers or stockpile apart to prevent mixing.
- C. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.
- D. Stockpile materials on impervious material and cover to prevent erosion and leaching, until disposed of.

- E. Remove and relocate any stockpiles that interfere with construction work at no additional cost to The Owner.

### 3.02 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition; grade site surface to meet proposed grades and to prevent freestanding surface water.
- B. Unless noted otherwise, restore stockpile area to condition existing prior to start of Work, and matching adjacent surfaces.

**END OF SECTION 31 0516**

## **SECTION 31 05 19 - GEOTEXTILES FOR EARTHWORK**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes classification and usage for Geotextile Materials.
- B. Work shall be conducted in accordance with the Drawings, General Conditions, Supplementary Conditions, and the requirements of this Section.

#### **1.02 MEASUREMENT AND PAYMENT**

- A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.
- B. Geotextiles:
  - 1. Basis of Measurement: Per contract bid of lump sum
  - 2. Basis of Payment:
    - a. Includes materials, equipment, installation, and testing of geotextile material.
    - b. No allowance will be made for overlaps.

#### **1.03 REFERENCES**

- A. Pennsylvania Department of Transportation (PennDOT) Publication:
  - 1. 408 Specifications, Section 212, latest edition.

#### **1.04 SUBMITTALS**

- A. Product Requirements: Submittal procedures.
- B. Materials Source: Submit Geotextile Shop Drawings and Specification from supplier.

#### **1.05 QUALITY ASSURANCE**

- A. Maintain one copy of PennDOT Publication 408 standards on site.
- B. Perform Work in accordance with Commonwealth of Pennsylvania Department of Transportation's standards.
- C. Perform Work in accordance with ASTM standards.
- D. Perform Work in accordance with AASHTO standards.
- E. Geotechnical Engineer shall be on site during earthwork operations per the requirements of the geotechnical report.

## PART 2 MATERIALS

### 2.01 MATERIALS

- A. Use geotextiles as specified in Section 735 for the specified class and type.
- B. For bedding use open-graded stone conforming to the requirements of Type C or better aggregate, as specified in Section 703.2, except do not use No. 2-A or No. 10 coarse aggregate.
- C. Use BioSTAKEs by North American Green 10.16 cm (4") or 15.24 cm (6") long. If permitted, alternate securing devices may be used. Certify as specified in Section 106.03(b)3.
- D. Use cover material as specified or indicated the Construction Plan Typical Details.
- E. Quality Requirements: Testing and inspection services.
- F. When tests indicate materials do not meet specified requirements, the Contractor shall at their expense change material or material source and retest.
- G. Furnish materials of each type from same source throughout the Work.

## PART 3 CONSTRUCTION REQUIREMENTS

### 3.01 CONSTRUCTION

- A. Remove and replace fabric areas damaged during construction. Lap or sew replaced fabric as specified for the class of fabric used. Do not allow traffic or construction equipment on the fabric.
- B. **Class 1—Subsurface Drainage.** Provide smooth side and bottom trench surfaces so the fabric does not bridge depressions in the soil and is not damaged by rock projections. Use fabric of a width to permit a minimum trench-width overlap across the backfill at the trench top. Lay the fabric flat in the prepared trench without stretching. Lay the top of the fabric back on the sides to allow for the placement of the aggregate backfill and pipe. Overlap ends of rolls an amount equal to the trench width before placing fabric. Fill pockets or cavities in the trench bottom or sides with acceptable granular material to prevent distortion or damage to the fabric.

Backfill aggregate and install pipe in a manner to prevent damage to the fabric. Compact aggregate and overlap the fabric across the trench top. Do not allow the fabric to be exposed for more than 2 weeks without covering with aggregate.

- C. **Class 2—Erosion Control.** Use Type A or Type B fabric as indicated or specified. Remove vegetation, large stones, and other debris from the area to be protected and grade the surface to a relatively smooth condition. Undercut areas of soft material and replace with acceptable compacted material, as directed.

Lay the fabric on the prepared area in a loose and unstretched condition to minimize shifting, puncturing, or tearing the fabric. Join adjacent edges and ends with a folded seam and sew using a single lock-type stitch seam or a double chain type stitch seam equivalent in strength to the fabric tensile strength. Sewing may be done on-site or by the manufacturer. Overlap only when directed. Provide a minimum overlap of 300 mm (1 foot). For underwater placement, overlap a minimum of 1 m (3 feet). Offset adjacent roll ends a minimum of 1.5 m (5 feet) when lapped.



Lay and overlap the fabric in the direction shown in Table A for the indicated use.

Anchor the fabric in place by BioSTAKES or other acceptable methods, along sewn seams or overlaps, at the spacing shown in Table B. Place securing pins on a maximum 1.8 m (6 foot) grid on the unsewn or unlapped portions of the fabric.

Eliminate stakes for slopes flatter than 1:6 (6:1), provided that aggregate, rock, or other acceptable means are used to secure the fabric.

**Table A – Fabric Placement**

Operation	Slope Stabilization, Runoff Protection, and Internal Seepage Piping	Stream Slope Protection	Wave Protection
Direction of Fabric	Up and down (Parallel with slope direction)	Parallel to stream flows from upstream to downstream	Up and down (parallel with slope direction)
Overlap Direction	Upslope over downslope	Upstream over downstream and upslope downstream	Upslope over downslope

**Table B – Securing Pin Spacing\***

Slope	Steeper Than 1:3 (3:1)	1:4 (4:1)	Flatter Than 1:4 (4:1)
Stake spacing along sewn seams	0.6 m (2 feet)	1 m (3 feet)	1.5 m (5 feet)

\*Place additional stakes to secure unlapped portions as specified.

Cover the fabric with the covering material as soon as possible. Do not expose the fabric for more than 4 weeks for Type A and 2 weeks for Type B. Prevent slippage of the cover material on the fabric.

Do not drop rocks, 600 mm (2 feet) or larger in dimension, directly on the fabric from a height greater than 300 mm (1 foot). Do not allow the rock placement procedure to puncture or damage the fabric. Use a minimum 150 mm (6-inch) layer of bedding stone and a greater drop-height combination if the combination produces the placement, thickness, gradation and fabric integrity requirements, and if permitted.

- D. **Class 3—Sedimentation Control.** Use Type A or B fabric as indicated or specified. Install as specified in Section 865.3.
- E. **Class 4—Layer Separation (Type A).** Use to separate the subgrade and other layers. Place the fabric on a prepared subgrade area covering the full width of the subbase layer being protected. Place fabric in a loose and unstretched condition to minimize shifting, puncture, and/or tearing of the fabric. Overlap fabric roll-ends and edges a minimum of 300 mm (12 inches) with adjacent material. Place subbase material within 2 weeks after placement of fabric to minimize exposure. Place subbase material in a manner to minimize slippage of the fabric. Use steel securing pins, as specified in Section 212.2, at a maximum spacing of 1.8 m (6 feet) if excessive slippage occurs.

- F. **Class 4—Stabilization (Type B).** Fine grade the subgrade as specified in Section 210.3(c), as indicated, and in compliance with the cross sections. Remove any object that may puncture the geotextile. Roll out the geotextile over the prepared subgrade as indicated. Place the geotextile free of wrinkles. Do not drag the geotextile on the ground during placement or handling. Overlap parallel rolls or intersecting rolls a minimum of 610 mm (2 feet) in the direction of fill. For curves fold and overlap the geotextile in the direction of the turn. Do not allow any equipment directly on the geotextile until it is covered to full plan depth of subbase. Do not back dump the subbase material directly onto the geotextile. Place subbase material by back dumping then spread the subbase ahead of all equipment at full plan depth. Compact the subbase material with a roller in static mode, if directed. Fill any wheel ruts that form during construction with additional subbase to maintain plan profile. Do not remove the wheel ruts by blading the wheel ruts level.
- G. **Class 4—Reinforcement (Type C).** Section 212.3(f) except as follows: For a subgrade with a CBR value of 0.5 or lower, overlaps must be stitched. Use a 401 lock chain stitch seam with a 100 mm (4-inch) lap.

**END OF SECTION 31 0519**

## **SECTION 31 1000 - SITE CLEARING**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes removal of surface debris; removal of above-ground improvements including paving and curbs; protection of trees to remain; removal of trees, shrubs and other plant life; clearing and grubbing; topsoil excavation; and disposal of material.
- B. Work shall be conducted in accordance with The Drawings, General Conditions, and the requirements of this Section.
- C. Related Sections:
  - 1. Section 01 5000 – Temporary Facilities and Controls
  - 2. Section 31 0513 – Soils for Earthwork
  - 3. Section 31 2323.13 – Backfill

#### **1.02 DEFINITIONS**

- A. Clearing is defined as the removal of trees, brush, downed timber, rotten wood, rubbish, any other vegetation and objectionable material at or above original ground elevation not designated to be saved; clearing also includes removal of fences, walls, guide posts, guide rail, signs and other obstructions interfering with the proposed Work.
- B. Grubbing is defined as the removal from below the surface of the natural ground of stumps, roots and stubs, brush, organic materials and debris.
- C. Existing topsoil is defined as fertile, friable, loamy soil, containing a minimum of 2% of dry organic matter; free from subsoil, roots, refuse, weeds, stones larger than 1 inch and other foreign material. Existing topsoil material may require amendments to meet topsoil requirement for finished work.

#### **1.03 MEASUREMENT AND PAYMENT**

- A. Site Clearing:
  - 1. Basis of Measurement: Incidental
  - 2. Basis of Payment: Includes clearing site, loading and removing waste materials from site, applying herbicide to designated plant life

#### **1.04 SUBMITTALS**

- A. Permits for Disposal of Debris:
  - 1. Arrange for disposal of debris resulting from clearing and grubbing to locations outside the landowner's property and obtain written agreements with the owners of the property where the debris will be deposited.
  - 2. Submit two copies of the agreement with each property owner releasing The Owner from responsibility in connection with the disposal of the debris.

#### **1.05 PROJECT CONDITIONS**

- A. Locate, protect, and maintain existing improvements indicated to remain.

- B. Indicated locations related to existing above-grade and below-grade utility services are approximate based on the best sources available; determine exact locations of existing utilities prior to commencing Work. Notify the Construction Manager, Engineer, and the appropriate utility provider immediately should uncharted or incorrectly charted underground utilities be encountered during earthwork operations. Record all existing utility locations verified in the field.
- C. Identify and clearly mark benchmarks. Verify and record benchmark elevations prior to commencing Work. Reestablish or relocate benchmarks disturbed by site work operations at the Contractor's expense.
- D. Restore disturbed areas or damaged improvements to their original grades and conditions, as acceptable to the owner at the Contractor's expense.

## PART 2 PRODUCTS

### 2.01 MATERIALS –NOT USED

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify existing plant material designated to remain.
- B. Contractor to identify waste or salvage areas for placing removed materials that are to be kept on site.

### 3.02 PROTECTION

- A. Locate, identify and protect utilities indicated to remain from damage; piping, conduits, or underground utilities encountered that are not required to be removed shall be temporarily supported and maintained until permanent support has been restored. Utilities damaged during site work operations shall be repaired at the Contractor's expense.
- B. Protect benchmarks, survey control points and existing structures from damage or displacement.
- C. Protect plant materials and existing features designated to remain, as final landscaping.
- D. Protect existing utilities from damage; see Section 01 50 00 for installation of temporary security barriers.
- E. Protection of Existing Plant Material:
  - 1. Plant material to remain shall be protected from injury to their roots, trunks, and branches; maintain protection during the entire construction period.
  - 2. Install tree protection fencing at drip line of existing trees to remain; stake fencing securely in place with posts set at 10'-0" maximum. Erect fencing prior to commencing Work.
  - 3. No material shall be stored or piled within 25 feet of the trunks of any tree.
  - 4. No gasoline, fuel oil, harmful chemical or material shall be spilled on the ground within 150 feet limit.
  - 5. No vehicles shall be permitted in the protected area.

### 3.03 UTILITY DEMOLITION

- A. Inform utility companies, individuals and others owning or controlling facilities or structures within the limits of the Work which have to be terminated and capped off in sufficient time for the utility to organize and perform such Work in advance of the Contractor's operations.
- B. All utility facilities or structures indicated to be removed shall be removed from the terminated utility source by the General Contractor, unless noted otherwise. Removal of certain utilities included under the Work of other Prime Contractors shall be the responsibility of that Contractor as indicated.

### 3.04 UTILITY RELOCATIONS

- A. Inform utility companies, individuals and others owning or controlling facilities or structures within the limits of the Work which have to be relocated, adjusted or reconstructed in sufficient time for the utility to organize and perform such work in conjunction with or in advance of the Contractor's operations.

### 3.05 CLEARING

- A. Remove existing site improvements as indicated on Drawings.
- B. Clear areas required for access to site and execution of Work.
- C. Remove trees and shrubs indicated.
- D. Fell trees by best means with stripping of branches where necessary to prevent damage to other construction, remaining trees or persons.
- E. Grubbing: Remove and dispose of all shrubs, stumps and roots larger than 1-1/2 inches in diameter to full depth in areas occupied by improvements; other areas to depth of 24 inches below proposed subgrades. Use hand method for grubbing within drip line of trees indicated to remain.
- F. Backfill depressions caused by clearing and grubbing with suitable material, unless further earthwork is indicated. Place fill and/or topsoil material in accordance with Section 31 2323.13.
- G. Clear undergrowth and deadwood, without disturbing subsoil.
- H. Remove existing paving and curbs as indicated, including base materials, as required. Neatly saw cut edges at right angle to surface to provide a clean transition between new and existing surfaces. Remove existing pavement as required to form and install new work.
- I. Unless otherwise noted or directed, materials (debris, rock and extracted plant life) resulting from site clearing operations shall be the property of the Contractor, shall not be used in the Work and shall be promptly removed from the site.
- J. Disposal of Material:
  - 1. Refuse: All wood, paper and refuse shall be hauled from site and legally disposed.
  - 2. Wet down all dust and loose debris materials before handling.
  - 3. Do not let debris accumulate; remove daily.
  - 4. On-site refuse chutes and trucks removing the debris must be covered at all times.
- K. Do not burn materials or debris on premises.

- L. Do not deposit or bury on the site debris resulting from the clearing and grubbing Work.
- M. Remove all existing traffic signage within limits of Work. Temporarily relocate signage and provide additional signage as required by governing authorities to maintain service to on-site facilities during construction. Existing signage that meets the requirements of the Contract Documents and is in like-new condition and is acceptable to The Owner may be reused and installed in final locations as indicated.

### 3.06 STRIPPING TOPSOIL

- A. Strip existing topsoil from areas to be further excavated, re-landscaped, re-graded, or used for any storage or installation of any temporary construction materials or facilities, to full depth without mixing with subsoil and foreign materials.
- B. Do not excavate wet, muddy, or frozen topsoil.
- C. Topsoil stockpile shall not exceed 35 feet in height and shall be in accordance with the Erosion and Sedimentation Control Plan.

### 3.07 RESTORATION

- A. Repair all injuries to bark, trunk, limbs and roots of remaining plants by properly dressing, cutting, tracing and painting, using approved arboricultural practices and materials.
- B. Replace plant material designated to be saved, which are permanently injured or die during the life of the Contract as a result of construction operations with like species acceptable to The Owner.
- C. Remove protective fences, enclosures and guides upon the completion of the Project.
- D. Restore guide posts, guiderail, signs and other interferences to the condition equal to that existing before construction operations.

### 3.08 CLEANUP

- A. Remove all excess materials, debris and equipment from the site. Provide site clear, clean, and suitable for site work operations.

**END OF SECTION 31 1000**

## **SECTION 31 2316.13 - TRENCHING**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes excavating trenches for utilities; compacted fill from top of utility bedding to subgrade elevations; and backfilling and compaction.
- B. Work shall be conducted in accordance with Drawings, General Conditions, and the requirements of this Section.
- C. Related Sections:
  - 1. Section 31 0513 – Soils for Earthwork
  - 2. Section 31 0519.13 – Geotextiles for Earthwork
  - 3. Section 31 0516 – Aggregates for Earthwork
  - 4. Section 31 2213 – Rough Grading
  - 5. Section 31 2316 – Excavation
  - 6. Section 31 2316.26 – Rock Removal
  - 7. Section 31 2323.13 – Backfill
  - 8. Section 32 9219 – Seeding

#### **1.02 MEASUREMENT AND PAYMENT**

- A. Trenching:
  - 1. Basis of Measurement: Refer to bid sheet
  - 2. Basis of Payment: Includes excavating to required elevations, protecting excavation, and stockpiling excavated materials. Over Excavating: Payment is not made for over excavated work nor for replacement materials.
- B. Subsoil Fill:
  - 1. Basis of Measurement: Refer to bid sheet
  - 2. Basis of Payment: Includes furnishing fill material, stockpiling, placing where required, and compacting.
- C. Granular Fill:
  - 1. Basis of Measurement: Refer to bid sheet
  - 2. Basis of Payment: Includes furnishing fill material, stockpiling, placing where required, and compacting.

#### **1.03 REFERENCES**

- A. ASTM D698.
- B. ASTM D3786.
- C. ASTM D4491.
- D. ASTM D4533.
- E. ASTM D4632.
- F. ASTM D4833.

#### **1.04 DEFINITIONS**

- A. Utility: Any buried pipe, duct, conduit, or cable.

