PROJECT SPECIFICATIONS

Prepared for:

Franklin Park Borough, Allegheny County
MS4 Sediment Reduction
Matterhorn Basin

Prepared by:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
Moon Township, Pennsylvania

CEC Project 315-219

March 2024

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OFFICIAL
BOROUGH OF FRANKLIN PARK
NOTICE TO BIDDERS

Sealed proposals will be received by the Borough of Franklin Park, 2344 West Ingomar Road, Pittsburgh, PA 15237 of Allegheny County, Pennsylvania through the Borough's office until 11:00 AM prevailing time on March 19, 2024 for:

MS4 SEDIMENT REDUCTION
MATTERHORN BASIN

The project is located near Matterhorn Drive in the Borough of Franklin Park, Allegheny County, Pennsylvania and will include the conversion of an existing stormwater BMP to a managed release concept stormwater BMP.

All work shall be constructed according to the Contract Drawings and Specifications which are on file at the office of the Owner and Civil and Environmental Consultants, 700 Cherrington Parkway, Moon Township, PA 15108.

All bidders may download bidding documents at the following location https://www.cecinc.com/projects-for-bid-pittsburgh/. Any technical questions regarding the bid documents are to be directed to CEC at 412-429-2324.

A pre-bid conference will be held at the Borough Building on March 5, 2024 at 11am. Bidders are not required to attend the pre-bid conference. All bidders must be PennDOT pre-qualified. Bidders shall submit their PennDOT pre-qualifications with their bid.

Pennsylvania prevailing wage rates apply. Proposals must be upon the forms furnished by the Borough. The bid must be accompanied by a certified check or bid bond in the amount of ten percent (10%) of the bid, made payable to the Borough of Franklin Park.

The Borough reserves the right to reject any or all proposals and to waive any informalities in the bidding. No bid may be withdrawn for ninety (90) calendar days after the scheduled time for receipt of bids.

Attention is directed to the fact that procurement is subject to all requirements of the Pennsylvania "Steel Products Procurement Act, Act No. 1978-3"; and for Contract value exceeding $25,000, the Pennsylvania Prevailing Wage Act (Act of 1961 P.L. 987), and The Public Works Employment Verification Act (July 2012) apply.

CATHY L. KRUMMERT
BOROUGH SECRETARY

SECTION 004143

BID FORM - UNIT PRICE (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. To: Franklin Park Borough, 2344 West Ingomar Road, Pittsburgh, PA 15237

B. Project Name: Matterhorn Basin Retrofit

C. Project No.: CEC Project #315-219

D. Date: March 19, 2024

E. Submitted by:

1. Name:
2. Address:

1.2 OFFER

A. Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Civil & Environmental Consultants, Inc. for the above-referenced Project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Unit Prices listed in this Bid Form in lawful money of the United States of America.

B. Include Bid security as required by the Instructions to Bidders.

C. All applicable federal and state taxes are included in the Unit Prices.

1.3 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for 60 days from the Bid closing date.

1. If this Bid is accepted by the Owner within the time period stated above, we will:

a. Execute the Agreement within 30 days of receipt of Notice of Award.
b. Furnish the required bonds within 30 days of receipt of Notice of Award
c. Commence Work within 30 days after written Notice to Proceed.

B. If this Bid is accepted within the indicated time, and we fail to commence the Work or we fail to provide the required bonds, the Bid security shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the Bid security or the difference between this Bid and the Bid upon which a Contract is signed.

C. In the event our Bid is not accepted within the time stated above, the required Bid security will be returned to the undersigned, according to the provisions of the Instructions to Bidders, unless

a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.4 CONTRACT TIME

A. If this Bid is accepted, we will:

1. Substantial completion by August 31, 2024. Final completion by September 30, 2024. It is understood that plantings will occur in the 2024 planting season.

1.5 UNIT PRICES

A. Following are Unit Prices for specific portions of the Work as listed: Include a list of items required to be priced. Extend following list as required to cover all items in the Work. Modify format of this list to suit nature of item and desired quantity measurement.

Item #1 **Description: Mobilization/Demobilization** – The contractor shall include all costs, fees, permits to mobilize, and demobilize their equipment, materials and other necessary items deemed necessary by the bidder to execute and complete the specified work and desired intent of this contract. The bidder will be paid a lump fee sum for this item, which includes **both** mobilization and demobilization.

Item #2 **Description: Traffic Control** – The contractor shall include all labor, materials, equipment to provide adequate signage and flaggers where needed in accordance with PennDOT Publication 213 to provide safe ingress and egress from the work site entrance/exit locations. The contractor shall provide advance warning signage in accordance with PennDOT requirements.

Item #3 **Description: Site Safety/Work Zone Protection** – The contractor shall include all labor, materials, equipment to secure the work zone during construction and until the site is accepted by the owner. This item shall include orange protection fence or other means necessary to protect the work area and restrict access to the construction areas.

Item #4 **Description: Site Preparation/Clearing & Grubbing** – The contractor shall include all labor, materials, equipment, disposal costs, and fees for site preparation, staging areas, clearing, and grubbing of existing vegetation and disposal of unwanted materials.