## 1.05 PROJECT CONDITIONS

- A. Excavation shall be performed on an "unclassified basis" with the removal of all kinds of materials, including rock.
- B. If rock or shale is encountered, material shall be removed by blasting or mechanical means; to be executed as specified in Section 31 2316.26.
- C. Dewatering:
  - 1. Keep trenches and stored materials free from excess water, either rain or subsurface water, at all times.
  - 2. Use pumps, site drainage or other approved methods.
  - 3. Discharge water to acceptable drainage points.
- D. Utilities Encountered:
  - 1. Protect all existing active utility services and structures that may be encountered.
  - 2. If active utility lines are encountered which are not indicated on the plans, protect these lines and request determination from Engineer.
  - 3. Do not proceed without written directive, unless in an emergency requiring immediate protection.
- E. Excavation for pipe laying shall be conducted in a manner to cause the least interruption to traffic; where traffic must cross open trenches or open excavated areas, provide suitable bridges.
- F. Where existing concrete or pavement is encountered, openings shall be made using the "saw cut" method.

## 1.06 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

## 1.07 COORDINATION

- A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

## PART 2 PRODUCTS

### 2.01 FILL MATERIALS

- A. Subsoil Fill: Refer to Section 31 0513.
- B. Aggregate Fill: Refer to 31 0516.
- C. Concrete: Structural concrete conforming to Section 03 30 00 with compressive strength of 2000 psi.

### 2.02 ACCESSORIES

- A. Geotextile Fabric: Refer to Section 31 0519.13.



## PART 3 EXECUTION

### 3.01 LINES AND GRADES

- A. Grades:
  - 1. Lay pipes to lines and grades indicated on Drawings.
  - 2. Alignment:
    - a. Maintain grade alignment of pipe using string line parallel with grade line and vertically above centerline of pipe.
    - b. Establish string line on level batter boards at intervals of not more than 25 feet.
    - c. Install batter boards spanning trench, rigidly anchored to posts driven into ground on both sides of trench.
    - d. Set three adjacent batter boards before laying pipe to verify grades and line.
    - e. Determine elevation and position of string line from elevation and position of offset points or stakes located along pipe route.
    - f. Do not locate pipe using side lines for line or grade.
  - 3. As an alternative method, use laser-beam instrument with qualified operator to establish lines and grades.
- B. Location of Pipe Lines:
  - 1. Location and approximate depths of proposed pipe lines are shown on Drawings.
  - 2. Engineer reserves right to make changes in lines, grades, and depths of pipe lines when changes are required for project conditions.

### 3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Protect plant materials, lawns, and other features remaining as portion of final landscaping.
- C. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, curbs and other improvements from excavating equipment and vehicular traffic.
- D. Maintain and protect above and below grade utilities indicated to remain.
- E. Cut out soft areas of subgrade not capable of compaction in place; backfill with select granular material and compact to density equal to or greater than requirements for subsequent backfill material.

### 3.03 CUTTING PAVED SURFACES

- A. Cutting:
  - 1. Where excavation includes breaking a paved surface, make cuts in a neat, uniform fashion forming straight lines parallel with the centerline of the trench.
  - 2. Cut offsets at right angles to the centerline of the trench.
  - 3. Saw cut concrete surfaces; saw cut other hard surfaces or make straight cuts with jackhammer.
  - 4. No paving shall be broken except that which has been previously cut.
- B. Protect edges of cut pavement during excavation to prevent raveling or breaking; square edges prior to pavement replacement.

### 3.04 TRENCHING

- A. Excavate subsoil required for building utilities' connection to public utilities.

- B. Perform excavation within 24 inches of existing public utilities in accordance with utility's requirements.
- C. Do not advance open trench ahead of installed pipe more than can be installed and backfilled.
- D. Cut trenches sufficiently wide to enable installation and allow inspection; remove water or materials that interfere with Work.
- E. Excavate trench so that the minimum depth of cover for the following utilities and pipelines is obtained unless otherwise indicated on the Drawings:

<u>ITEM</u>	<u>MINIMUM COVER DEPTH</u>
All utilities	1.0 feet plus pavement section

- F. Excavate bottom of trenches maximum 1/3 each side wider than outside diameter of pipe or structure.
- G. Shape trench walls completely vertical from trench bottom to at least 24 inches above the top of the pipe.
- H. Excavate trenches to depth indicated on Drawings, or when not indicated, to depth which will permit 6 inches of bedding under pipe; provide uniform and continuous bearing and support for bedding material, pipe, and/or utilities.
- I. Do not disturb subsoil within 45 degree bearing splay of foundations.
- J. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe; when side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this Section.
- K. When subsurface materials at bottom of trench are loose or soft, notify the Geotechnical Engineer and request instructions.
- L. Correct areas over excavated areas with compacted granular backfill as specified for authorized excavation or replace with fill concrete as directed by the Geotechnical Engineer.
- M. Hand trim excavation; hand trim for bell and spigot pipe joints; remove loose matter.
- N. Stockpile excavated material in area designated on site and remove excess material not being used from site.

### 3.05 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches excavated through unstable, loose, or soft material; provide sheeting, shoring, bracing, "trench box" or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of excavation Work.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

- E. Repair damage to new and existing work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

### 3.06 BACKFILLING

- A. Exposed Joints for Testing:
  - 1. The Contractor has the option to test the pipe prior to backfilling the trench; if this option is selected, place 2 feet of thoroughly compacted backfill over the pipe leaving pipe joints partially exposed.
  - 2. If the Contractor elects to completely backfill the trench prior to testing, the Contractor shall be responsible for locating and uncovering leaks that may cause the test to fail.
- B. Backfill trenches to contours and elevations with unfrozen fill materials.
- C. Systematically backfill trenches; do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- D. Place geotextile fabric over aggregate cover prior to placing next lift of fill.
- E. Select Granular Fill at Overexcavation: Place and compact materials in equal continuous layers not exceeding 8 inches compacted depth.
- F. Pipe Bedding and Cover: Place and compact materials in equal continuous layers not exceeding 8 inches compacted depth.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Employ placement method that does not disturb or damage foundation perimeter drainage, subdrains, and utilities in trench.
- I. Maintain optimum moisture content of fill materials to attain required compaction density.
- J. Do not leave more trench open at end of working day, except as required to continue Work next working day.
- K. Protect open trench to prevent danger to the public.
- L. Backfill trenches with concrete where excavations pass within 18 inches of column or wall footings or other concrete structures and which are carried below bottom of such footings, or which pass under wall footings; place concrete to level of bottom of adjacent footing.
- M. Pipeline or conduit less than specified depth below surface of traffic bearing pavements is to be installed on a 6 inch thick concrete base support slab; after the pipe is tested for leakage, provide 6 inch thick concrete encasement around top and sides of pipe prior to backfilling or placement of traffic bearing pavement subbase.
- N. Encase pipe or conduit, which passes within 18 inches in a horizontal or vertical plane of another pipe or conduit, in 6-inch thick concrete for a minimum horizontal distance of 5 feet to either side of the crossing.
- O. Displacement of the pipeline and settlement of backfill shall be considered evidence of improper workmanship or inclusion of unsuitable backfill materials, or both, and will require regrading and realigning the pipelines, and removing, recompacting and regrading settled materials at no expense to The Owner.

- P. Do not permit excavations to be used as dumping areas for refuse and such other materials considered unsatisfactory to the Geotechnical Engineer.
- Q. Do not use frozen backfill material or place backfill materials on frozen subgrade or trench surfaces.
- R. Leave fill material stockpile areas completely free of excess fill materials.

3.07 TOLERANCES

- A. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

3.08 FIELD QUALITY CONTROL

- A. Compaction Testing: In accordance with ASTM D698.
- B. When tests indicate Work does not meet specified requirements, remove Work, replace, compact and retest.
- C. Frequency of Tests:
  - a. Trench Backfill: One test per lift per 500 lineal feet (LF), or fraction thereof, of trench in open areas. One test per lift per 100 LF, or fraction thereof, of trench in traffic bearing pavements or adjacent to structures.

3.09 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic during construction.

3.10 RESTORATION OF UNPAVED SURFACES

- A. Restore unpaved surfaces disturbed by construction to equal the surface condition prior to construction.
- B. Restore grassed areas in accordance with Section 32 9219.

**END OF SECTION 31 2316.13**

## **SECTION 31 22 13 - ROUGH GRADING**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes removal of subsoil; and cutting, grading, filling (nonbearing areas), rough contouring, and compacting site for site structures and pads.
- B. Work shall be conducted in accordance with the Drawings, General Conditions, and the requirements of this Section.

#### **1.02 MEASUREMENT AND PAYMENT**

- A. Topsoil Fill Type shall comply with the requirements and specifications of the PennDOT Publication 408.:
  - 1. Basis of Measurement: Refer to Contract Pricing
  - 2. Basis of Payment: Includes supplying soil materials stockpiling, scarifying substrate surface where required, placing where required, and compacting.
- B. Subsoil Fill Type shall comply with the requirements and specifications of the PennDOT Publication 408.:
  - 1. Basis of Measurement: Refer to Contract Pricing
  - 2. Basis of Payment: Includes supplying subsoil materials, stockpiling, scarifying substrate surface where required, placing where required, and compacting.

#### **1.03 REFERENCES**

- A. ASTM D698  
ASTM D1557
- B. Related Sections:
  - 1. Section 31 0513 – Soil for Earthwork.
  - 2. Section 31 1000 – Site Clearing.
  - 3. Section 31 2316.26 – Rock Removal.
  - 4. Section 31 2323.13 – Backfill.

#### **1.04 CLOSEOUT SUBMITTALS**

- A. Requirements for submittals.
- B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

#### **1.05 QUALITY ASSURANCE**

- A. Perform Work in accordance with ASTM Standards.
- B. Geotechnical Engineer shall be on site during earthwork operations per geotechnical report.

## 1.06 PROJECT CONDITIONS

- A. Excavation shall be performed on an “unclassified basis” with the removal of all kinds of materials, including rock.
- B. If rock or shale is encountered, material shall be removed by blasting or mechanical means; to be executed as specified in Section 31 2316.26.
- C. Dewatering:
  - 1. Keep excavations, road and walk bases and stored materials free from excess water, either surface water or subsurface water at all times.
  - 2. Use pumps, site drainage or other approved methods.
  - 3. Discharge water to acceptable drainage points.
- D. Utilities Encountered:
  - 1. Protect all existing active utility services and structures, which may be encountered.
  - 2. If active utility lines are encountered, which are not indicated on the plans, protect these lines and request determination from the Utility Provider, Construction Manager, and Engineer.
  - 3. Do not proceed without written directive, unless in an emergency requiring immediate protection.
  - 4. Erect sheeting, shoring and bracing as necessary for protection of persons, improvements and excavations.
  - 5. Preserve, protect and maintain operable existing drainage ways, drains and sewers.

## PART 2 EXECUTION

### 2.01 EXAMINATION

- A. Verify survey benchmark and intended elevations for the Work areas as indicated on Drawings.
- B. Verify suitability of subsoil materials. All fill materials are subject to testing and inspection.

### 2.02 PREPARATION

- A. Locate, identify, and protect utilities existing under and above grade from damage.
- B. Protect plant materials, lawns, rock outcropping and other features remaining as portions of final landscaping.
- C. Protect benchmarks, survey control point, existing structures, fences, sidewalks, paving and curbs and other existing improvements to remain, from excavating equipment, vehicular traffic, and hazards created by earthwork operations.
- D. Establish extent of earthwork operations.
- E. Identify required lines, levels, contours, elevations, and datum.
- F. Strip existing topsoil to its full depth in areas for site improvements, and all areas to be regraded, resurfaced, or paved.
- G. Notify Pennsylvania One Call System, Inc. 1-800-242-1776 not less than three (3) working days prior to performing earthwork operations.
- H. Stake and flag locations of known utilities.

- I. Notify utility company regarding Work related to the utilities.
- J. When using local streets as transportation routes for hauling materials, the Contractor shall utilize approved roads designated by The Owner for his trucking route(s) (between the project site and borrow sites, supply sites and disposal site) from all local and other governing agencies.

#### 2.03 GENERAL CONDUCT OF THE WORK

- A. Temporary haul road(s) to be used by the Contractor shall be located in approved areas; the haul road(s) shall be freely drained and shall be maintained in good condition throughout the Contract period; measures shall be taken by the Contractor to control excessive dust caused by truck traffic during dry periods.
- B. The Contractor shall maintain and protect cut and filled areas at all times until final completion and acceptance of all Work of the Contract; eroded areas shall be repaired and replaced by the Contractor in a satisfactory manner, with no additional payment to be made for this restoration Work; the Contractor may be required to remove, at its own expense, any fill material placed outside the prescribed slope lines.
- C. The Contractor shall remove, from the project site, debris of any kind resulting from or related to its operations and shall leave the premises in a condition satisfactory to The Owner.
- D. Rough grade to prevent ponding of water in any area; install temporary swales if necessary to improve surface drainage.

#### 2.04 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, re-seeded, or re-graded. Excavate subsoil to the elevations and dimensions required to accommodate construction operations.
- B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- C. When excavating near utilities, perform Work by hand and provide shoring and supports as required.
- D. Remove excess subsoil and unsatisfactory subsoil not intended for reuse, from site.
- E. Stockpile subsoil on site to depth not exceeding 35 feet and in accordance with the Erosion and Sedimentation Control Plan.
- F. Stability: Replace damaged or displaced subsoil as specified for fill.

#### 2.05 GRADING - NON-BEARING

- A. Uniformly grade areas to contours and elevations with unfrozen materials. Fill low spots and trim high spots to conform to the required surface tolerances.
- B. Do not place fill on muddy or frozen subgrade. Subgrade surfaces shall be parallel to finished grade surfaces.
- C. Compact non-bearing fill at 95% Standard Proctor density at +/- 5% optimum moisture content according to ASTM D698.

- D. Areas indicating sponginess and instability during earth moving operations shall be excavated and prepared to receive acceptable fill materials as specified; material excavated due to unsuitability shall be removed from the site.
- E. Place all fill material in eight (8) inch maximum loose lifts and compact using a roller and/or compactor that has a minimum static weight of twenty (20) tons or as approved by the Geotechnical Engineer.
- F. Provide positive drainage to prevent ponding of surface water.
- G. Make grade changes gradual; blend slope into level areas. Provide smooth transitions between new and existing grades.
- H. Excess Fill materials as designated by the Geotechnical Engineer shall be removed by the Contractor from the site.
- I. Fill operation within load bearing areas shall be performed as specified in Section 31 2323.13.
- J. Infiltration systems are to comply with the requirements of the Pennsylvania Department of Environmental Protection Best Management Practices manual.
- K. Areas for infiltration shall be protected from compaction. If compaction of this area does occur, scarify soil to a depth of at least 8 inches.
- L. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density, in accordance with ASTM D 1557:
  - 1. Under lawn or unpaved areas, compact top 6 inches of subgrade and each layer of backfill or fill material at 85 percent maximum density.
  - 2. Under infiltration areas no compact shall be permitted.
- M. Complete site grading and stabilize infiltration area; refer to Section 32 9219

## 2.06 FIELD QUALITY CONTROL

- A. Quality Requirements: Testing and inspection services.
- B. Compaction Testing: In accordance with ASTM D698.
  - 1. When tests indicate Work does not meet specified requirements, the Contractor shall (at their own expense) remove Work, replace and retest as many times as required to obtain the specified density.
- C. Frequency and distribution of samples and testing shall be determined by the Geotechnical Engineer.

## 2.07 PROTECTION OF FINISHED WORK

- A. The Contractor shall maintain all excavations and repair and recompact fills damaged by construction operations.
- B. The Contractor shall protect structures, utilities, and other facilities from damaged caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.



2.08 CLEAN-UP

- A. Remove stockpile areas, leave area in clean and neat condition; grade site surface to meet the proposed grades and to prevent freestanding surface water.
- B. Unless otherwise indicated, restore the stockpile area to condition existing prior to start of Work, and matching adjacent surfaces.
- C. The Contractor shall remove, from the project site, excess materials, unsuitable materials, equipment and debris of any kind resulting from or related to its operations and shall leave the premises in a condition satisfactory to The Owner.

**END OF SECTION 31 2213**

## **SECTION 31 23 16 - EXCAVATION**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes excavation within load bearing areas and excavating for site structures.
- B. Work shall be conducted in accordance with the Drawings, General Conditions, Supplementary Conditions, and the requirements of this Section.
- C. Related Sections:
  - 1. Section 31 0513 – Soils for Earthwork
  - 2. Section 31 2316.13 – Trenching
  - 3. Section 31 2316.26 – Rock Removal
  - 4. Section 31 2323.13 – Backfill
- D. Geotechnical Engineer shall be on site during earthwork operations.

#### **1.02 MEASUREMENT AND PAYMENT**

- A. Excavating Soil Materials:
  - 1. Basis of Measurement: Per contract bid of lump sum.
  - 2. Basis of Payment: Includes excavating to required elevations, loading and placing materials in stockpile. Over Excavating: Payment will not be made for over excavated work nor for replacement materials.

#### **1.03 REFERENCES**

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. AASHTO T194.
- B. American Society for Testing and Materials (ASTM):
  - 1. ASTM D698.
  - 2. ASTM D2487.

#### **1.04 SUBMITTALS**

- A. Product Requirements: Submittal procedures.
- B. Materials Source: Submit name of imported materials source.
- C. Submit certified density testing results from the soils testing laboratory and field test.
- D. Submit certified testing and analysis of acidity testing results.

#### **1.05 PROJECT CONDITIONS**

- A. Excavation shall be performed on an "unclassified basis" with the removal of all kinds of materials, including rock.

- B. If rock or shale is encountered, material shall be removed by blasting or mechanical means; to be executed as specified in Section 31 2316.26.
- C. Dewatering:
  - 1. Keep excavations, road and walk bases and stored materials free from excess water, either rain or subsurface water, at all times.
  - 2. Use pumps, site drainage or other approved methods.
  - 3. Discharge water to acceptable drainage points.
- D. Utilities Encountered:
  - 1. Protect all existing active utility services and structures, which may be encountered.
  - 2. If active utility lines are encountered which are not indicated on the plans, protect these lines and request determination from the Utility Provider, Construction Manager, and Engineer.
  - 3. Do not proceed without written directive, unless in an emergency requiring immediate protection.
  - 4. Preserve, protect and maintain operable existing drainage ways, drains and sewers.
- E. Cold Weather Protection: In cold, wet weather, the last 6 inches depth of excavations for footings and foundations shall be done prior to concreting Work in all soils other than rock.
- F. Frost Protection: If concrete cannot be immediately deposited in excavations, protect bottoms of footings and foundations from frost by an approved covering until concreting operations resume.
- G. Erect sheeting, shoring and bracing as necessary for protection of persons, improvements and excavations.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities indicated to remain from damage.
- C. Notify utility company regarding Work related to the utilities. Notify PA One Call System, Inc. 1 (800) 242-1776 not less than three working days prior to performing earthwork operations.
- D. Protect plant materials, lawns, rock outcroppings and other features remaining as portion of final landscaping.
- E. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, curbs and other existing improvements from excavating equipment and vehicular traffic.

### 3.02 EXCAVATING - GENERAL

- A. Excavate subsoil to accommodate paving, site structures, and construction operations.
- B. Excavate in sequence and stages, which will not subject permanent or temporary structures, installations or surfaces to unstable conditions.

- C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 2323.13 and Section 31 2316.13.
- D. Slope banks to angle of repose or less until shored.
- E. Do not disturb subsoil within 45 degree bearing splay of foundations.
- F. Keep excavations free from water.
- G. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- H. The Contractor's failure to maintain dewatering operations for structure excavations shall not be a basis for payment for removal and replacement of unsuitable materials.
- I. Hand trim excavation; remove loose matter.
- J. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume Work.
- K. Correct areas over excavated; refer to 31 2323.13.
- L. Stockpile excavated material in area designated on site; remove unsuitable material from site.

### 3.03 FOUNDATION PREPARATION OF NEW LOAD BEARING AREAS

- A. A load bearing area is defined as an area supporting loads of a structure or pavement area subject to motor traffic.
- B. After excavating to subgrade elevation, the independent testing agency shall perform soil-bearing tests to confirm bearing capacity of the subgrade meets or exceeds the minimum safe bearing capacity noted on the Drawings. If the subgrade does not meet the minimum safe bearing capacity noted on the Drawings, the Geotechnical Engineer will review and provide direction for change in the Work (changes resulting in additional cost or time will be addressed in accordance with the General Conditions, as amended).
- C. The entire exposed natural soil of the load bearing area shall be proof-rolled with no less than 10 complete coverages of vibratory compaction equipment (minimum of one (1) twenty (20) ton static weight roller/and or compactor); all soft spots or irregularities within the natural soil, disclosed as proof-rolling progresses, shall be excavated to sound material and then backfilled or leveled to grade as hereinafter specified; Geotechnical Engineer shall be so advised by Contractor that additional excavation is necessary to achieve satisfactory proof-rolling; additional excavation required will be paid for by Change Order (unit price basis); suitable backfill to replace unacceptable soil in load bearing areas shall be select granular material.

### 3.04 EXCAVATING WITHIN LOAD BEARING AREAS

- A. Dimensions: Excavate to elevations and dimensions indicated; allow for working space, forms, drains, damp proofing and inspection.
- B. Workmanship:
  - 1. Bottoms of all excavations shall be properly leveled; remove loose materials.
- C. If rock is exposed at design grades, the rock shall be overcut one foot and replaced with select granular material as specified in Section 31 2323.13; no additional payment will be made for this Work.

### 3.05 SHORING, SHEETING AND BRACING

- A. Install shoring, sheeting and bracing to comply with federal, state and local code requirements.
- B. Responsibility for the safety of the Work, personnel and structures rests solely with the Contractor.
- C. Carry the bottom of the support system to depth below the main excavation, adequate to prevent ground movement.
- D. Follow the excavation closely with sheeting and shoring placement.
- E. Perform excavation for the installation of sheeting carefully to minimize the formation of voids.
- F. If unsuitable material is encountered during excavation, take measures to contain it in place and prevent ground displacement.
- G. Have sufficient quantity of material on hand at all times for sheeting, shoring, bracing and other operations for the protection of the Work and for use in case of accident or emergency.
- H. Leave sheeting and shoring in place as long as possible, compatible with the placing and compacting of backfill.

### 3.06 FIELD QUALITY CONTROL

- A. Quality Requirements: Testing and Inspection Services.
  - 1. After completion of the fill placement and compaction specified, the independent testing agency will perform test to confirm soil densities in compliance with the Contract Documents; if they do not, compaction and lab tests must be redone.
  - 2. Receive approval of the Geotechnical Engineer prior to foundation excavation.
- B. Request visual inspection of bearing surfaces by Geotechnical Engineer before installing subsequent Work.
  - 1. The Geotechnical Engineer shall inspect the foundation excavations for the pad foundations; they shall verify that specified compaction has been achieved to support the design and that no loose pockets exist beneath the bearing surfaces of the footing excavations.

### 3.07 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

**END OF SECTION 31 2316**

## SECTION 31 23 23 FILL

### PART 1 GENERAL

#### 1.00 GENERAL REQUIREMENTS

- A. Contractor shall comply with requirements of governmental agencies having jurisdiction, comply with the directions of the Geotechnical Engineer.
- B. On site excavated material free of vegetation, lumber, metal and refuse; and free of rocks or similar hard objects larger than one (1) inch in greatest dimension, shall be used as clean earth backfill as approved by the Geotechnical Engineer.
- C. Approval: All fill material shall be subject to the approval of the Geotechnical Engineer and the Owner.
- D. Geotechnical Engineer shall be on site during earthwork operations per the geotechnical report requirements.
- E. On site or imported natural soils as approved by the Geotechnical Engineer.
- F. Excess Fill and Unsatisfactory Fill: Excess fill and unsatisfactory fill materials as designated by the Geotechnical Engineer shall be removed by the Contractor from the site at no additional cost to the Owner.
- G. Geotechnical Engineer shall be on site during earthwork operations per the requirements of the geotechnical report.

#### 1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for slabs-on-grade, paving, and utilities within the building.
- B. Backfilling and compacting for utilities outside the building to connections.
- C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

#### 1.02 RELATED REQUIREMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.
- B. Geotechnical report; bore hole locations and findings of subsurface materials.
- C. Section 01 5713 - Temporary Erosion and Sedimentation Control: Slope protection and erosion control.
- D. Section 03 3000 - Cast-in-Place Concrete.
- E. Section 26 4200 - Cathodic Protection.
- F. Section 31 2200 - Grading: Removal of soil.
- G. Section 31 2200 - Grading: Site grading.
- H. Section 31 2316 - Excavation: Trenching.
- I. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- J. Section 31 2316.26 - Rock Removal: Removal of rock during excavating.
- K. Section 31 3700 - Riprap.
- L. Section 32 1413 - Precast Concrete Unit Paving: Leveling bed placement under pavers.
- M. Section 32 1416 - Brick Unit Paving: Leveling bed placement under pavers.
- N. Section 32 1423 - Asphalt Unit Paving: Leveling bed placement under pavers.
- O. Section 32 1440 - Stone Paving: Leveling bed placement under pavers.
- P. Section 33 4600 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

### 1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices, for general requirements applicable to unit prices for earthwork. Payment may be by unit price or lump sum depending on owner requirements. Unit Price requirements are shown below.

### 1.04 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
  - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- C. Fill: Soil materials used to raise existing grades.
- D. Finish Grade Elevations: Indicated on drawings.
- E. Granular Fill: Course of washed granular material supporting slab-on-grade placed to cut off upward capillary flow of pore water.
- F. Subgrade Elevations: Indicated on drawings.
- G. Subgrade Elevations: 14 inches below finish grade elevations indicated on drawings, unless otherwise indicated.
- H. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- I. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.
- K. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.
- L. Finish Grade Elevations: 4 inches above subgrade elevations indicated on drawings, unless otherwise indicated.

### 1.05 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 2010
- B. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.
- C. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)); 2012.
- D. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.
- E. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2012.
- F. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
- G. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.
- H. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
- I. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2010.
- J. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

## 1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Samples: 10 lb sample of each type of fill; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Product data for the following:
  - 1. Each type of plastic warning tape.
  - 2. Geotextile.
- E. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
  - 1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
  - 2. Laboratory compaction curve according to ASTM D 1557 for each cohesive on-site and borrow soil material proposed for fill and backfill.
  - 3. Relative density according to ASTM D4253 and D4254 for granular borrows.
- F. Compaction Density Test Reports.
- G. Photographs of existing adjacent structures and site improvements.

## 1.07 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

## 1.08 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where designated.
  - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
  - 2. Prevent contamination.
  - 3. Protect stockpiles from erosion and deterioration of materials.
- C. Perform operations to assure minimum interference with streets, walks, and other adjacent facilities.
- D. Control dust caused by the work. Dampen surfaces as required. Comply with pollution control regulations of governing authorities.

## PART 2 PRODUCTS

### 2.01 FILL MATERIALS

- A. General Fill - Conforming to PennDOT Highway Department standard.
- B. General Fill: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
  - 1. Satisfactory Soils:
    - a. Graded.
    - b. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris, waste, frozen materials, vegetation, and other deleterious matter.
    - c. Conforming to ASTM D2487 Group Symbol GW, GP, GM, ML, SW, SP, and SM or a combination of these groups.
  - 2. Unsatisfactory Soils:
    - a. Conforming to ASTM D 2487 Group Symbol GC, SC, CL, OL, CH, MH, OH, and PT according to ASTM D 2487 or a combination of these groups.
    - b. Satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction, slag and carbonaceous material.
- C. Structural Fill - Conforming to PennDOT Highway Department standard and conforming to.



- D. Structural Fill: Imported borrow.
  - 1. Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2 inch sieve and not more than 12 percent passing a No. 200 sieve or as recommended and approved by Independent Testing Agency.
  - 2. Graded.
  - 3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
  - 4. Conforming to ASTM D2487 Group Symbol CL.
- E. Concrete for Fill: Lean concrete.
- F. Concrete for Fill: As specified in Section 03 3000; compressive strength of 2500 psi.
- G. Granular Fill: Coarse aggregate, conforming to State of Pennsylvania Highway Department standard.
  - 1. Clean mixture of crushed stone or crushed or uncrushed gravel; Size 57, with 100 percent passing a 1-1/2-inch Sieve and 0 to 5 percent passing a No. 8 sieve in accordance with In accordance with Penndot's Specifications Publication 408, Section 703.
  - 2. For pavement subject to any Vehicular use: Clean mixture of crushed stone or crushed or uncrushed gravel; PENNDOT 2A without slag, in accordance with Penndot's Specifications Publication 408/2007, Section 350 and Section 703.
- H. Granular Fill - Gravel - AASHTO M147, with a liquid limit of not more than 25 and a plasticity index of not more than 5 in accordance with ASTM D4318.
- I. Granular Fill - Gravel - Pit run washed stone; free of shale, clay, friable material and debris.
  - 1. Graded in accordance with ASTM D2487 Group Symbol GW.
  - 2. Graded in accordance with ASTM C136, within the following limits:
    - a. 2 inch sieve: 100 percent passing.
    - b. 1 inch sieve: 95 percent passing.
    - c. 3/4 inch sieve: 95 to 100 percent passing.
    - d. 5/8 inch sieve: 75 to 100 percent passing.
    - e. 3/8 inch sieve: 55 to 85 percent passing.
    - f. No. 4 sieve: 35 to 60 percent passing.
    - g. No. 16 sieve: 15 to 35 percent passing.
    - h. No. 40: 10 to 25 percent passing.
    - i. No. 200: 5 to 10 percent passing.
- J. Granular Fill - Natural stone; washed, free of clay, shale, organic matter.
  - 1. Grade in accordance with ASTM D2487 Group Symbol GM.
  - 2. Graded in accordance with ASTM C136, within the following limits:
    - a. Minimum Size: 1/4 inch.
    - b. Maximum Size: 5/8 inch.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.
- L. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.
- M. Sand - Conforming to PennDOT Highway Department standard.
- N. Sand - Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.
  - 1. Grade in accordance with ASTM D2487 Group Symbol SW.
  - 2. Graded in accordance with ASTM C136; within the following limits:
    - a. No. 4 sieve: 100 percent passing.
    - b. No. 14 sieve: 10 to 100 percent passing.
    - c. No. 50 sieve: 5 to 90 percent passing.
    - d. No. 100 sieve: 4 to 30 percent passing.
    - e. No. 200 sieve: 0 percent passing.
- O. Topsoil: See Section 31 2200.
- P. Topsoil - Conforming to PennDOT Highway Department standard.

## 2.02 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.
  - 1. Tape Colors: Provide tape colors to utilities as follows:
    - a. Red: Electric.
    - b. Yellow: Gas, oil, steam, and dangerous materials.
    - c. Orange: Telephone and other communications.
    - d. Blue: Water systems.
    - e. Green: Sewer systems.
- B. Geotextile Fabric: Non-biodegradable, non-woven, pervious geotextile fabric of polypropylene, nylon or polyester fibers, or a combination.
  - 1. Provide filter fabrics that meet or exceed the listed minimum physical properties determined according to ASTM D 4759 and the referenced standard test method in parentheses:
    - a. Grab Tensile Strength (ASTM D 4632): 100 lb.
    - b. Apparent Opening Size (ASTM D 4751): #100 U.S. Standard sieve.
    - c. Permeability (ASTM D 4491): 150 gallons per minute per sq. ft.
- C. Vapor Retarder: 10 mil thick, polyethylene.

## 2.03 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.
- D. If tests indicate materials do not meet specified requirements, change material and retest at no additional cost to the Owner.
- E. Provide materials of each type from same source throughout the Work.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 22 00 for additional requirements.
- D. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- E. Verify structural ability of unsupported walls to support imposed loads by the fill.
- F. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.
- G. Report in writing to Architect all prevailing conditions that will adversely affect satisfactory execution of work. Do not proceed with work until unsatisfactory conditions have been corrected.
  - 1. Starting work constitutes acceptance of the existing conditions and the Contractor shall be responsible for any delays or changes required to existing conditions at the Contractor's expense.

### 3.02 PREPARATION

- A. Approval of Subgrade: See Section 31 2200.
- B. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.
- C. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- D. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

1. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density at no additional cost to Westmoreland County Housing Authority.
- E. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.
- F. Place and compact backfill in excavations promptly, but not before completing the following:
1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
  2. Surveying locations of underground utilities for Record Documents.
  3. Testing and inspecting underground utilities.
  4. Removing concrete formwork.
  5. Removing trash and debris.
  6. Removing temporary shoring and bracing, and sheeting.
  7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- G. Place backfill on subgrades free of mud, frost, snow, or ice.

### 3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- C. Fill up to subgrade elevations unless otherwise indicated.
1. Do not backfill trenches until tests and inspections have been made and backfilling is authorized by Architect. Use care in backfilling to avoid damage or displacement of pipe.
  2. Backfill around piping by hand and for minimum depth of 1 foot above the pipe. Take care not to disturb pipe or injure pipe coating.
- D. Employ a placement method that does not disturb or damage other work.
- E. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- F. Maintain optimum moisture content of fill materials to attain required compaction density.
- G. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- H. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- I. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- J. Correct areas that are over-excavated.
1. Load-bearing foundation surfaces: Fill with concrete.
  2. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 100 percent of maximum dry density.
  3. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- K. Control all compaction, providing minimum percentage of density specified for each area classification indicated below. Correct improperly compacted areas or lifts as directed by Architect if soil density tests indicate inadequate compaction at no additional cost to Westmoreland County Housing Authority.
- L. Soil Moisture Control: Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
  2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.
- M. Compaction Density Unless Otherwise Specified or Indicated:
1. Under paving and similar construction: 97 percent of maximum dry density.

2. At all locations: 95 percent of maximum dry density.

N. Reshape and re-compact fills subjected to vehicular traffic.

### 3.04 FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

B. Structural Fill (per Geotechnical Engineer's Recommendations)

1. Use general fill.
2. Fill up to subgrade elevations.
3. Maximum depth per lift: 6 inches, compacted.
4. Compact to minimum 95 percent of maximum dry density.