Item #5 **Description: Demolition- Existing 18" RCP Removal & Disposal** – The contractor shall include all labor, materials, equipment, disposal costs, and fees for removal of the existing 18" RCP. All other debris must be taken to an approved dump site. The contractor shall consider and include in their bid all items necessary to accomplish the removal of the pipe. This item includes but is not limited to bypass pumping and dewatering of the basin prior to pipe removal, dewatering pumping, filter bags for dewatering and all other incidental items needed to safely remove the pipe without releasing sediment downstream. This item also includes protection of any infrastructure in the vicinity of the pipe removal, including but not limited to above and below ground utilities, buildings, downstream storm sewers, bridges, roads or other improvements or sensitive areas. The contractor has accounted for these conditions in their bid price and schedule.

Item #6 **Description: Demolition- Existing Endwall Removal & Disposal** – The contractor shall include all labor, materials, equipment, disposal costs, and fees for removal of the existing endwall and riprap apron. All debris must be taken to an approved dump site. The contractor shall consider and include in their bid all items necessary to accomplish the removal of the structure. This item includes but is not limited to bypass pumping and dewatering of the basin prior to structure removal, dewatering pumping, filter bags for dewatering and all other incidental items needed to safely remove the structure without releasing sediment downstream. This item also includes protection of any infrastructure in the vicinity of the endwall removal, including but not limited to above and below ground utilities, buildings, riprap apron, bridges, roads or other improvements or sensitive areas. The contractor has accounted for these conditions in their bid price and schedule.

Item #7 **Description: Demolition- Existing 6" PVC Standpipe Removal & Disposal** of associated piping – The contractor shall include all labor, materials, equipment, disposal costs, and fees for removal of the existing 6" pipe and other incidental items not needed for the basin retrofit. All other debris must be taken to an approved dumping site. The contractor shall consider and include in their bid all items necessary to accomplish the removal of the pipe. This item includes but is not limited to bypass pumping and dewatering of the basin prior to pipe removal, dewatering pumping, filter bags for dewatering and all other incidental items needed to safely remove the pipe without releasing sediment downstream. This item also includes protection of any infrastructure in the vicinity of the pipe removal, including but not limited to above and below ground utilities, buildings, bridges, roads or other improvements or sensitive areas. The contractor has accounted for these conditions in their bid price and schedule.

Item #8 **Description: Topsoil Removal/Replace** – The contractor shall include all labor, materials, equipment to strip topsoil, temporarily stockpile, re-spread the topsoil within the limits of disturbance or remove it from the site to accomplish the desired intent of the contract. This item may or may not include removing the topsoil from the site. The basin bottom will be replaced by an amended soil media, which is a separate pay item.

Item #9 **Description: Rough Grading/Excavation** – The contractor shall include all labor, materials, equipment to load, remove unwanted material from the project site to a waste site to achieve the proposed final grades. This item includes stockpiling the material in the stockpile area, when necessary, and transporting the materials with a tri-axle to the waste site in a safe manner without spilling sediment laden runoff onto roadways. This item also includes placement, rough grading. This item includes removal of soils, silts or other materials from the haul route, should they become soiled.

Item #10 **Description: Import Fill** – The contractor shall include all labor, materials, equipment to import clean fill to the project site to achieve the proposed final grades. This item includes stockpiling the material in the stockpile area, when necessary, and transporting the materials with a tri-axle to the site in a safe manner without spilling sediment laden runoff onto roadways. This item also includes placement, rough grading and compaction of the approved soil type over the existing gas line to the proposed final grades. This item includes removal of soils, silts or other materials from the haul route, should they become soiled. The materials shall be placed in 9" lifts and spread evenly over the gas line during fill placement.

Item #11 **Description: Amended Soil (MRC)** – The contractor shall include all labor, materials, equipment, fees for the placement of amended soils to achieve the final grades and

the desired intent of the contract in accordance with the amended soil detail. The contractor shall provide a submittal with soil description of the import material for approval by the engineer. The material being imported must be imported with proper documentation provided by the contractor. This item includes all grading not completed during rough grading operations to achieve the desired intent of the project documents and in accordance with the grading plans.

Item #12 **Description: Rock Construction Entrance** – The contractor shall include all labor, materials, equipment to install and remove rock construction entrances in accordance with the approved NPDES permit and drawings. The contractor shall be required to furnish and place new stone, add additional stone for the rock construction entrance in accordance with the requirements of the NPDES earth disturbance permit issued by the Allegheny County Conservation District.

Item #13 **Description: Inlet Protection** – The contractor shall include all labor, materials, and equipment to install and maintain the inlet protection to meet the intent of the project documents. This item includes the installation of inlet protection, berm installation, all maintenance and replacement of inlet protection at the locations noted on the project documents. This item also includes the removal of inlet protections when a uniform 70% vegetative growth has been established across the site.

Item #14 **Description: Erosion Control Blanket** – The contractor shall include all labor, materials, and equipment to install and maintain the erosion control blanket to meet the intent of the project documents in accordance with the details provided. This item includes the installation of erosion control blanket and all maintenance and replacement of erosion control blanket at the locations noted on the project documents. The contractor shall provide a submittal for the engineers approval prior to installation.

Item #15 **Description: Filter Bag** – The contractor shall include all labor, materials, equipment to install, maintain and re-install a filter bag as necessary for the area being dewatered. The contractor will be paid one time, replacement filter bags and maintenance shall be included in the contractors bid price. Additional compensation will not be provided for replacement of the filter bags or maintenance and disposal of the sediment within the filter bag.

Item #16 **Description: R-6 Rip Rap Outlet Protection** – The contractor shall include all labor, materials, equipment to furnish, maintain and install R-6 limestone rip rap outlet protection where indicated on the approved NPDES drawing set and details. This item includes a layer of PennDOT Class 4 geotextile fabric.

Item #17 **Description: Broad-Based Dip** – The contractor shall include all labor, materials, equipment to construct, maintain, and remove the broad-based dips where indicated on the approved NPDES drawing set and details in accordance with PADEP details and the approved plan drawings.

Item #18 **Description: 12” Compost Filter Sock** – The contractor shall include all labor, materials, equipment to furnish, maintain and install 12” compost filter sock where indicated on the approved NPDES permit drawings and in accordance with manufacturers requirements. This item also includes the removal of 12” compost filter sock when a uniform 70% vegetative growth has been established across the site.

Item #19 **Description: Maintenance, and Removal Following Site Stabilization** – The contractor shall include all labor, materials, equipment to remove the erosion and sedimentation control BMPs until a uniform 70% vegetative growth has been established across the site.

Item #20 **Description: Temporary Seeding** – The contractor shall include all labor, materials, equipment to seed all areas of disturbance at the project site in accordance with the temporary seeding plan and detail sheets included within the project drawings. Temporary stabilization may be necessary during non-germinating months of the project, to prevent inactive areas from accelerated erosion or in the event an area of the site is not actively under construction beyond 4 days.

Item #21 **Description: PennDOT Type 4 Manhole** – The contractor shall include all labor, materials, equipment to install a PennDOT type 4 manhole where shown on the plans in accordance with the details and PennDOT RC details. The manhole sections, grade adjustment rings, steps frames and covers shall be installed in accordance with the site plans and details and PennDOT 408 specifications.

Item #22 **Description: Outlet Structure** – The contractor shall include all labor, materials, equipment to the existing outlet structure per the construction plans and detail in accordance with the construction drawings. The outlet structure, orifices, trash racks and all appurtenances shall be installed in accordance with the site plans and details and PennDOT 408 specifications.

Item #23 **Description: 24" ADS N-12 HDPE Pipe** – The contractor shall include all labor, materials, equipment to install 24" ADS N-12 HDPE Pipe (or equal) where indicated on the plans. The contractor shall place the pipe on 6" of AASHTO #57 limestone for pipe bedding and backfill around the remainder of the pipe with AASHTO #57 limestone to a minimum 6" above the pipe. The remainder of the trench shall be back filled with compacted native soil fill, unless located in pavement areas.

Item #24 **Description: R-6 Rip Rap for Emergency Spillway** – The contractor shall include all labor, materials, equipment to furnish, maintain and install R-6 rip rap for emergency spillway protection where indicated on the approved NPDES drawing set and in accordance with the construction details. A class 2 non-woven geotextile fabric shall be placed over the exposed sub-grade prior to stone placement.

Item #25 **Description: 4" Perforated Underdrain** – The contractor shall include all labor, materials, equipment to install 4" ADS N-12 HDPE Perforated Pipe where indicated on the plans. The contractor shall place the pipe on 6" of AASHTO #57 limestone for pipe bedding and backfill around the remainder of the pipe with AASHTO #57 limestone to a minimum 6" above the pipe. The pipe and associated #57 stone backfill shall be wrapped in Class 1 non-woven geotextile fabric. This item includes elbows, endcaps and fittings to complete the work in accordance with the approved permit drawings.

Item #26 **Description: MRC Seed Mix** – The contractor shall include all labor, materials, and equipment to seed all areas where the amended soil mixture was placed. The contractor shall include in their bid reseeding of the area until 70% vegetative growth is established. The contractor should assume one overseeding of permanent seed or until 70% vegetation is established. The contractor shall place seed within 48hrs of achieving final grade to encourage and promote early growth and stabilization of disturbed areas.

Item #27 **Description: Planting & Seeding** – The contractor shall include all labor, materials, and equipment to seed all disturbed areas of the site with the permanent seed mixture described in the plan and project documents. The contractor shall include in their bid reseeding of areas for permanent stabilization until 70% growth is established. The contractor should assume one over seeding of permanent seed in addition to the initial planting and seeding. The contractor shall place seed within 48hrs of achieving final grade to encourage and promote early growth and stabilization of disturbed areas. The contractor understands that seeding should be within 48hrs of reaching the finished grade.