C. Under Interior Slabs-On-Grade: (per Geotechnical Engineer's Recommendations)

1. Use granular fill.
2. Depth: six (6) inches deep.
3. Compact to 97 percent of maximum dry density.
4. Provide final grades within ½ inch tolerance when tested with a 10 ft straight edge.
5. Cover with sand.
  - a. Depth: 2 inches.
  - b. Compact to 95 percent of maximum dry density.

E. At Foundation Walls and Footings: (per Geotechnical Engineer's Recommendations)

1. Use general fill.
2. Fill up to subgrade elevation.
3. Compact each lift to 90 percent of maximum dry density.
4. Do not backfill against unsupported foundation walls.
5. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

F. Over Piping at Under Slabs: (per Geotechnical Engineer's Recommendations)

1. Granular fill: Section 33 4600.
2. Cover granular fill with general fill.
3. Fill up to subgrade elevation.
4. Compact to 97 percent of maximum dry density.

G. Over Buried Utility Piping and Conduits in Trenches: (per Geotechnical Engineer's Recommendations)

1. Coordinate backfilling with utilities testing.
2. Bedding: Use Fill Type as indicate in Section 31 2316.
  - a. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
3. Cover with general fill for normal conditions and granular fill for specific locations including but not limited to pavements and slabs on grade.
  - a. CLSM backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.
  - b. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
4. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.
5. Fill up to subgrade elevation.
6. Compact in maximum 8 inch lifts to 97 percent of maximum dry density.
7. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

H. At Interior Crawl Spaces: (per Geotechnical Engineer's Recommendations)

1. Use general fill.
2. Depth: 6 inches.
3. Compact to 90 percent of maximum dry density.

4. Install vapor retarder over entire exposed surface.
  5. Cover with granular fill, 2 inches deep.
- I. Inside Planter Boxes: (per Geotechnical Engineer's Recommendations)
    1. Use granular fill, 4 inches deep.
    2. Cover with geotextile fabric.
    3. Cover with sand, 2 inches deep.
    4. Finish with topsoil, to within 2 inches of planter rim, lightly tamped.
  - J. Around and Over Underground Tanks: (per Geotechnical Engineer's Recommendations)
    1. Use initial fill of sand.
      - a. 12 inches deep.
      - b. Compact to 95 percent of maximum dry density.
    2. Complete with general fill.
      - a. Depth: Up to subgrade elevation.
      - b. Compact to 95 percent of maximum dry density.
  - K. At Lawn Areas: (per Geotechnical Engineer's Recommendations)
    1. Use general fill.
    2. Fill up to 4 inches below finish grade elevations.
    3. Fill up to subgrade elevations.
    4. Compact to 97 percent of maximum dry density.
    5. See Section 31 2200 for topsoil placement.
  - L. At Planting Areas Other Than Lawns: (per Geotechnical Engineer's Recommendations)
    1. Use general fill.
    2. Fill up to 12 inches below finish grade elevations.
    3. Fill up to subgrade elevations.
    4. Compact to 95 percent of maximum dry density.
    5. See Section 31 2200 for topsoil placement.
  - M. At French Drains: (per Geotechnical Engineer's Recommendations)
    1. Use granular fill.
    2. Fill up to 8 inches below finish grade.
    3. Compact to 95 percent of maximum dry density.
  - N. Under Pavers Set on Sand Leveling Bed: (per Geotechnical Engineer's Recommendations)
    1. Use granular fill.
    2. Fill up to bottom of sand leveling bed.
    3. Compact to 95 percent of maximum dry density.
    4. See unit pavers section for leveling bed placement.
  - O. Under Monolithic Paving: (per Geotechnical Engineer's Recommendations)
    1. Compact subsoil to 97 percent of its maximum dry density before placing fill.
    2. Use Fill Type Structural Fill.
    3. Fill up to 14 inches below finish paving elevation.
    4. Fill up to subgrade elevation.
    5. Compact to 97 percent of maximum dry density.
    6. See Section 32 1123 for aggregate base course placed over fill.
    7. See Section 32 1216 and 32 1313 for aggregate base course placed over fill.

### 3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

### 3.06 FIELD QUALITY CONTROL

- A. See Division 01 - Quality Requirements, for general requirements for field inspection and testing.

- B. Testing and Inspection Service: Westmoreland County Housing Authority shall employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing including but not limited to compaction tests to certify specified density requirements.
  - 1. Test results shall be reported in writing to Architect, Westmoreland County Housing Authority and Contractor within 24 hours after tests.
- C. Compaction density testing will be performed on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D3017, or ASTM D6938.
- D. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
- E. If tests indicate work does not meet specified requirements, remove work, replace and retest at no additional cost to the Owner.
- F. Frequency of Tests: At the discretion of the Owner and Testing Agency.
- G. Proof roll compacted fill at surfaces that will be under slabs-on-grade.

### 3.07 PROTECTION

- A. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace material to depth directed by the Architect and/or Independent Testing Agency; reshape and recompact at optimum moisture content to the required density.
- B. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

### 3.08 CLEANING

- A. Leave unused materials in a neat, compact stockpile.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

## **SECTION 31 23 23.13 - BACKFILL**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes site structure backfilling to subgrade elevations; fill under load bearing areas; fill for over-excavation; and consolidation and compaction as scheduled.
- B. Work shall be conducted in accordance with the Drawings, General Conditions, and the requirements of this Section.

#### **1.02 MEASUREMENT AND PAYMENT**

- A. Fill Type shall comply with the specifications and requirements of the PennDOT Pub 48.
  - 1. Basis of Measurement: Refer to Bid Sheet
  - 2. Basis of Payment: Includes supplying fill materials, stockpiling, placing where required, and compacting.

#### **1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM D698
  - 2. ASTM D751.
  - 3. ASTM D882.
  - 4. ASTM D1556.
  - 5. ASTM D1709.
  - 6. ASTM D2582.
  - 7. ASTM D3786.
  - 8. ASTM D4318.
  - 9. ASTM D4355.
  - 10. ASTM D4491.
  - 11. ASTM D4533.
  - 12. ASTM D4595.
  - 13. ASTM D4632.
  - 14. ASTM D4751.
  - 15. ASTM D4833.
  - 16. ASTM D5199.
  - 17. ASTM D5261.
  - 18. ASTM E96.
  - 19. ASTM E154-93.
- B. Related Sections:
  - 1. Section 31 0513 – Soils for Earthwork.
  - 2. Section 31 0516 – Aggregates for Earthwork.
  - 3. Section 31 0519.13 – Geotextiles for Earthwork.
  - 4. Section 31 2316 – Excavation.

1.04 SUBMITTALS – NOT USED

1.05 QUALITY ASSURANCE

A. Geotechnical Engineer:

1. The Contractor shall provide ample notification and coordination of the construction schedule with the Geotechnical Engineer for earthwork operations to ensure that the Geotechnical Engineer can certify that all Work has been completed in accordance with the Contract Documents.

B. Geotechnical Testing Firm:

1. The Contractor shall hire a Geotechnical Testing Firm to perform laboratory and field compaction testing for the earthwork operations. The Geotechnical Testing Firm's experience will be submitted to the Owner and the Geotechnical Engineer for acceptance.
2. The Geotechnical Testing Firm shall submit weekly reports documenting the field compaction and laboratory testing to the Geotechnical Engineer.
3. The Geotechnical Testing Firm's field inspector shall notify the Geotechnical Engineer immediately if unforeseen soil and/or groundwater conditions are encountered in the field for direction.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Subsoil Materials, Backfill Materials, Load Bearing Fills, or Embankments (Load Bearing Areas): Refer to Section 31 0513.
- B. Aggregate Fill: Refer to Section 31 0516.
  1. Compacted select granular material in areas of overexcavation within load bearing areas.
  2. Pipe bedding for perforated drainage pipe.

2.02 ACCESSORIES

- A. Geotextile Fabric: Refer to Section 31 0519.13.

PART 3 EXECUTION

3.01 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Refer to Section 31 2316 for preparation of subgrade, including proof rolling operation to identify and overexcavate soft spots.

3.02 BACKFILLING - GENERAL

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement; do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Select Granular Fill: Place and compact materials in equal continuous layers not exceeding 8 inches compacted depth.



- D. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches or maximum limits specified by earthwork equipment manufacturer's recommendations.
- E. Employ placement method that does not disturb or damage other Work.
- F. Compaction shall be to 95% of maximum dry density and +/- 3% of optimum moisture content as determined by ASTM D698 (Standard Proctor Test Method) or to 90% of maximum dry density and +/- 3% of optimum moisture content as determined by ASTM D1557 (Modified Proctor Test Method), unless otherwise authorized by the project Geotechnical Engineer.
- G. Maintain optimum moisture content of backfill materials to attain required compaction density.
- H. Provide minimum 1 percent drainage away from secondary containment on the tank pad, and across the well pad as noted on the construction plans.
- I. Make gradual grade changes; blend slope into level areas.
- J. Refer to Section 31 0513 for disposition of excess fill materials
- K. Leave fill material stockpile areas free of excess fill materials.

### 3.03 TOLERANCES

- A. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

### 3.04 PLACEMENT OF STONE

- A. In areas of overexcavation, install geotextile fabric over compacted select granular material fill prior to placement of stone material; install according to manufacturer's instructions; no equipment shall drive directly on top of the geotextile material.
- B. Grade stone material smooth and even, free of voids, compacted, and to required thickness and elevation; provide final grades within a tolerance of 1/2 inch when tested with a 10 foot straightedge.
- C. Compaction shall continue until all compaction marks are eliminated and the course is thoroughly and properly compacted.

### 3.05 FIELD QUALITY CONTROL

- A. Quality Requirements: Testing and inspection services.
- B. Testing: In accordance with ASTM D698.
- C. Frequency of distribution of sampling and testing shall be determined by the Geotechnical Engineer.

### 3.06 WORK

- A. Reshape and re-compact fills subjected to vehicular traffic.

**END OF SECTION 31 2323.13**

## **SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROLS**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes construction of temporary or permanent erosion checks and controls, including but not limited to:
  - 1. Erosion Control Blankets and Mats.
  - 2. Geotextile Sedimentation and Erosion Control.
  - 3. Riprap and Rock Lining.
  - 4. Rock Barriers and Filters.
  - 5. Water Course and Slope Erosion Protection.
- B. Contractor will keep Erosion and Sedimentation Plan Temporary Control Measures in place and maintained until site vegetation and permanent measures are deemed sufficient and stable by the Pennsylvania Department of Environmental Protection.
- C. Upon approval of permanent measures, remove all temporary measures, clean and remove left over silt from site.
- D. Work shall be conducted in accordance with the Drawings, General Conditions, Supplementary Conditions, and the requirements of this Section.
- E. Related Sections:
  - 1. Section 31 2316.26 – Rock Removal
  - 2. Section 32 9219 – Seeding

#### **1.01 MEASUREMENT AND PAYMENT**

- A. All Erosion & Sedimentation Control Plan BMPs, maintenance, including but not limited to Rock Construction Entrances, Filter Socks, Silt Fence, Inlet protection, pumped water filter bags including placement, monitoring, weekly maintenance is on a Lump Sum Basis as shown on the bid sheet.

#### **1.02 SUBMITTALS**

- A. Product Requirements: Submittal Procedures.
- B. Product Data: Submit product data sheets and the manufacturer's installation instructions.

#### **1.03 QUALITY ASSURANCE**

- A. Comply with the current requirements of the rules and regulations of Chapter 102 of the Pennsylvania Clean Streams Law as administered by the Pennsylvania Department of Environmental Protection.
- B. Comply with the Pennsylvania Department of Environmental Protection's Erosion and Sediment Pollution Control Program Manual of the Bureau of Soil and Water Conservation.
- C. Comply with current PENNDOT Publication 408 and all local codes and ordinances.
- D. Local Pennsylvania Department of Environmental Protection and Local Conservation District Coordination:

1. Meet with local representative and present Contractor plan for compliance.
  2. Record meeting discussions.
- E. A copy of the Sedimentation and Erosion Control Plan shall be kept available for inspection on the construction site at all times through the term of the Project.
1. Contractor shall request a copy of the Erosion Control Plan from the Engineer.
  2. The Contractor's copy, once reviewed, shall be available in the Contractor's field office.

#### 1.04 PROJECT CONDITIONS

- A. All related erosion and sediment control facilities shall be in place and capable of functioning as intended prior to earthmoving activity within their contributing watershed areas.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Rock sizes required by PENNDOT Publication 408 (Per Sections 703.2 and 850.2):
1. Rock for stabilized construction entrances: AASHTO No. 1.
  2. Rock for filters: AASHTO No. 57 and R Rock.
- B. Erosion Control Filter Fabric:
1. Filter fabric mat to be used under riprap.
  2. PENNDOT Class 2, Type B.
- C. Silt Barrier Fence:
1. Compost Filter Sock: Netting material shall be photodegradable or biodegradable.
    - a. Netting material shall consist of a minimum of 5 mil HDPE with mesh openings of 3/8"
      - 1) Resistance to Installation Stresses:
        - a) Tensile Strength (psi)      ASTM 5035-95      26
        - 2) Environmental Factors:
          - a) Ultraviolet resistance      ASTM G-155 23 percent @ 1000 hrs.
      - b. Compost material shall consist of untreated wood chips less than or equal to 5 inches in length with 95% passing a 2-inch screen and less than 30% passing a 1 inch screen.
- D. Erosion Control Matting:
1. Temporary matting shall be Curlex Blanket by American Excelsior Company; equals by North American Green or Enkamat by Colbond Geosynthetics.
    - a. Stake down with wood stakes.
    - b. Remove plastic matting when vegetation is thick and soundly rooted.
  2. Silt Sack: Factory filter fabric sack that fits inside inlet grating and filters storm water, as manufactured by ACF (800-448-3636).
  3. Outlet Pipe: Corrugated pipe shall conform to Section 601.2(a)4.b or 4.c in PENNDOT Publication 408.
  4. Substitutions: Substitutions shall be approved by the Engineer prior to installation.
- E. Riprap: Limestone irregular shaped rock; solid and non-friable; of size indicated on the plans.
- F. Temporary Seed: As specified in Section 32 9219.

### PART 3 EXECUTIONS

#### 3.01 EROSION AND SEDIMENTATION CONTROL - GENERAL

- A. The intent of the Erosion and Sedimentation Plan is to indicate the minimum scope of work necessary for compliance with the rules and regulations of Chapter 102 of the Pennsylvania Clean Streams Law as administered by the Pennsylvania Department of Environmental Protection.
  - 1. It shall be the responsibility of the General Contractor to implement these methods plus additional methods as may be necessary because of conditions created by localized site conditions, and/or construction procedures in order to assure compliance with applicable law.
  - 2. It shall be the responsibility of the Contractor to strictly follow the minimum requirements of the Plan, adapt to changing site conditions, and maintain all erosion and sediment control facilities so that they perform as required by applicable law and so that they minimize the amount of environmental nuisance from the standpoint of erosion, sedimentation and dust pollution.
  - 3. Protect all new and existing improvements from water and sediment infiltration.
- B. Comply with construction schedule.
- C. Minimize the disturbed area and duration of exposure.
- D. Preserve existing wetlands, natural grass, shrubs and existing trees.
- E. Install temporary measures to control storm water runoff to protect soil disturbed by construction.
- F. Practice proper line grading and excavation; hold line grading and excavation to a minimum.
- G. Establish permanent vegetation as soon as it is practical and possible; 70% perennial vegetative cover must be established prior to removal of temporary erosion and sedimentation controls.
- H. Suitable Protection: Erosion control matting, crushed stone road surfaces, roller sealing, shoulder drainage ditches with piped drains, temporary sediment, ponds with riser drains or other means and methods shall protect disturbed areas when Work will cease for a period greater than one day.

### 3.02 TEMPORARY CONTROL MEASURES

- A. Stabilized Construction Entrance: Provide 8-inch minimum depth AASHTO #1 coarse aggregate on geotextile Class 2, Type A, Section 735, in PENNDOT Publication 408 specifications.
  - 1. Wash mud off vehicles leaving site.
  - 2. Replace aggregate when choked.
  - 3. The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto the paved surface.
  - 4. Sediment spilled, dropped or tracked onto paved surfaces shall be removed immediately by the General Contractor.
  - 5. If soil is deposited on off-site pavements and not cleaned immediately, Work will be shut down and traffic in and out of the site will be closed off until the soil is completely removed to the satisfaction of the Local Pennsylvania Department of Environmental Protection.
  - 6. Flushing of off-site pavements with water will not be permitted.
- B. Compost Filter Sock: Compost filter sock shall conform to Section 867 in PENNDOT Publication 408.

1. Fill sock with compost using pneumatic (blower) equipment either off or on-site. Tie off ends and fill socks to the lengths required.
  2. Place sock on level contour or surface as indicated on plan drawings.
  3. Ensure a minimal overlap of at least 12 inches on either side of the area to be protected.
  4. Anchor sock with approved stakes or other devices capable of holding the sock in place.
  5. Place sock at least 5 feet from the toe of the slope if possible.
  6. Clean out when half the exposed height is full.
- C. Slope Protection Matting: Install in accordance with manufacturer's recommendation.
- D. Stabilization:
1. Slopes, channels, ditches, or any disturbed area shall be stabilized as soon as possible after each of the following stages are completed - earthmoving, final grading and topsoil distribution.
  2. Stabilization may occur immediately after a combination of the stages is completed as long as earth is protected from erosion within 20 days of being disturbed.
- E. Interim Stabilization: Where it is not possible to permanently stabilize a disturbed area immediately after the final earthmoving has been completed or where the activity ceases for more than 20 days, interim stabilization measures shall be implemented promptly.
- F. Interim Stabilization Measures: Temporarily seed all disturbed areas or protect with sheet polyethylene anchored down.
- G. Riprap:
1. Where rip rap slope protection and ditch lining is indicated on the Drawings, construct to the lines and grades indicated and in accordance with Section 850.3, Publication 408 Specifications.
- H. Inlet Protection: Install silt sack over grating and place in frame in addition to surrounding filter protection. Inlet Curb Protection shall be ACF EconoCurb or approved equal.
- I. Dust Control: Wet dust producing earthwork areas down to protect adjacent properties.