1.6 ADDENDA

A. Following Addenda have been received, and the modifications to the Bid Documents noted below have been considered and all costs are included in the bidders fee price.

1. Addendum No. ....., dated .....
2. Addendum No. ....., dated .....

1.7 APPENDICES

A. Following documents are attached to and made a condition of the Bid:

1. Bid security in form of a 10% bid bond.
2. Bidder's qualifications statement and supporting data.
3. Document 004300 - Procurement Form Supplements, including:

1.8 BID FORM SIGNATURES

A. Full Name of Bidder, Address and Authorized Officer Signature

B. Hereunto affixed in the presence of _____

C. Authorized Signing Officer and Title: _____

END OF DOCUMENT 004143

Matterhorn Basin Retrofit Project			Construction Quantity Estimate		
No.	*Item*	*Units*	*Quantity*	*Unit Price ($)*	*Item Total ($)*
	GENERAL CONDITIONS				
1	Mobilization/Demobilization	LS	1	$ -	$ -
2	Traffic Control	LS	1	$ -	$ -
3	Site Safety/ Work Zone Protection	LS	1	$ -	$ -
	GENERAL CONDITIONS TOTAL				$ -
	SITE CLEARING AND DEMOLITION				
4	Site Preparation/Clearing & Grubbing	LS	1	$ -	$ -
5	Demolition - Existing 18" Reinforced Concrete Pipe Removal & Disposal	LS	1	$ -	$ -
6	Demolition - Existing Endwall Removal	LS	1	$ -	$ -
7	Demolition - Existing 6" PVC Standpipe Removal & Disposal	LS	1	$ -	$ -
	SITE CLEARING AND DEMOLITION SUBTOTAL				$ -
	SITE EARTHWORK				
8	Topsoil Removal/Replace	LS	1	$ -	$ -
9	Rough Grading/Earthwork - CUT	CY	390	$ -	$ -
10	Import Fill	CY	1000	$ -	$ -
11	Amended Soil (From MRC)	CY	2550	$ -	$ -
	SITE EARTHWORK SUBTOTAL				$ -
	EROSION & SEDIMENTATION CONTROL				
12	Rock Construction Entrance	EA	1	$ -	$ -
13	Inlet Protection	EA	2	$ -	$ -
14	Erosion Control Blanket	SY	1060	$ -	$ -
15	Filter Bag (Includes Replacement Bags)	EA	1	$ -	$ -
16	R-6 Rip-Rap outlet protection	TON	35	$ -	$ -
17	Broad-Based Dip	EA	1	$ -	$ -
18	Perimeter compost filter sock	LF	460	$ -	$ -
19	Maintenance, and Removal Following Site Stabilization	LS	1	$ -	$ -
20	Temporary seeding	EA	1	$ -	$ -
	EROSION & SEDIMENTATION CONTROL SUBTOTAL				$ -
	SURFACE DRAINAGE				
21	PennDOT Type 4 Manhole	EA	1	$ -	$ -
22	Proposed Outlet Control Structure	EA	1	$ -	$ -
23	Proposed 24" ADS N-12 High Density Polyethylene Pipe (HDPE) Pipe	LF	35	$ -	$ -
24	R-6 Rip-Rap for Emergency Spillway	TON	700	$ -	$ -
25	4" Perforated ADS underdrain	LF	200	$ -	$ -
	SURFACE DRAINAGE SUBTOTAL				$ -
	RESTORATION & PLANTING				
26	Managed Release Concept Seed Mix	LS	1	$ -	$ -
27	Planting & Seeding (In accordance w/planting and seeding plans)	LS	1	$ -	$ -
	RESTORATION & PLANTING SUBTOTAL				$ -
	GRAND TOTAL				$ -

Note:

1. All quantities are for bidding purposes. Contractor is responsible to verify quantities prior to submisison of their bid.
2. This quantity takeoff was based on permit plan set for Matterhorn Basin Retrofit project, prepared by Civil & Environmental Consultants, Inc., dated October 2023

Company Name: _____

Company Representative (Signature: electronic acceptable): _____

Company Representative (Print): _____

Contact Phone Number: _____

Email Address: _____

Date: _____

SECTION 005223.11

AGREEMENT FORM - AIA CONSTRUCTION MANAGEMENT (SINGLE-PRIME CONTRACT)

1.1 SUMMARY

A. Document Includes:

1. Agreement.

B. Related Documents:
1. Document 007223.11 - General Conditions - AIA Construction Management (Single-Prime Contract).
2. Document 007313 - Supplementary Conditions - AIA.
3. Document 007315 - Supplementary Conditions - AIA (Construction Management).

1.2 AGREEMENT

A. Basis of Agreement between Owner and Contractor: AIA A132 - Standard Form of Agreement between Owner and Contractor, Construction Manager as Adviser Edition.

B. Basis of Agreement between Owner and Contractor: AIA A133 - Standard Form of Agreement between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price.

C. Basis of Agreement between Owner and Contractor: AIA A134 - Standard Form of Agreement between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee without a Guaranteed Maximum Price.

END OF DOCUMENT 005223.11

SECTION 007223.11

GENERAL CONDITIONS - AIA CONSTRUCTION MANAGEMENT (SINGLE-PRIME CONTRACT)

1.1 SUMMARY

A. Document Includes:

1. General Conditions.

B. Related Documents:

1. Document 005223.11 - Agreement Form - AIA Construction Management (Single-Prime Contract).
2. Document 007315 - Supplementary Conditions - AIA (Construction Management).

1.2 GENERAL CONDITIONS

A. General Conditions of the Contract: AIA A232 - General Conditions of the Contract for Construction - Construction Manager as Adviser Edition.

1.3 SUPPLEMENTARY CONDITIONS

A. Refer to Document 007315 - Supplementary Conditions - AIA (Construction Management) for modifications to General Conditions.

END OF DOCUMENT 007223.11

SECTION 007313

SUPPLEMENTARY CONDITIONS - AIA

1.1 SUMMARY

A. Document Includes:

1. Supplementary Conditions.

B. Related Documents:

1. Document 004143 - Bid Form - Unit Price (Single-Prime Contract).
2. Document 004300 - Procurement Form Supplements: Appendices A to G.
3. Document 005213.11 - Agreement Form - AIA Stipulated Sum (Single-Prime Contract).
4. Document 007213.11 - General Conditions - AIA Stipulated Sum (Single-Prime Contract).

1.2 SUPPLEMENTARY CONDITIONS

A. Modifications:

1. These Supplementary Conditions modify AIA A201 - General Conditions of the Contract for Construction and other provisions of the Contract Documents as indicated below.
2. All provisions not modified remain in full force.
3. The terms used in these Supplementary Conditions, which are defined in AIA A201, have the meanings assigned to them in the General Conditions.

1.3 (ARTICLE 1) GENERAL PROVISIONS

A. (Subparagraph 1.1) Basic Definitions:

1. Add following Subparagraphs:

a. (Subparagraph 1.1.8) Products: New material, machinery, components, equipment, fixtures, and systems forming the Work, not including machinery and equipment used for preparation, fabrication, conveying, and erection of the Work. Products may also include existing materials or components required for reuse.
b. (Subparagraph 1.1.9) Furnish: To supply, deliver, unload, and inspect for damage.
c. (Subparagraph 1.1.10) Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.
d. (Subparagraph 1.1.11) Provide: To furnish and install.

1.4 (ARTICLE 3) CONTRACTOR

A. (Subparagraph 3.6) Taxes:

1. Add following Subparagraph:

a. (Subparagraph 3.6.2): Owner will obtain an exemption certificate for Contractor for taxes on certain products or items, for purchasing products or items for the Work.

1.5 (ARTICLE 7) CHANGES IN THE WORK

A. (Subparagraph 7.3) Construction Change Directives:

1. Add following Subparagraphs:

a. (Subparagraph 7.1.4): The Agreement identifies the overhead and profit fees applicable to changes in the Work, whether additions to or deductions from the Work on which the Contract Sum is based, and it identifies the fees for Subcontract work for changes (both additions and deductions) in the Work. Contractor shall apply fees, as noted, to Subcontractor's gross (net plus fee) costs on additional work.

1.6 (ARTICLE 8) TIME

A. Contract Time:

1. Add following Subparagraph:

a. (Subparagraph 8.1.5): Contract Time commences upon notice to proceed from the owner. The Notice to Proceed is anticipated in May 2024. The work is expected to be substantially complete by August 31, 2024, with final completion by September 30, 2024.

1.7 (ARTICLE 9) PAYMENTS AND COMPLETION

A. (Subparagraph 9.3) Applications for Payment:

1. Add following Subparagraph to Subparagraph 9.3.1:

a. (Subparagraph 9.3.1.3): Until Substantial Completion, Owner shall pay 90 percent of the amount due Contractor on account of progress payments.

B. Add following Paragraph and Subparagraph:

1. (Paragraph 9.11) Liquidated Damages:

a. (Subparagraph 9.11.1): Liquidated damages in the amount of $500 per calendar day shall accrue to Owner after Contract Time has expired.

1.8 (ARTICLE 11) INSURANCE AND BONDS

A. (Subparagraph 11.1) Contractor's Liability Insurance.

B. (Subparagraph11.5) Performance Bond and Payment Bond:

1. Add following Subparagraphs:

a. (Subparagraph 11.5.3): Contractor shall furnish bonds to Owner in the following amounts:
b. (Subparagraph 11.5.3.1): Furnish a 50 percent performance bond on standard surety bond form for a period of 2 years.
c. (Subparagraph 11.5.3.2): Furnish a 50 percent payment bond on standard surety bond form for a period of 2 years.