### 3.03 GENERAL

- A. Excavated material (spoil) shall be placed up slope from the excavation whenever possible; runoff from spoil piles shall be directed through a sediment filter structure and discharged in a non-erosive manner.
- B. Utility excavations shall be open only long enough to properly install and inspect all underground facilities in accordance with applicable specifications.
- C. Dewatering equipment discharge shall be directed onto a stabilized surface so that erosion does not occur; discharges shall be directed through a sediment filter structure and discharged in a non-erosive manner.
- D. Positive drainage shall be maintained away from all structures; isolated low spots shall not be created.
- E. Strict adherence to the Erosion and Sedimentation Control Plans is mandatory.

### 3.04 MAINTENANCE

- A. Inspect all erosion control devices daily and after every rain.
- B. Daily remove accumulated sediment and properly dispose of on topsoil stockpile on site.
- C. Daily repair or replace any damaged or non-functioning devices
- D. Daily determine if any additional measures or devices are needed to completely control erosion and sedimentation; install any such devices immediately.
- E. Contractor is responsible for correction of all off-site damage, debris and silt clean up caused by storm water runoff from work areas.
- F. All sediment and erosion facilities must be maintained in operating condition until upstream areas are stabilized with permanent cover.

3.05 FINAL CLEAN-UP

- A. When all disturbed areas have been properly stabilized and approved by the Local Pennsylvania Department of Environmental Protection, the Contractor shall remove all temporary erosion protection devices.
- B. Remove any accumulated sediment and dispose of materials properly off the site.
- C. Remove all temporary devices such as fabric, posts, fence, stone basins, dams, risers, spillways, etc.; dispose of properly off the site.
- D. Stabilize disturbed areas where devices were located; stabilize with grass, erosion control matting or riprap as appropriate.
- E. Temporary control measures and silt must be removed and a healthy stand of vegetation shall be established prior to Substantial Completion of Project.

**END OF SECTION 31 2500**



J. Roy Houston Conservation Center  
218 Donohoe Road  
Greensburg, PA 15601-9217  
Phone: 724-837-5271  
email: wcd@wcdpa.com website: westmorelandconservation.org

April 8, 2024

To: Erik Spiegel  
Westmoreland County Housing Authority  
167 Greengate Road  
Greensburg, PA 15601

Re: GP-5 Shaner Housing Sanitary Sewer Extension  
District Review #10644  
Sewickley Township, Westmoreland County

Dear Mr. Spiegel:

The erosion and sedimentation control plan for the above referenced project has been reviewed and it has been determined that it meets the requirements of 25 Pa. Code Chapter 102.

The Conservation District has reviewed this plan solely to determine whether it is adequate to satisfy the requirements of Pa. Code Chapter 102, the erosion and sediment control regulations of the Department of Environmental Protection. Before construction or earthmoving may begin, any other necessary local, state, and federal permits or authorizations must be secure from the agency having specific authority. This approval does not authorize any land use changes, nor does it authorize any injury to private property or infringement of federal, state, or local laws or regulations. This approval does not convey any property rights of any sort.

Neither the Conservation District nor the County assumes any responsibility for the implementation of the plan or the proper construction and operation of the facilities contained in the plan.

**A copy of the Erosion and Sedimentation Control Plan must be available at the site at all times. Erosion control BMPs must be implemented prior to earthmoving activity.**

**PLEASE NOTIFY THE DISTRICT OF THE START DATE.**

If you have any further questions regarding this, please contact the Conservation District Office and use the District Review number above when referring to this plan.

Sincerely,

A handwritten signature in blue ink that reads "Ryan Peckheiser". The signature is written in a cursive, slightly slanted style.

Ryan Peckheiser  
Erosion Control Specialist

cc: Sewickley Township  
Justin Darazio, Morris Knowles & Associates, Inc., 443 Athena Drive, Delmont, PA 15626

CS

---

**Board of Directors**

Ron Rohall, Chairman • Charles Duritsa, Vice Chairman • Kim Edward Miller, Treasurer • Emil Bove, PLS, Secretary • Jay Bell, Director  
County Commissioner Douglas W. Chew, Director • William Doney, Director • Paul R. Sarver, Director • Fred J. Slezak, Director



J. Roy Houston Conservation Center  
218 Donohoe Road  
Greensburg, PA 15601-9217  
Phone: 724-837-5271  
email: wcd@wcdpa.com website: westmorelandconservation.org

April 8, 2024

To: Erik Spiegel  
Westmoreland County Housing Authority  
167 Greengate Road  
Greensburg, PA 15601

Re: General Permit (GP) Acknowledgment Notification  
Shaner Housing Sanitary Sewer Extension  
GP056500224-006  
Sewickley Township  
Westmoreland County

Dear Mr. Spiegel:

This letter acknowledges receipt of your notification to use and registers your use of above authorized General Permit(s) (GP(s)) under the authority of the Dam Safety and Encroachments Act (32 P. S. § 693.1 et. seq.) and 25 Pa. Code Chapter 105. You are responsible for assuring the work is done in accordance with the drawings, terms and conditions contained in the GP(s). Please direct special attention to all time sensitive issues associated with the GP authorization(s). You may proceed with your project after making the required notifications stipulated in the GP(s) and securing all other approvals that may be necessary.

Enclosed is an acknowledged copy of your GP Registration Form. Please place this letter and the acknowledged GP Registration form with your copy of the GP Registration package, the applicable GP terms and conditions, required Federal authorizations, and the Erosion and Sediment Control plan and maintain on site during construction. Please review the complete permit authorization package so that you are aware of the extent of the authorization(s).

We have determined that your proposed work, if accomplished in accordance with the enclosed terms and conditions, is authorized by the Pennsylvania State Programmatic General Permit-6 (PASPGP-6). This PASPGP-6 verification provides U.S. Army Corps of Engineers authorization pursuant to Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act. This authorization may be subject to modification, suspension, or revocation if any of the information contained in the application, including the plans, is later found to be in error.

The enclosed list of conditions must be followed for purposes of the PASPGP-6 (Enclosure 1).

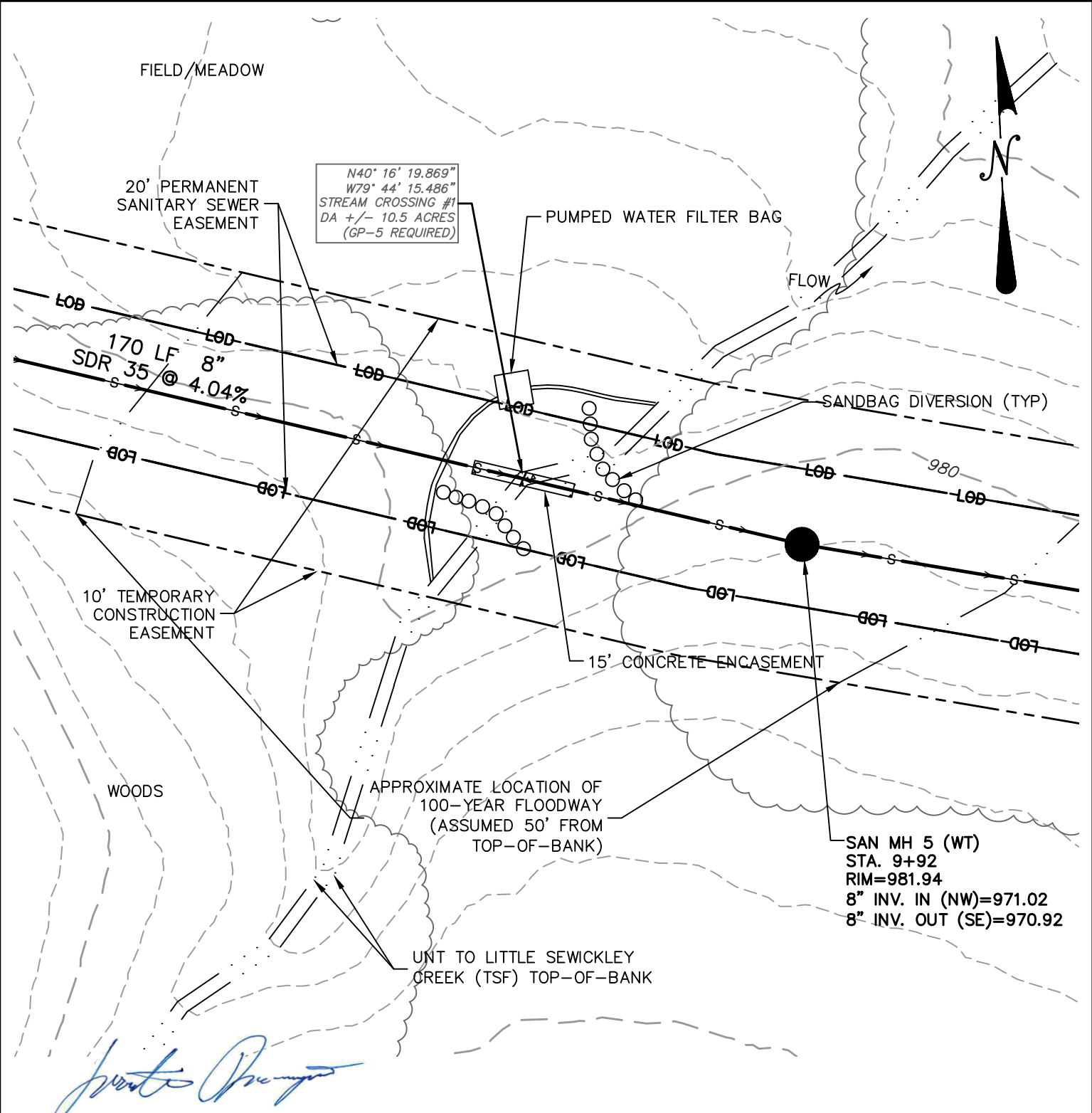
Any person aggrieved by this action may appeal the action to the Environmental Hearing Board (Board), pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. § 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A. The Board's address is:

---

**Board of Directors**

Ron Rohall, *Chairman* • Charles Duritsa, *Vice Chairman* • Kim Edward Miller, *Treasurer* • Emil Bove, *PLS, Secretary* • Jay Bell, *Director*  
County Commissioner Douglas W. Chew, *Director* • William Doney, *Director* • Paul R. Sarver, *Director* • Fred J. Slezak, *Director*





I, Justin Pronger DO HEREBY CERTIFY PURSUANT TO THE PENALTIES OF 18 PA. C.S.A SEC 4904 TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 105 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

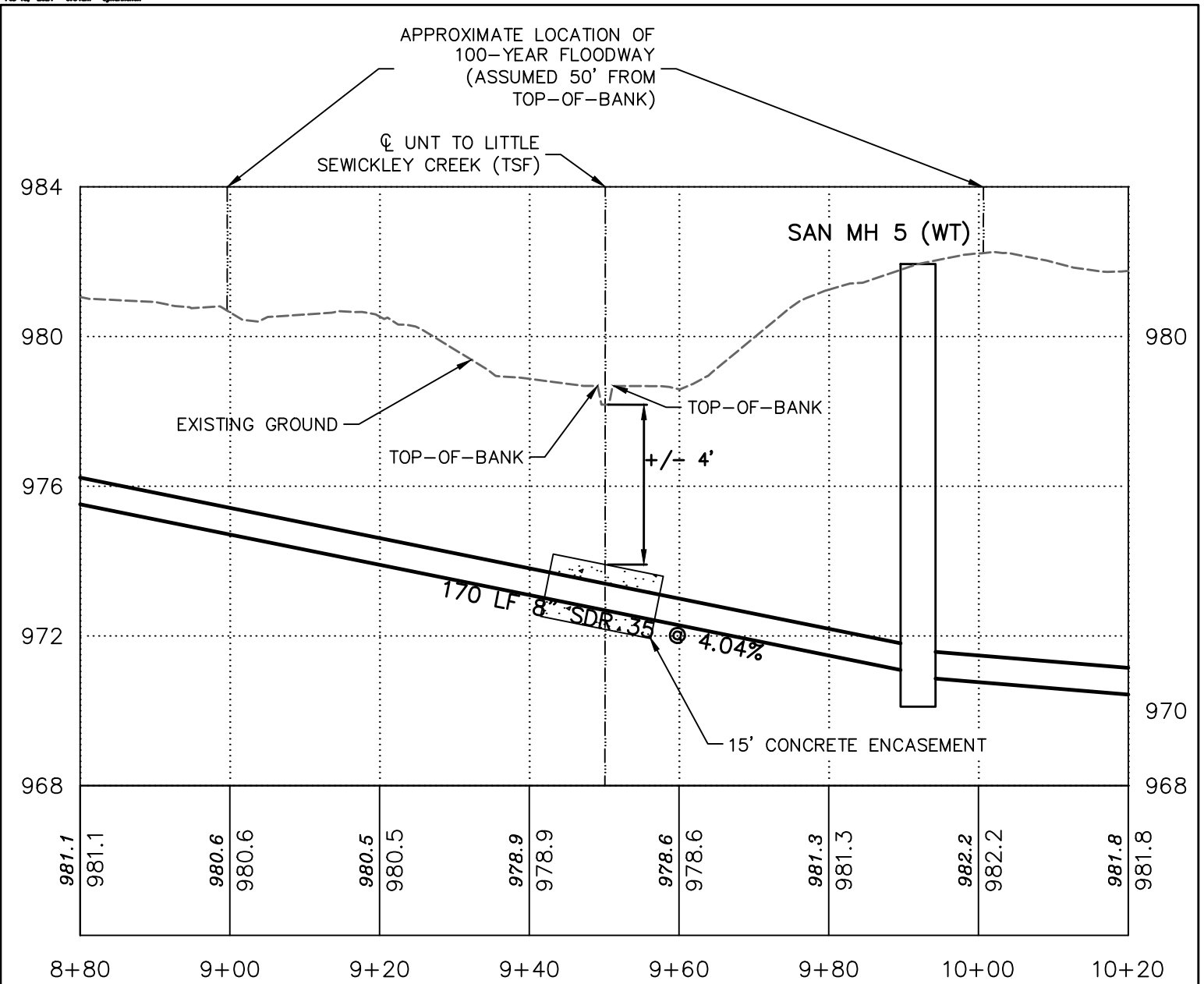
SCALE:  1" = 20'	DESIGNED BY: JTD REVIEWED BY: WPU DRAWN BY: JTD DATE: OCT. 2023 PROJ. NO.: 1885.20	REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____
------------------------	--	--

**GP-5 UTILITY CROSSING PLAN**  
**SHANER SANITARY SEWER EXTENSION**  
*prepared for*  
**WESTMORELAND COUNTY HOUSING AUTHORITY**  
*situated*  
**SEWICKLEY TOWNSHIP, WESTMORELAND COUNTY, PENNSYLVANIA**

**Morris Knowles & Associates, Inc.**  
 (A Hammontree Company)  
*Consulting Engineers and Land Surveyors*  
 443 Athena Drive  
 Delmont, PA 15628  
 Telephone: (724) 468-4822  
 Fax: (724) 468-8940  
 info@morrisknowles.com www.morrisknowles.com



SHEET NO.  
GP-5A



STREAM CROSSING #1 PROFILE —  
STA. 8+80 TO STA. 10+20

HORIZ SCALE: 1"=20'

VERT SCALE: 1"=4'