END OF DOCUMENT 007313

SECTION 007315

SUPPLEMENTARY CONDITIONS - AIA (CONSTRUCTION MANAGEMENT)

1.1 SUMMARY

A. Document Includes:

1. Supplementary Conditions.

B. Related Documents:

1. Document 004143 - Bid Form - Unit Price (Single-Prime Contract).
2. Document 004300 - Procurement Form Supplements: Appendices A to G.
3. Document 005223.11 - Agreement Form - AIA Construction Management (Single-Prime Contract).
4. Document 007223.11 - General Conditions - AIA Construction Management (Single-Prime Contract).

1.2 SUPPLEMENTARY CONDITIONS

A. Description:

1. These Supplementary Conditions modify AIA A232 - General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and other provisions of the Contract Documents as indicated below.
2. All provisions not modified remain in full force.

B. Terms used in these Supplementary Conditions, which are defined in AIA A232, have meanings assigned to them in the General Conditions.

1.3 (ARTICLE 1) GENERAL PROVISIONS

A. (Subparagraph 1.1) Basic Definitions:

1. Add following Subparagraphs:

a. (Subparagraph 1.1.8) Products: New material, machinery, components, equipment, fixtures, and systems forming the Work, not including machinery and equipment used for preparation, fabrication, conveying, and erection of the Work. Products may also include existing materials or components required for reuse.
b. (Subparagraph 1.1.9) Furnish: To supply, deliver, unload, and inspect for damage.
c. (Subparagraph 1.1.10) Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.
d. (Subparagraph 1.1.11) Provide: To furnish and install.

B. (Subparagraph 1.2) Execution, Correlation, and Intent:

1. Add following Subparagraph:

a. (Subparagraph 1.2.6): Sections of Division 01 govern the execution of the Work of all Sections of the Specifications.

1.4 (ARTICLE 3) CONTRACTOR

A. (Subparagraph 3.6) Taxes:

1. Add following Subparagraph:

a. (Subparagraph 3.6.2): Owner will obtain an exemption certificate for Contractor for taxes on certain products or items, for purchasing products or items for the Work.

1.5 (ARTICLE 7) CHANGES IN THE WORK

A. (Subparagraph 7.3) Construction Change Directives:

a. (Subparagraph 7.3.10): The Agreement identifies the overhead and profit fees applicable to changes in the Work, whether additions to or deductions from the Work on which the Contract Sum is based, and it identifies the fees for Subcontract work for changes (both additions and deductions) in the Work. Contractor shall apply fees, as noted, to Subcontractor's gross (net plus fee) costs on additional work.

1.6 (ARTICLE 8) TIME

A. Add following Subparagraph:

1. (Subparagraph 8.1.5): Contract Time commences upon notice to proceed from the owner. The NTP is anticipated in May 2024. The work is expected to be substantially complete by August 31, 2024, with final completion by September 30, 2024.

1.7 (ARTICLE 9) PAYMENTS AND COMPLETION

A. (Subparagraph 9.3) Applications for Payment:

1. Add following Subparagraph to Subparagraph 9.3.1:

a. (Subparagraph 9.3.1.3): Until Substantial Completion, Owner shall pay 90 percent of the amount due Contractor on account of progress payments.

B. Add following Paragraph and Subparagraph:

1. (Paragraph 9.11): Liquidated Damages:

a. (Subparagraph 9.11.1): Liquidated damages in the amount of $500 per calendar day shall accrue to Owner after Contract Time has expired.

1.8 (ARTICLE 11) INSURANCE AND BONDS

A. (Subparagraph 11.1) Contractor's Liability Insurance.

B. (Subparagraph 11.4) Performance Bond and Payment Bond:

1. Add following Subparagraphs:

a. (Subparagraph 11.4.3): Contractor shall furnish bonds to Owner in the following amounts:

1) (Subparagraph 11.4.3.1): Furnish a 50 percent performance bond on standard surety bond form for a period of 2 years.
2) (Subparagraph 11.4.3.2): Furnish a 50 percent payment bond on standard surety bond form for a period of 2 years.

END OF DOCUMENT 007315

SECTION 009113

ADDENDA

1.1 ADDENDUM #1

A. Project Information:
   1. To:<_____>.
   2. Project Title: MS4 Sediment Reduction - Matterhorn Basin
   3. Project No.: 315-219
   4. Date: <_____>.
   5. Owner: Borough of Franklin Park
   6. Engineer: Civil & Environmental Consultants, Inc.
   7. This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated <_____>, Addendum Number [1] <_____> issued <_____> and Addendum Number [2] <_____> issued <_____>, with amendments and additions noted below.
   8. Acknowledge receipt of this Addendum in the space provided in the Bid Form Section 004143, paragraph 1.6. Failure to do so may disqualify the Bidder.
   9. This Addendum consists of <_____> pages and the following drawings:
      a. No. Drawing Title
      b. Issue Date

B. Changes to Addendum Number 1 - Issued XXXX, 2024:

   1. N/A

C. Changes to the Project Manual:

   1. N/A

D. Changes to the Drawings:

   1. N/A

END OF DOCUMENT 009113

BOROUGH OF FRANKLIN PARK
INSTRUCTIONS TO BIDDERS

- The Borough of Franklin Park ("Borough") will award this contract to the lowest qualified and responsible bidder under the requirements of Chapter 14 in the Borough Code, 8 Pa.C.S.A. §§1401-1411.