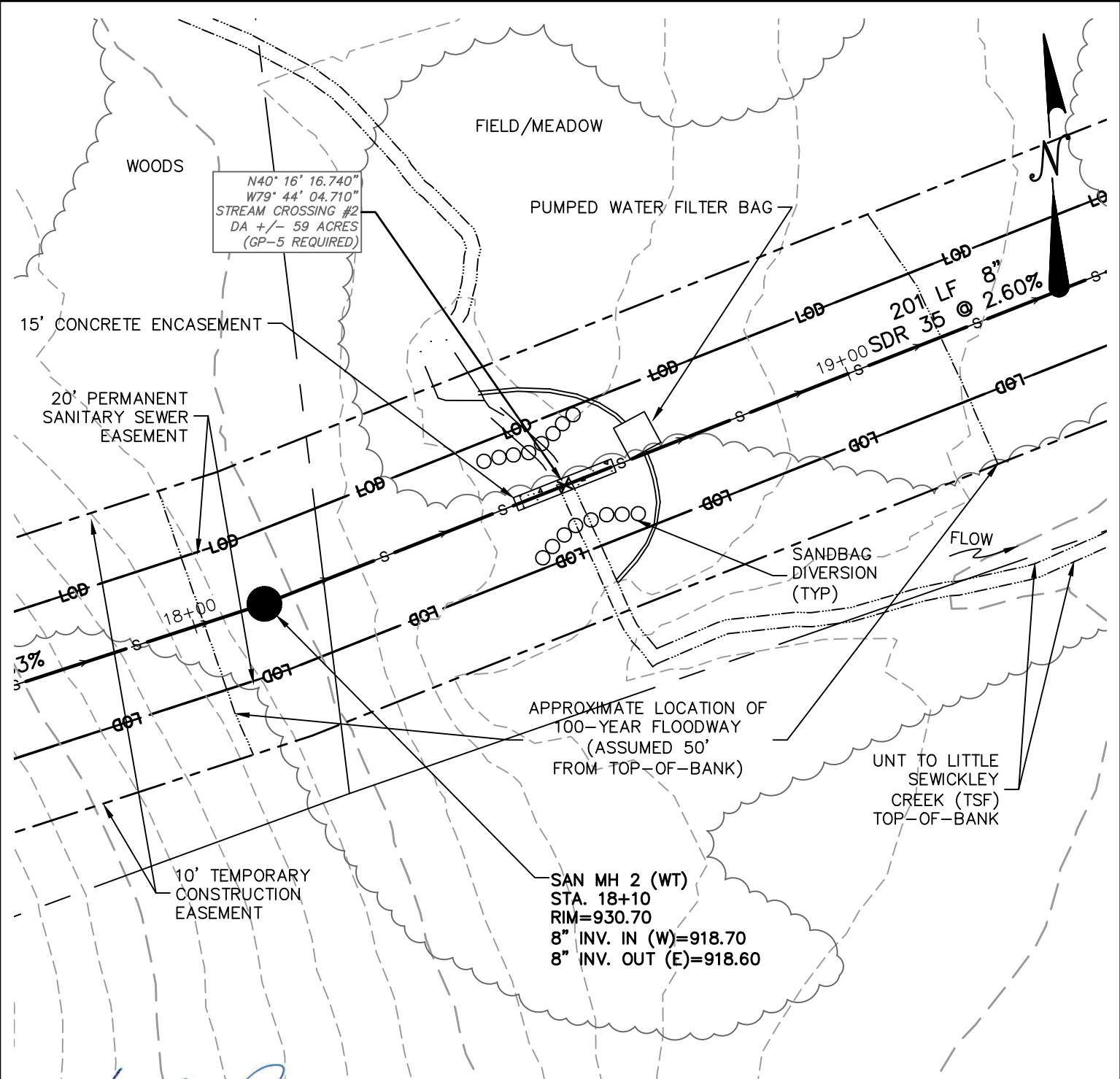
SCALE:  AS NOTED	DESIGNED BY: JTD	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	REVIEWED BY: WPU	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	DRAWN BY: JTD	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	DATE: OCT. 2023	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	PROJ. NO.: 1885.20	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
		REVISION BY: _____	DATE: _____	DESCRIPTION: _____

**GP-5 UTILITY CROSSING PLAN**  
**SHANER SANITARY SEWER EXTENSION**  
*prepared for*  
**WESTMORELAND COUNTY HOUSING AUTHORITY**  
*situated*  
**SEWICKLEY TOWNSHIP, WESTMORELAND COUNTY, PENNSYLVANIA**



**Morris Knowles & Associates, Inc.**  
 (A Hammontree Company)  
*Consulting Engineers and Land Surveyors*  
 443 Athena Drive  
 Delmont, PA 15628  
 Telephone: (724) 468-4822  
 Fax: (724) 468-8940  
 info@morrisknowles.com www.morrisknowles.com

SHEET NO.  
GP-5B



*John A. [Signature]*

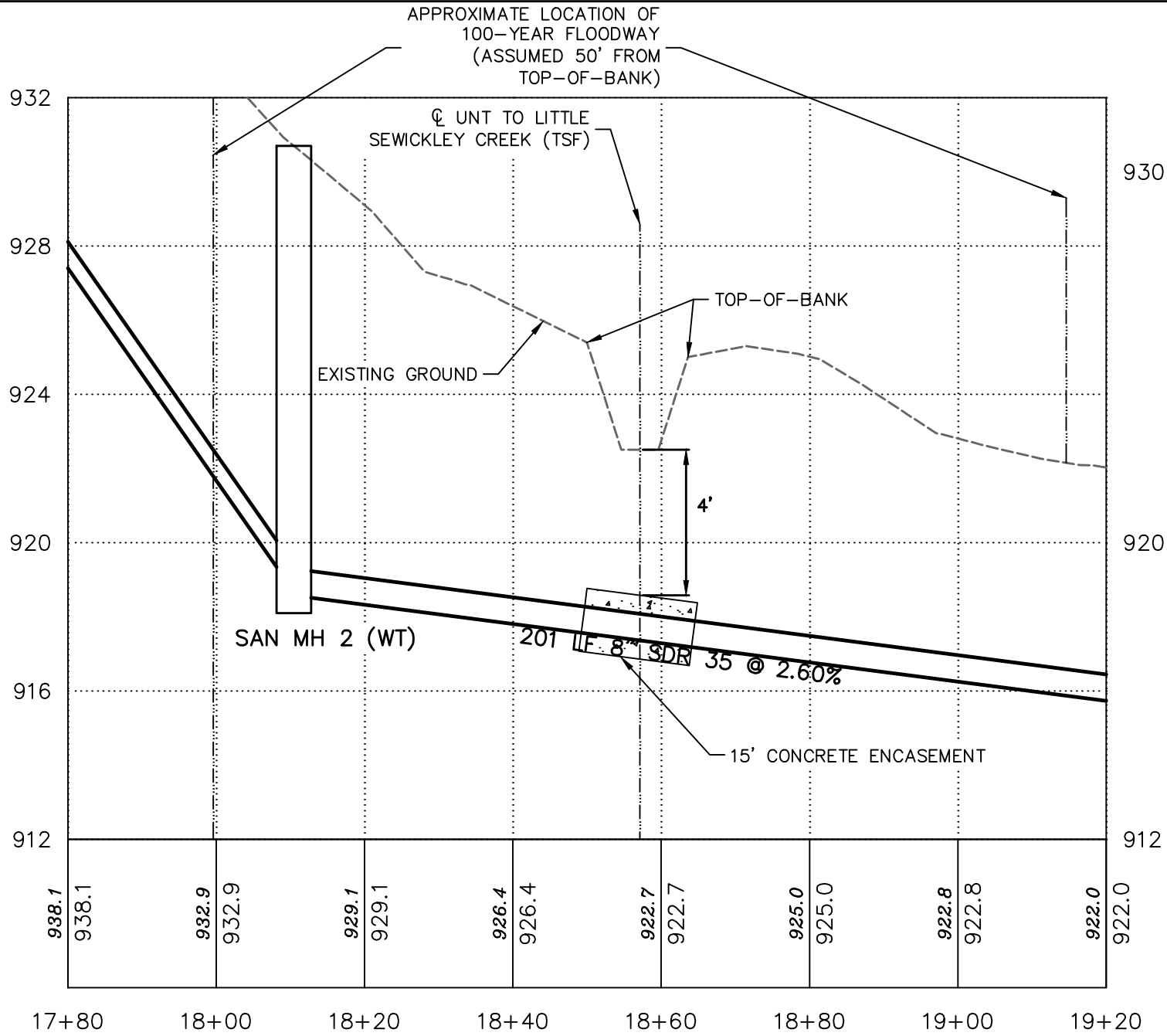
I, \_\_\_\_\_ DO HEREBY CERTIFY PURSUANT TO THE PENALTIES OF 18 PA. C.S.A SEC 4904 TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 105 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

SCALE:  1" = 20'	DESIGNED BY: JTD REVIEWED BY: WPU DRAWN BY: JTD DATE: OCT. 2023 PROJ. NO.: 1885.20	REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____ REVISION BY: _____ DATE: _____ DESCRIPTION: _____
------------------------	--	---

**GP-5 UTILITY CROSSING PLAN**  
**SHANER SANITARY SEWER EXTENSION**  
*prepared for*  
**WESTMORELAND COUNTY HOUSING AUTHORITY**  
*situated*  
**SEWICKLEY TOWNSHIP, WESTMORELAND COUNTY, PENNSYLVANIA**

SHEET NO.  
GP-5C

**Morris Knowles & Associates, Inc.**  
 (A Hammontree Company)  
*Consulting Engineers and Land Surveyors*  
 443 Athena Drive  
 Delmont, PA 15628  
 Telephone: (724) 468-4822  
 Fax: (724) 468-8940  
 info@morrisknowles.com www.morrisknowles.com



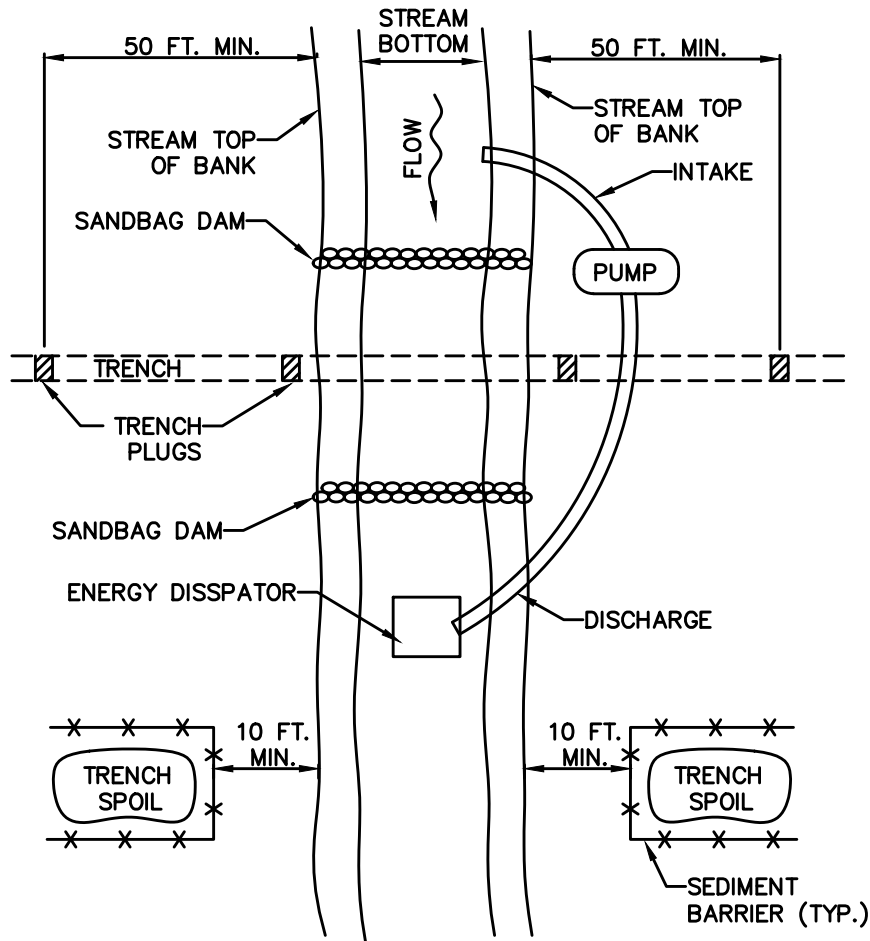
STREAM CROSSING #2 PROFILE –  
STA. 17+80 TO STA. 19+20  
 HORIZ SCALE: 1"=20'  
 VERT SCALE: 1"=4'

SCALE:  AS NOTED	DESIGNED BY: JTD	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	REVIEWED BY: WPU	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	DRAWN BY: JTD	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	DATE: OCT. 2023	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	PROJ. NO.: 1885.20	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
		REVISION BY: _____	DATE: _____	DESCRIPTION: _____

**GP-5 UTILITY CROSSING PLAN**  
**SHANER SANITARY SEWER EXTENSION**  
*prepared for*  
**WESTMORELAND COUNTY HOUSING AUTHORITY**  
*situated*  
**SEWICKLEY TOWNSHIP, WESTMORELAND COUNTY, PENNSYLVANIA**

SHEET NO.  
GP-5D

**Morris Knowles**  
 & Associates, Inc.  
 (A Hammontree Company)  
*Consulting Engineers and Land Surveyors*  
 443 Athena Drive  
 Delmont, PA 15628  
 Telephone: (724) 468-4822  
 Fax: (724) 468-8940  
 info@morrisknowles.com www.morrisknowles.com



**NOTES:**

- GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION.
- BYPASS PUMP INTAKE SHALL BE MAINTAINED A SUFFICIENT DISTANCE FROM THE BOTTOM TO PREVENT PUMPING OF CHANNEL BOTTOM MATERIALS.
- TRENCH PLUGS SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE STREAM CHANNEL (STANDARD CONSTRUCTION DETAIL #13-4).
- WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
- HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE TOP OF STREAMBANK.
- ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
- ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED.
- APPROPRIATE STREAMBANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

**STANDARD CONSTRUCTION DETAIL #13-2  
 TYPICAL UTILITY LINE STREAM CROSSING  
 WITH PUMP BYPASS**

NOT TO SCALE

SCALE:  N.T.S.	DESIGNED BY: JTD	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	REVIEWED BY: WPU	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	DRAWN BY: JTD	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	DATE: OCT. 2023	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
	PROJ. NO.: 1885.20	REVISION BY: _____	DATE: _____	DESCRIPTION: _____
		REVISION BY: _____	DATE: _____	DESCRIPTION: _____

**GP-5 UTILITY CROSSING PLAN  
 SHANER SANITARY SEWER EXTENSION**  
*prepared for*  
**WESTMORELAND COUNTY HOUSING AUTHORITY**  
*situated*  
**SEWICKLEY TOWNSHIP, WESTMORELAND COUNTY, PENNSYLVANIA**



**Morris Knowles  
 & Associates, Inc.**  
 (A Hammontree Company)  
*Consulting Engineers and Land Surveyors*  
 443 Athena Drive  
 Delmont, PA 15628  
 Telephone: (724) 468-4822  
 Fax: (724) 468-8940  
 info@morrisknowles.com www.morrisknowles.com

SHEET NO.  
GP-5E

Environmental Hearing Board  
Rachel Carson State Office Building, Second Floor  
400 Market Street  
P.O. Box 8457  
Harrisburg, PA 17105-8457

TDD users may contact the Environmental Hearing Board through the Pennsylvania Relay Service, 800-654-5984.

Appeals must be filed with the Board within 30 days of receipt of notice of this action unless the appropriate statute provides a different time. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

A Notice of Appeal form and the Board's rules of practice and procedure may be obtained online at <http://ehb.courtapps.com> or by contacting the Secretary to the Board at 717-787-3483. The Notice of Appeal form and the Board's rules are also available in braille and on audiotape from the Secretary to the Board.

**IMPORTANT LEGAL RIGHTS ARE AT STAKE. YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD AT 717-787-3483 FOR MORE INFORMATION. YOU DO NOT NEED A LAWYER TO FILE A NOTICE OF APPEAL WITH THE BOARD.**

**IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST BE FILED WITH AND RECEIVED BY THE BOARD WITHIN 30 DAYS OF RECEIPT OF NOTICE OF THIS ACTION.**

If you have additional questions about your registration, please contact Ryan Peckheiser at [ryan@wcdpa.com](mailto:ryan@wcdpa.com) or 724-837-5271.

Sincerely,



Chelsea Gross  
Non-Point Source Manager

cc: Dana Drake, DEP, 400 Waterfront Drive, Pittsburgh, PA 15222  
Sewickley Township  
Justin Darazio, Morris Knowles & Associates, 443 Athena Drive, Delmont, PA 15626

CS

## **SECTION 32 92 19 - SEEDING**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. Section includes seeding, hydroseeding, mulching and fertilizer; and maintenance.
- B. Work shall be conducted in accordance with the Drawings, General Conditions, and the requirements of this Section.
- C. Related Sections:
  - 1. Section 32 2323.13 – Backfill.

#### **1.02 MEASUREMENT AND PAYMENT**

- A. Grassed Areas:
  - 1. Basis of Measurement: per bid sheet
  - 2. Basis of Payment: Includes seeding, watering and maintenance until vegetation is 70% established or greater.

#### **1.03 REFERENCES**

- A. Pennsylvania Department of Transportation (PennDOT) Publication 408 Specifications, latest edition.
- B. Pennsylvania Seed Act of 1965, Act 187, as amended.
- C. Pennsylvania Soil Conditioner and Plant Growth Substance Law, Act of December 1, 1977, P.L. 258, No. 86 (3P.S.68.2), as amended.
- D. Pennsylvania Agricultural Liming Materials Act of 1978, P.L. 15, No. 9 (3P.S.132-1), as amended.
- E. Rules for Testing Seeds of the Association of Official Seed Analysts.

#### **1.04 DEFINITIONS**

- A. The lawn area shall be considered "satisfactory" when a close, practically weed-free stand of the grass specified is produced over the entire area during the Correction of Work period.
- B. Weeds: Vegetative species other than specified species to be established in given area.

#### **1.05 SUBMITTALS**

- A. Submit labeled samples of seed and fertilizers showing mixture and composition of each type specified.
- B. Submit invoices of seed and fertilizers to Engineer showing adequate quantities are on hand.
- C. Closeout Submittals:
  - 1. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency and recommended coverage of fertilizer.