- All bidders must utilize the bid forms provided within the bidding documents.

- All bidders must be PennDOT prequalified. Bidders to submit PennDOT prequalification's with bid documents.

- The bid forms are to be completely filled out, signed, and submitted to the Borough of Franklin Park, 2344 West Ingomar Road, Pittsburgh, PA 15237 by 11:00 a.m. on March 19, 2024, in accordance with the official advertisement. Sealed Bids should be clearly marked with the words "SEALED BID - MS4 Sediment Reduction – Matterhorn Basin" on the front cover of the envelope.

- No responsibility will be attached to any Borough representative for the premature opening of a bid proposal not properly addressed or identified.

- Each bid shall be accompanied by a separate certified check, cashier's check or bid bond drawn to the order of the Borough, which bond/check shall equal 10% of the total bid ("Bid Bond"). The conditions of the Bid Bond shall be that the bidder, upon being awarded the bid by the Borough, shall execute the contract to provide the services or materials as outlined in these specifications in default of which the contractor and the surety shall forfeit the Bid Bond as payment for damages or losses incurred by the Borough in obtaining alternate or additional bids and the difference between the amount of such bids and the bids submitted herewith.

- The Bid Bond will be returned to the successful bidder upon successful completion of the project. The Bid Bond will be returned to all unsuccessful bidders within sixty (60) days after contract award.

- A non-collusion affidavit will be required. See attached form.

- The successful bidder must provide a Performance Bond in the amount of 100% of the contract amount. The Performance Bond must be in a form equal to AIA Form A312. The successful bidder must furnish the Performance Bond within twenty (20) days after the contract has been awarded.

- The successful bidder must provide a Labor & Materialmen's Bond in the amount of 100% of the contract amount. The Labor & Materialmen's Bond must be in a form equal to AIA Form A312.

- The successful bidder will be required to enter into an agreement that will require a 100% maintenance bond at the completion of the project for a period of one year. This requirement is primarily for public infrastructure improvements.

- The successful bidder must perform work on this project in compliance with PA Labor and Industry Prevailing Wage Rate Regulations if the estimated cost of the total project is in excess of $25,000. If applicable, a wage decision is attached (Serial Number: 23-07855) and incorporated into the project bid specifications.

- The successful bidder will be required to provide a certificate of insurance. The coverage and amounts would be specified in an agreement between the successful bidder and the Borough after the bid is awarded. The minimum acceptable limits would be $1 million per occurrence/$2 million limit.

- Each bidder shall include a detailed specifications brochure with the bid proposal, if applicable.

BOROUGH OF FRANKLIN PARK
INSTRUCTIONS TO BIDDERS

- Prices should be quoted without Federal Excise or Transportation Taxes or Commonwealth of Pennsylvania Sales Tax because the Borough is exempt from such taxes.

- Every bidder must identify its principal subcontractors and are prohibited from changing subcontractors without the Borough's prior approval.

- Every bidder is presumed to have investigated and examined the plans and all other contract documents, as well as the site, if applicable, and it is assumed the bid is made with the bidder's full knowledge and understanding of the conditions of the work.

- When necessary, Erosion & Sedimentation (E&S), National Pollution Discharge Elimination System (NPDES) and Pennsylvania Department of Environmental Protection (DEP) Permits will be obtained by the Borough.

- The successful bidder will be required to comply with all applicable Federal and State Acts, such as:
  - Federal Occupational Safety and Health Act of 1970 (OSHA)
  - Architectural Barriers Act of 1968 and Section 504 of the Rehabilitation Act of 1973; PA Act of 1965, as amended, Universal Accessibility Act and Americans with Disabilities Act (ADA) of 1990
  - Pennsylvania Act 187 of 1996, as amended – PA One Call System. "Call 811 before you dig"

- The successful bidder will be required to comply with all Federal and State Nondiscrimination/Sexual Harassment guidelines included in the contract.

- Failure of a bidder to sign the bid proposal or have the signature of an authorized representative or agent on the bid proposal in the space provided may be cause for rejection of the bid proposal.

- Any bidder may withdraw his/her bid proposal at any time before the time set for receipt of bids. Except as provided in the Public Contract Bid Withdrawal Law, 73 P.S. § 1601 *et seq*., no bid proposal may be withdrawn in the sixty (60) day period after said bid proposals are received.

- In the event two or more identical low bids are received, the Borough reserves the right to determine which bidder will be certified as the lowest qualified and responsible bidder.

- Bids will be awarded at the discretion of the Borough Council by a majority vote. Council reserves the right to reject any and all bids or any portion of any bid for any reason whatsoever and to waive any technicalities.

- It is understood by both the Borough and the bidder that all bids offered meet the specifications unless the bidder states otherwise. It is further understood that the decision of the Borough Council or its fully authorized representatives as to the equality of items will be final.