## 1.06 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, date of testing and net weight.
- B. Seed shall be pure, cleaned seed of latest crop, labeled in accordance with provisions of the Pennsylvania Seed Act of 1965, except as follows:
  - 1. Labels must show the percentage by weight and all particulars of each ingredient in the mixture.
  - 2. Germination tests shall have been performed not more than nine months prior to delivery of the seed to the purchaser; all seed shall be furnished in sealed, standard containers, each of which carries the analysis label.
  - 3. Seed that has become wet, musty or otherwise damaged in transit or storage will not be acceptable.

## 1.07 COORDINATION

- A. Coordinate and schedule Work to permit seeding to occur during regular planting seasons. Where Work cannot occur during regular planting seasons, employ methods as required to address seasonal conditions at time of seeding or sodding.
- B. Coordinate Work so as to avoid conflicts with other operations. Contractor shall be responsible for reseeding any areas damaged due to a failure to coordinate or schedule construction activities. The contractor shall be responsible for the work until acceptance by the Engineer and The Owner.
- C. Notify The Owner a minimum of three days in advance of all maintenance work including fertilizing, reseeding, over-seeding and application of herbicides following initial seeding through Substantial Completion.

## 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers; seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- D. Seed that has become wet, moldy or otherwise damaged in transit or storage will not be accepted.

## 1.09 MAINTENANCE SERVICE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition and uniform color over entire work area for three cuttings provided all areas are grassed and free from bare spots.

## PART 2 PRODUCTS

### 2.01 SEED

- A. Fresh, clean, dated material from the last available crop and within the date period specified, with a date of test not more than 9 months prior to the date of sowing.



- B. Percentage of pure seed present shall represent freedom from inert matter and from other seeds distinguishable by their appearance.
- C. All seeds will be subject to analysis and testing.
- D. Individual species shall be a combination of improved certified varieties with no one variety exceeding 50 percent of the component; individual species comprising 20 percent or less of the total seeding mixture may be of one variety.

## 2.02 SEED MIXTURE

- A. Seed Mixture: Refer to Grass Seeds Table attached at the end of this Section, unless specified otherwise in the Sedimentation and Erosion Control Plan (as applicable).

## 2.03 FERTILIZER

- A. Commercial Fertilizer: Analysis 10-20-20 and as defined by the PENNDOT Publication 408 Section 804.2(a)2.

## 2.04 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant material, and dry; hay or chopped cornstalks are not acceptable.
- B. Mulch Binders:
  - 1. Non-asphaltic Emulsion - Natural Vegetable Gum Blended with Gelling and Hardening Agents.
  - 2. Polyvinyl Acetate Emulsion Resin, Containing 60 percent ( $\pm 1$  percent) Total Solids by Weight.
- C. Provide all lime in accordance with application rates shown on schedule or as recommended by the soil test laboratory; raw ground limestone conforming to Section 804.2(a), Publication 408 Specifications.
- D. Inoculant:
  - 1. Inoculate leguminous seed before seeding with nitrogen fixing bacteria culture prepared specifically for the species.
  - 2. Do not use inoculant later than the date indicated by the manufacturer.
  - 3. Protect inoculated seed from prolonged exposure to sunlight prior to sowing.
  - 4. Reinoculate seed not sown within 24 hours following initial inoculation.
- E. Soil Conditioner: Use mushroom manure or a conditioner approved by the Engineer.
- F. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- G. Erosion Fabric:
  - 1. Temporary matting shall be Curlex Blanket as manufactured by American Excelsior Company; equals by North American Green or Enkamat by Colbond Geosynthetics.
    - a. Stake down with wood stakes.
    - b. Remove plastic matting when vegetation is thick and soundly rooted.
  - 2. Substitutions: Substitutions shall be approved by the Engineer prior to installation.
- H. Stakes: Softwood lumber, chisel pointed.

- I. String: Inorganic fiber.
- J. Edging: Galvanized steel.

### PART 3 EXECUTION

#### 3.01 PREPARATION

- A. All underground utility Work of whatever nature shall be installed, inspected and approved prior to start of seeding operations.
- B. Equipment used to prepare seed bed, distribute fertilizers and seeding shall be approved by the Engineer prior to start of Work.
- C. Coordinate application of fertilizer with placement of topsoil; placement of topsoil shall be as specified in Section 32 2323.13.

#### 3.02 FERTILIZING

- A. Apply lime and fertilizer based on results of soil analysis and recommendations of approved soil testing laboratory.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine used to apply seed.
- D. After seedbed areas have been brought to proper compacted elevation, thoroughly loosen to a minimum depth of 5 inches by discing, harrowing or other approved methods.
- E. Do not work top-soiled areas when frozen or excessively wet.
- F. Liming:
  - 1. Distribute limestone uniformly at the rate indicated by the soil test.
  - 2. Thoroughly incorporate into the topsoil a minimum depth of 4 inches as a part of the tillage operation.
- G. Basic Fertilizer:
  - 1. Distribute basic fertilizer uniformly at the rate indicated by the soil test.
  - 2. Incorporate into soil to depth of 4 inches by approved methods as part of tillage operation.
- H. Remove unsuitable material larger than 1 inch in any direction.
- I. Uniformly grade surface to the required contours without the formation of water pockets.
- J. Spread soil conditioner by approved means at 125 cubic yards per acre.
- K. Distribute starter fertilizer and rake in lightly by acceptable means.
- L. Incorporate starter fertilizer into the upper 1 inch of soil.
- M. Lightly water soil to aid dissipation of fertilizer; irrigate top level of soil uniformly.
- N. Variations: The Engineer may vary the rates (provided within this Section) of fertilizers and soil conditioners as required by the soil analysis of the topsoil; cost modifications shall be based on unit price basis.

### 3.03 SEEDING

- A. Apply seed evenly in two intersecting directions at rate provided by schedule under Part 3 of this Section; rake in lightly.
- B. Uniformly sow specified seed mix by use of approved hydraulic seeder, power-drawn drill, power-operated seeder or hand-operated seeder.
- C. Do not seed areas in excess of that which can be mulched on same day.
- D. Planting Season:
  - 1. Seeding will be permitted only between September 1 through October 15, and March 1 through May 30, unless otherwise approved by the Engineer.
  - 2. Seeding of Crown Vetch not to be done during the months of September and October.
- E. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.
- F. Roll seeded area immediately after seeding (dry roll/dry ground) with roller not exceeding a maximum force of 65 pounds per foot width of roller.
- G. Immediately following seeding, apply mulch; maintain clear of shrubs and trees.
  - 1. Place straw mulch in a continuous blanket at a minimum rate of 3 tons per acre.
  - 2. Anchor straw mulch by use of twine, stakes, wire staples, plastic nets or chemical mulch binder; apply binders by the manufacturer's method and rate.
  - 3. Protect structures, pavements, curbs and walls to prevent staining.
  - 4. Do not spray chemical mulch binders onto any area within 100 feet of a stream or other body of water.
- H. Apply water with fine spray immediately after each area has been mulched; saturate to 4 inches of soil.
- I. Maintain saturation point to a depth of 3 inches for ten days immediately following the seeding.
- J. Grass areas must grow, and any which do not show a prompt catch of grass shall be reseeded; this operation shall be repeated until a complete coverage is obtained; when the area does not need to be reseeded, it shall be wet to a depth of 3 inches every time the surface shows evidence of drying out, and this shall continue through the entire period of maintenance.

### 3.04 HYDROSEEDING

- A. Contractor has the option of installing the seed mixture in a culture containing the necessary fertilizer ingredients and a papier mache or wood cellulose fiber slurry, all mixed with water and sprayed on the slope by pumping from a tank truck or similar equipment satisfactory to the Engineer.
- B. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at rate of 320 pounds per 1,000 square yards evenly in one pass.
- C. The medium shall be included in such quantities that when thoroughly mixed with the seed, lime and fertilizer and sprayed on the area to receive this mixture, it shall not be less than 1/4 inch thick.
- D. After application, apply water with fine spray immediately after each area has been hydroseeded; saturate to 4 inches of soil and maintain moisture levels two to four inches.

### 3.05 SEED PROTECTION

- A. On slopes 2:1 or steeper, omit mulching and apply erosion control fabric widths, rolled out from bottom to top of slope, held in place by heavy-duty wire staples at approximately 3 foot intervals, in accordance with the instructions of the manufacturer; roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench; overlap edges and ends of adjacent rolls minimum 12 inches; backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36 inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow; lap ends and edges minimum 6 inches.

### 3.06 SLOPE COVER

- A. Mixture Number 13: Where shown on the Drawings, permanent erosion control on banks.
  - 1. Seeding Rate: Orchard Grass (20), or Smooth Bromegrass (25), plus Birdsfoot Trefoil (6).
- B. Mixture "B":
  - 1. Work shall be as specified for Mixture "B" of PADEP Erosion and Sediment Control Program Manual; Table 11.4 Recommended Seed Mixtures.
- C. Topsoil will not be required in holes for planting and crowns; lime shall be raked into the soil at the rate of 2000 pounds per acre and fertilizer, analysis 10-20-20, at the rate of 1,000 pounds per acre (23 pounds per 1,000 square feet), prior to seeding.

### 3.07 TEMPORARY SEED COVER

- A. Temporary seed mix shall be as specified within the Project Manual, unless specified otherwise in the Sedimentation and Erosion Control Plan (as applicable).
- B. On disturbed areas, sow annual rye grass seed (Temporary Cover) on the prepared topsoil.
- C. Sow and cover seed by method described for permanent seeding.
- D. All conservation and erosion control areas, whether seeded with a drill, broadcasted or hydroseeded, should be mulched to reduce soil erosion and to aid seed germination and establishment of seedlings.
- E. Apply mulch same as permanent seeding.

### 3.08 MAINTENANCE

- A. Mow grass at regular intervals to maintain at maximum height of 3 inches; do not cut more than 1/3 of grass blade at each mowing; perform first mowing when seedlings are 40 percent higher than desired height.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming; do not let clippings lay in clumps.

- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Weeding: Control growth of weeds.
  - 1. Apply herbicides; remedy damage resulting from improper use of herbicides.
  - 2. Hand-weeding shall be required if chemical weeding does not produce a weed-free turf.
- G. Immediately reseed areas showing bare spots.
- H. Repair washouts or gullies; the Contractor shall continue to repair washouts and reseed unsatisfactory areas during the Correction of Work period, as satisfactory to the Geotechnical Engineer.
- I. Protect seeded areas with warning signs during maintenance period.
- J. Additional Protection:
  - 1. Where needed to prevent trespassing, provide a single strand of string stapled 15 inches above grade, stretched between 2 inch x 4 inch stakes, set 15 feet apart and driven 18 inches into ground.
  - 2. Hang from string at suitable intervals, "Keep off the Grass" signs.
  - 3. Movement of equipment across lawn areas shall be done on planks and then only where approved by the Geotechnical Engineer.

**END OF SECTION 32 92 19**

## SECTION 33 05 05.36 - VACUUM TESTING

### 1.1 SUMMARY

- A. Section Includes: Vacuum testing of manholes.
- B. Contractor shall coordinate with MAWC for vacuum testing at no additional cost to the Owner, Owner's design engineer, MAWC, or it's subsidiaries, or consultants.
- C. Related Requirements:
  - 1. Section 330130.61 - Packer Injection Grouting: Sealing of sewer pipe and manhole joints.
  - 2. Section 330130.86 - Manhole Rim Adjustment: Raising or replacing of designated manhole rims.
  - 3. Section 330561 - Concrete Manholes: Requirements for sewage and stormwater manholes.
  - 4. Section 330573 - Polyethylene Manholes: Requirements for sewage and stormwater manholes.
  - 5. Section 330576 - Fiberglass Manholes: Requirements for sewage and stormwater manholes.
  - 6. Section [333100 - Sanitary Sewerage Piping] [333111 - Public Sanitary Sewerage Gravity Piping]: Pipe materials, manholes, and accessories normally encountered with gravity sewerage piping.
  - 7. Municipal Authority of Westmoreland County (MAWC) standards.

### 1.2 REFERENCE STANDARDS

- A. ASTM International:
  - 1. ASTM C1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.

### 1.3 SUBMITTALS

- A. Submittal Procedures: Requirements for submittals.
- B. Submit following items prior to start of testing:
  - 1. Testing procedures.
  - 2. List of test equipment.
  - 3. Testing sequence schedule.
  - 4. Provisions for disposal of flushing and test water.
  - 5. Certification of test gage calibration.
- C. Test and Evaluation Reports: Indicate results of manhole tests.
- D. Qualifications Statement:
  - 1. Submit qualifications for applicator.

### 1.4 QUALITY ASSURANCE

- A. Perform Work according to ASTM standards and per MAWC requirements.

- B. Maintain two (2) hard copies and one (1) digital copy of each standard affecting Work of this Section on Site.

## 1.5 QUALIFICATIONS

- A. Applicator: Company specializing in performing Work of this Section with minimum [three] <3> years' [documented] experience.

## PART 2 - PRODUCTS

### 2.1 VACUUM TESTING

#### A. Equipment:

1. Vacuum pump.
2. Vacuum line.
3. Vacuum Tester Base:
  - a. Compression band seal.
  - b. Outlet port.
4. Shutoff valve.
5. Stopwatch.
6. Plugs.
7. Vacuum Gage: Calibrated to 0.1 in. Hg (0.34 kPa).

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that manholes are ready for testing.
- C. Verify that manholes are backfilled.

### 3.2 FIELD QUALITY CONTROL

- A. Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- B. Manhole Testing:
  1. Repair both outside and inside of joint to ensure permanent seal.
  2. Test manholes with manhole frame set in place.
  3. Vacuum Testing:
    - a. Comply with ASTM C1244
    - b. Plug pipe openings; securely brace plugs and pipe.
    - c. Inflate compression band to create seal between vacuum base and structure.

- d. Connect vacuum pump to outlet port with valve open, then draw vacuum to 10 in. Hg
  - e. Close valve.
  - f. Manhole Test Duration in Seconds:
    - 1) Manhole Diameter of 4 Feet (1.2 m): 60.
    - 2) Manhole Diameter of 5 Feet (1.5 m): 75.
    - 3) Manhole Diameter of 6 Feet (1.8 m): 90.
  - g. Record vacuum drop during test period.
  - h. If vacuum drop is greater than 1 in. Hg (3.4 kPa) during testing period, repair and retest manhole.
  - i. If vacuum drop of 1 in. Hg (3.4 kPa) does not occur during test period, manhole is acceptable; discontinue testing.
  - j. If vacuum test fails to meet 1-in. Hg (3.4-kPa) drop in specified time after repair, repair and retest manhole.
- 4. If unsatisfactory testing results are achieved, repair manhole and retest until result meets criteria.
  - 5. Repair visible leaks regardless of quantity of leakage.

END OF SECTION 330505.36



## SECTION 33 05 05.41 - AIR TESTING

### 1.1 SUMMARY

- A. Section Includes: Low-pressure air testing of gravity sewer piping.
- B. Contractor shall coordinate with MAWC for testing at no additional cost to the Owner, Owner's design engineer, MAWC, or it's subsidiaries, or consultants.
- C. Related Requirements:
  - 1. Section 330130.72 - Cured-in-Place Pipe Lining: Relining of sanitary sewer piping and associated preparatory Work.
  - 2. Section 330130.79 - Fold-and-Form Pipe Lining: Relining of sanitary sewer piping and associated preparatory Work.
  - 3. Section [333100 - Sanitary Sewerage Piping] [333111 - Public Sanitary Sewerage Gravity Piping]: Pipe materials, manholes, and accessories normally encountered with gravity sewerage piping.
  - 4. Municipal Authority of Westmoreland County (MAWC) standards.

### 1.2 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Submit following items prior to start of testing:
  - 1. Testing procedures.
  - 2. List of test equipment.
  - 3. Testing sequence schedule.
  - 4. Provisions for disposal of flushing and test water.
  - 5. Certification of test gage calibration.
- C. Test and Evaluation Reports: Indicate results of piping tests.
- D. Qualifications Statement:
  - 1. Submit qualifications for applicator.

### 1.3 QUALITY ASSURANCE

- A. Perform Work according to AWWA standards along with MAWC requirements.

### 1.4 QUALIFICATIONS

- A. Applicator: Company specializing in performing Work of this Section with minimum [three] (3) years' [documented] experience.

## PART 2 - PRODUCTS

### 2.1 AIR TESTING

#### A. Equipment:

1. Air compressor.
2. Air supply line.
3. Shutoff valves.
4. Pressure regulator.
5. Pressure relief valve.
6. Stopwatch.
7. Plugs.
8. Pressure Gage: Calibrated to 0.1 psi

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that piping is ready for testing.
- C. Verify that trenches are backfilled.

### 3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for preparation.
- B. Lamping:
  1. Lamp gravity piping after flushing and cleaning.
  2. Perform lamping operation by shining light at one end of each pipe section between manholes.
  3. Observe light at other end.
  4. Pipe not installed with uniform line and grade will be rejected.
  5. Remove and reinstall rejected pipe sections.
  6. Clean and lamp until pipe section is installed to uniform line and grade.
- C. Plugs:
  1. Plug outlets, wye branches, and laterals.
  2. Brace plugs to resist test pressures.

### 3.3 FIELD QUALITY CONTROL

- A. Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

B. Low-Pressure Air Testing:

1. Test each reach of gravity sewer piping between manholes.
2. Introduce air pressure slowly to approximately 4 psig
3. Determine ground water elevation above spring line of piping.
4. For every foot of ground water above spring line of piping, increase starting air test pressure by 0.43 psi
5. Do not increase pressure above 10 psig
6. Allow pressure to stabilize for at least five minutes.
7. Adjust pressure to 3.5 psig or to increased test pressure as determined above when ground water is present.
8. Do not make allowance for laterals.
9. Minimum Testing Duration in Minutes Per 100 Feet :
  - a. Pipe Size 3 Inches : 0.2.
  - b. Pipe Size 4 Inches : 0.3.
  - c. Pipe Size 6 Inches : 0.7.
  - d. Pipe Size 8 Inches : 1.2.
  - e. Pipe Size 10 Inches : 1.5.
  - f. Pipe Size 12 Inches : 1.8.
  - g. Pipe Size 15 Inches : 2.1.
  - h. Pipe Size 18 Inches : 2.4.
  - i. Pipe Size 21 Inches : 3.0.
  - j. Pipe Size 24 Inches: 3.6.
  - k. Pipe Size 27 Inches : 4.2.
  - l. Pipe Size 30 Inches : 4.8.
  - m. Pipe Size 33 Inches : 5.4.
  - n. Pipe Size 36 Inches: 6.0.
10. Record drop in pressure during testing period.
11. If air pressure drops more than 1.0 psi during testing period, piping has failed.
12. If 1.0-psi air pressure drop has not occurred during testing period, piping is acceptable; discontinue testing.
13. If piping fails, test reach of piping in incremental stages until leaks are isolated, repair leaks, and retest entire reach between manholes.
14. If unsatisfactory testing results are achieved, make necessary repairs and retest until result meets criteria.
15. Repair visible leaks regardless of quantity of leakage.

END OF SECTION 330505.41

## SECTION 33 05 05.43 - MANDREL TESTING

### 1.1 SUMMARY

- A. Section Includes: Deflection testing of plastic sewer piping.
- B. Contractor shall coordinate with MAWC for testing at no additional cost to the Owner, Owner's design engineer, MAWC, or it's subsidiaries, or consultants.
- C. Related Requirements:
  - 1. Section 330130.79 - Fold-and-Form Pipe Lining: Relining of sanitary sewer piping and associated preparatory Work.
  - 2. Section [333100 - Sanitary Sewerage Piping] [333111 - Public Sanitary Sewerage Gravity Piping]: Pipe materials, manholes, and accessories normally encountered with gravity sewerage piping.
  - 3. Municipal Authority of Westmoreland County (MAWC) standards.

### 1.2 REFERENCE STANDARDS

- A. ASTM International:
  - 1. ASTM D2122 - Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings.

### 1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Submit following items prior to start of testing:
  - 1. Testing procedures.
  - 2. List of test equipment.
  - 3. Testing sequence schedule.
  - 4. Provisions for disposal of flushing and test water.
  - 5. Certification of test gage calibration.
  - 6. Deflection mandrel drawings and calculations.
- C. Test and Evaluation Reports: Indicate results of piping tests.

## PART 2 - PRODUCTS

### 2.1 DEFLECTION TESTING

- A. Equipment:
  - 1. [Properly sized rigid ball] [or] ["go, no go" mandrel].
  - 2. Pull/retrieval ropes.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that piping is ready for testing.
- C. Verify that trenches are backfilled.

### 3.2 PREPARATION

- A. Execution and Closeout Requirements: Requirements for preparation.
- B. Lamping:
  - 1. Lamp gravity piping after flushing and cleaning.
  - 2. Perform lamping operation by shining light at one end of each pipe section between manholes.
  - 3. Observe light at other end.
  - 4. Pipe not installed with uniform line and grade will be rejected.
  - 5. Remove and reinstall rejected pipe sections.
  - 6. Clean and lamp until pipe section is installed to uniform line and grade.
- C. Plugs:
  - 1. Plug outlets, wye branches, and laterals.
  - 2. Brace plugs to resist test pressures.

### 3.3 FIELD QUALITY CONTROL

- A. Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- B. Deflection Testing of Plastic Sewer Piping:
  - 1. Perform vertical ring deflection testing on PVC and ABS sewer piping after backfilling has been in place for at least 30 days, but not longer than 12 months.
  - 2. Allowable maximum deflection for installed plastic sewer pipe is no greater than five percent of original vertical internal diameter.
  - 3. Perform deflection testing using [properly sized rigid ball] [or] ["go, no go" mandrel].
  - 4. [Rigid Ball] [or] [Mandrel] Diameter:
    - a. Not less than 95 percent of base or average ID of pipe.
    - b. Pipe Diameter: Comply with ASTM D2122.
  - 5. Perform testing without mechanical pulling devices.
  - 6. Locate, excavate, replace, and retest piping that exceeds allowable deflection.

END OF SECTION 330505.43

## SECTION 330561 – PRECAST CONCRETE MANHOLES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Standard PreCast Manholes
  - 2. Frame and Covers
  - 3. Vertical adjustment of existing manholes and structures.

#### 1.2 SUBMITTALS

- A. Product Data: Manufacturer information for manhole covers, component construction, features, configuration, and dimensions
- B. Manufacturer's Certificate: Products meet or exceed specified requirements.
- C. Manufacturer Instructions: Installation requirements, including storage and handling procedures.
- D. Source Quality-Control Submittals: Indicate results of [shop] [factory] tests and inspections.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- F. Qualifications Statement: - Qualifications for manufacturer.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of manholes and connections, and record invert elevations.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work according to MAWC standards.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Storage:
  - 1. Store materials according to manufacturer instructions.
  - 2. Store precast concrete manholes and drainage structures to prevent damage to Owner's property or other public or private property.
  - 3. Repair property damaged from materials storage.
- B. Protection:
  - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

2. Provide additional protection according to manufacturer instructions.

## 1.6 AMBIENT CONDITIONS

- A. Cold Weather Requirements: Comply with ACI 530/530.1.

## 1.7 EXISTING CONDITIONS

- A. Field Measurements:
  1. Verify field measurements prior to fabrication.
  2. Indicate field measurements on Shop Drawings.

## PART 2 - PRODUCTS

### 2.1 CONCRETE AND MASONRY MANHOLES

- A. Manufacturers: - AC Miller or approved equal
- B. Manhole Sections:

1. Materials:
  - a. Precast concrete manhole pipe sections shall be forty-eight inches (48") in diameter, conforming to ASTM C-478. Joints shall be sealed with waterproof gaskets as specified herein.

Precast concrete manhole bases shall be formed from concrete similar to that used for precast manhole pipe sections. Bases shall be of the dimensions shown on the Drawings and shall have an integral formed ring to receive the bottom manhole section and form a watertight joint, sealed with a waterproof gasket, as hereinafter specified. Bases shall have an integral rubber gasket cast into the pipe opening of the precast base at the time of manufacture. The gasket shall form a compression-type joint with no moving parts, assuring a positive watertight joint, and shall be the size and type required for the pipe selected. The rubber gasket shall be manufactured in accordance with Rubber Joint Specifications ASTM C-923 titled "Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes" manufactured by A-LOK Products, Inc., (OR APPROVED EQUAL). Gaskets: Comply with ASTM C923.

1. Following manufacturing, the exterior of the manhole shall be factory-coated with a bitumastic sealer as manufactured by KOP-COAT, Inc., Pittsburgh, PA, (OR APPROVED EQUAL). The same sealer shall be used and applied to all joints and areas damaged in handling.
- c. The waterproofing gasket shall be a preformed plastic joint sealant compound in compliance with Federal Specification SS-S-00210. Primer compounds shall be of a similar manufacture and compatible with the type of gasket incorporated. A waterproofing gasket shall be used to seal all joints formed between precast manhole sections. The gasket and primer shall be applied in strict accordance with the manufacturer's recommendations.

- d. Precast concrete sections of the manhole shall be installed in a vertical position. Where necessary, the manholes shall be brought to grade with precast concrete rings sealed with waterproofing gasket. After the concrete manhole sections are placed in position, the Contractor shall use extra care in embedding pipes in the walls to obtain watertight joints. Pipes entering and leaving manholes shall be connected by channels made from Class C concrete and the channel shall be finished smooth to give proper curve and grade. Any noticeable groundwater leakage into the manhole shall be repaired in a manner satisfactory to the Engineer. All loose concrete and debris inside the manhole shall be removed and the manhole shall be kept clean.
- e. Precast concrete grade adjustment rings of various thicknesses shall be used where necessary to adjust the height of the manhole to the finished surface elevation. Rings shall have inside and outside diameters the same as those of the top opening of the upper manhole section, and shall be placed as required before the frame is positioned. Where manholes are located on steep roadway slopes, the manhole lid and frame shall conform to the roadway slope by the installation of high-density polyethylene wedge design manhole adjustment rings as manufactured by Ladtech, Inc.
- f. Manhole frames and covers shall be roadway, non-rocking type, with machined surfaces. The frames shall have a clear opening as shown on the Standard Detail Drawing. Material used in the manufacture of the frame and lid shall conform to ASTM A-48, Class 30 iron minimum. The cover shall have two rectangular openings for removal, and shall be inscribed with the word "SEWER." The manhole frame and cover shall be as manufactured by Neenah Foundry Company, as manufactured by Allegheny Foundry (OR APPROVED EQUAL). All terminal (end of line) manhole covers shall be supplied with two (2) – three-quarter inch ( $\frac{3}{4}$ ") holes for venting purposes.
- g. Products by other manufacturers which are equal in type and quality will be considered for approval by the Engineer. The manhole frame and cover shall be placed on the top manhole section and anchored by two (2) – three-quarter inch ( $\frac{3}{4}$ ") diameter anchor bolts. The top manhole section shall be drilled and an approved multiple expanding machine-bolt anchor shall be installed for each bolt. A waterproofing gasket, as specified, shall be installed between the frame and manhole top section and/or any grade adjustment rings.
- h. Concrete grade adjustment rings shall be precast and provided with holes for anchor bolts. Anchor bolt holes shall be either precast or drilled in the unit.
- i. Manhole steps shall be of co-polymer polypropylene plastic construction reinforced with one-half inch ( $\frac{1}{2}$ ") grade 60 steel reinforcement as manufactured by M.A. Industries of Peach Tree City, Georgia, (OR APPROVED EQUAL).

2. Joints:

- a. Comply with ASTM C913.
- b. Maximum Leakage: 50 gal. per hour per inch diameter per mile of pipe per 24 hours for infiltration

2.2 FRAMES AND COVERS

A. Manufacturers:

- 1. Neenah Foundry or approved equal



## SECTION 33 31 00 - SANITARY SEWERAGE PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Sanitary sewerage piping.
2. Bedding and cover materials.

##### B. Related Requirements:

1. Section 221300 - Facility Sanitary Sewerage: Product and execution requirements for sanitary waste and vent piping at building.
2. Section 310513 - Soils for Earthwork: Soil for backfill in trenches.
3. Section 310516 - Aggregates for Earthwork: Aggregate for backfill in trenches.
4. Section 312316 - Excavation: Requirements for excavation and backfill as required by this Section.
5. Section 312316.13 - Trenching: Requirements for trenching as required by this Section.
6. Section 312323 - Fill: Requirements for backfilling as required by this Section.
7. Section 330130.61 - Packer Injection Grouting: Grout sealing of piping.
8. Section [330505.31 - Hydrostatic Testing] [330505.41 - Air Testing]: Testing of pressurized sewerage piping
9. Section 330505.33 - Infiltration and Exfiltration Testing: Infiltration testing of gravity-flow sewerage piping.
10. Section 330505.43 - Mandrel Testing: Deflection testing of plastic sewerage piping.
11. Section 330561 - Concrete Manholes: Manholes for sanitary sewerage piping.
12. Section 330573 - Polyethylene Manholes: Manholes for sanitary sewerage piping.
13. Section 330576 - Fiberglass Manholes: Manholes for sanitary sewerage piping.
14. Section 330597 - Identification and Signage for Utilities: Pipe markers.

#### 1.2 REFERENCE STANDARDS

##### A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

##### B. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.
4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
6. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
7. AWWA C153 - Ductile-Iron Compact Fittings.

##### C. ASTM International:

1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.

2. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.
3. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe (Metric).
4. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
5. ASTM C76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe (Metric).
6. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
7. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).
8. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
9. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
10. ASTM C923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals (Metric).
11. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
12. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
13. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
14. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
15. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
16. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
17. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
18. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.
19. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
20. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
21. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

### 1.3 COORDINATION

- A. Section 013000 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section with termination of sanitary sewer connection outside building, connection to municipal public sewer.

### 1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer information indicating pipe material to be used.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Source Quality-Control Submittals: Indicate results of [shop] [factory] tests and inspections.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

F. Qualifications Statement:

1. Submit qualifications for manufacturer and installer.

1.5 CLOSEOUT SUBMITTALS

- A. Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record finished locations of pipe runs, connections, [manholes,] [cleanouts,] and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

- A. Perform Work according to Sewer Authority standards.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum [three] <3> years' [documented] experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Storage:
  1. Store materials according to manufacturer instructions.
  2. Store valves in shipping containers with labeling in place.
- D. Protection:
  1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
  2. Block individual and stockpiled pipe lengths to prevent moving.
  3. Provide additional protection according to manufacturer instructions.

1.9 EXISTING CONDITIONS

- A. Field Measurements:
  1. Verify field measurements prior to fabrication.
  2. Indicate field measurements on Shop Drawings.

## PART 2 - PRODUCTS

### 2.1 SANITARY SEWERAGE PIPING

#### A. Plastic Pipe:

1. Material: PVC.
2. Comply with ASTM D3034, SDR-[35]
3. Inside Nominal Diameter: Refer to Drawings,
4. End Connections: Bell and spigot with rubber-ring-sealed gasket joint.
5. Fittings: PVC.
6. Joints:
  - a. Elastomeric gaskets.
  - b. Comply with ASTM F477.

#### B. Plastic Pipe:

1. Material: PVC, Schedule [40] [80] [120].
2. Comply with ASTM D1785.
3. Inside Nominal Diameter: Refer to Drawings
4. End Connections: Bell and spigot with solvent-sealed ends.
5. Fittings:
  - a. Material: PVC.
  - b. Comply with ASTM D2466.
6. Joints:
  - a. Solvent welded with solvent cement according to ASTM D2564.
  - b. Comply with ASTM D2855.

### 2.2 MANHOLES

- #### A. As specified in Section [330561 - Concrete Manholes]

### 2.3 FLEXIBLE COUPLINGS

#### A. Manufacturers:

1. Furnish materials according to Sewer Authority standards.

#### B. Description:

1. Material: Resilient, chemical-resistant, elastomeric PVC.
2. Attachment: Two [Series-300] stainless-steel clamps, screws, and housings.

### 2.4 FLEXIBLE PIPE BOOTS FOR MANHOLE PIPE ENTRANCES

#### A. Manufacturers:

1. Furnish materials according to Sewer Authority standards.

- B. Description:
  - 1. Comply with ASTM C923.
  - 2. Attachment: [Series-300] stainless-steel clamp and hardware.

## 2.5 MATERIALS

- A. Bedding and Cover:
  - 1. Bedding: 310516 - Aggregates for Earthwork
  - 2. Cover: Fill Type 310516 - Aggregates for Earthwork
  - 3. Soil Backfill from Above Pipe to Finish Grade:

## 2.6 MIXES

- A. Grout: As specified in Section 30130.61

## 2.7 ACCESSORIES

- A. Pipe Markers: per MAWC requirements .

## 2.8 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Provide shop inspection and testing of pipe.
- C. Certificate of Compliance:
  - 1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
  - 2. Specified shop tests are not required for Work performed by approved manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that excavations, dimensions, and elevations are as indicated on [Drawings]

### 3.2 PREPARATION

- A. Execution and Closeout Requirements: Requirements for installation preparation.
- B. Correct over-excavation with [fine aggregate]
- C. Remove large stones or other hard materials that could damage pipe or impede consistent backfilling or compaction.

D. Protect and support existing sewer lines, utilities, and appurtenances.

E. Utilities:

1. Maintain profiles of utilities.
2. Coordinate with [other utilities] to eliminate interference.
3. Notify Architect/Engineer if crossing conflicts occur.

### 3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section [312316.13 - Trenching]
2. Place bedding material at trench bottom.
3. Level materials in continuous layer not exceeding <8> inches.
4. Maintain optimum moisture content of bedding material to attain required compaction density.

B. Piping:

1. Installation Standards: Install Work according to Sewer Authority standards.

C. Manholes: As specified in Section [330561 - Concrete Manholes]

D. Backfilling: As specified in Section 312323 - Fill.

### 3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Maximum Variation from Indicated Slope: No less than 2%

### 3.5 FIELD QUALITY CONTROL

A. Quality Requirements: Requirements for inspecting and testing.

### 3.6 PROTECTION

A. Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

C. Cap open ends of piping during periods of Work stoppage.

### 3.7 ATTACHMENTS

A. Sanitary Sewer Main: From 5 feet beyond east building wall, to municipal sewer under Oak Street. Size: 8 inches.

B. Cleanout: Near west side of main sidewalk on sanitary sewer main.

END OF SECTION 333100