- At the request of the Borough Council, the bidder will furnish any additional information that may be necessary to fully evaluate the lowest qualified and responsible bidder. This may include furnishing samples of all items, if applicable, at a mutually agreeable time and location.

- These Instructions to Bidders take precedence over all other sections throughout specifications in the event of a conflict.

NON-COLLUSION AFFIDAVIT

STATE OF _____)
) SS:
COUNTY OF _____)

I state that I am _____ of _____
(Title) (Name of my firm)
and 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:

1. The price(s) and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other Contractor, bidder or potential bidder.

2. Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.

3. No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.

4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.

5. _____
(Name of my firm)
its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

I state that
_____
(Name of my firm)
understands and acknowledges that the above representations are material and important, and will be relied on by the Borough of Franklin Park in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from the Borough of Franklin Park of the true facts relating to the submission of bids for this contract.

_____
(Signature and Title)

SWORN TO AND SUBSCRIBED

BEFORE ME THIS _____ DAY

OF _____, 20__

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES:

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project Name:	MS4 Sediment Reduction - Matterhorn Basin
Awarding Agency:	Franklin Park Borough
Contract Award Date:	4/18/2024
Serial Number:	24-01163
Project Classification:	Heavy/Highway
Determination Date:	2/7/2024
Assigned Field Office:	Pittsburgh
Field Office Phone Number:	(412)565-5300
Toll Free Phone Number:	(877)504-8354
Project County:	Allegheny County

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 24-01163 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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		$36.99	$24.95	$61.94
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
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 Masons	6/1/2023		$33.07	$23.59	$56.66
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	9/1/2023		$35.65	$30.05	$65.70
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
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

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 24-01163 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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)	6/1/2023		$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
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	6/1/2023		$32.14	$20.54	$52.68
plumber	6/1/2023		$48.65	$25.87	$74.52
plumber	6/1/2024		$51.75	$25.87	$77.62
plumber	6/1/2025		$54.95	$25.87	$80.82
plumber	6/1/2026		$58.05	$25.87	$83.92
plumber	6/1/2027		$61.15	$25.87	$87.02
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	1/1/2023		$41.44	$25.50	$66.94
Sprinklerfitters	7/1/2023		$43.84	$25.50	$69.34
Sprinklerfitters	1/1/2024		$43.28	$26.06	$69.34
Sprinklerfitters	7/1/2024		$45.78	$26.06	$71.84
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

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 24-01163 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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

Project: 24-01163 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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	5/29/2023		$52.56	$29.99	$82.55
Electric Lineman	6/3/2024		$53.97	$31.05	$85.02
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
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

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 24-01163 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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
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

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 24-01163 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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
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 012000

PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cash allowances.

B. Contingency allowances.

C. Testing and inspection allowances.

D. Schedule of Values.

E. Application for Payment.

F. Change procedures.

G. Defect assessment.

H. Unit prices.

I. Alternates.

1.2 CASH ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.

B. Costs Not Included in Cash Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.

C. Architect/Engineer Responsibilities:

1. Consult with Contractor for consideration and selection of products
2. Select products in consultation with Owner and transmit decision to Contractor.
3. Prepare Change Order.

D. Contractor Responsibilities:

1. Assist Architect/Engineer in selection of products and suppliers.
2. Obtain proposals from suppliers and offer recommendations.

3. Upon notification of selection by Engineer, execute purchase agreement with designated supplier.
4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.
5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

1.3 APPLICATION FOR PAYMENT

A. Submit one copy of each Application for Payment on AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702

B. Content and Format: Use Schedule of Values for listing items in Application for Payment.

C. Payment Period: monthly

1.4 CHANGE PROCEDURES

A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Architect/Engineer of any error, inconsistency, omission, or apparent discrepancy.

C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Architect/Engineer; establish procedures for handling queries and clarifications.

1. Use AIA G716 - Request for Information for requesting interpretations.
2. Architect/Engineer may respond with a direct answer on the Request for Interpretation form, Clarification Notice.

D. Architect/Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions.

E. Architect/Engineer may issue Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change. Contractor will prepare and submit estimate within 7 days.

F. Contractor may propose changes by submitting a request for change to Architect/Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on the Work by separate or other Contractors.

1.5 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct appropriate remedy or adjust payment.

C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Engineer.

D. Defective Work will be partially repaired according to instructions of Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Engineer.

E. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.

F. Authority of Engineer to assess defects and identify payment adjustments is final.

G. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from transporting vehicle.
4. Products placed beyond lines and levels of the required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected products.

1.6 UNIT PRICES

A. Authority: Measurement methods are delineated in individual Specification Sections.

B. Measurement methods delineated in individual Specification Sections complement criteria of this Section.

C. Take measurements and compute quantities. Engineer will verify measurements and quantities.

D. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Quantities and measurements supplied or placed in the Work shall determine payment.

1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at contracted unit sum/prices.

E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.

F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Architect/Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.

G. Measurement of Quantities:

1. Weigh Scales: Inspected, tested, and certified by Pennsylvania weights and measures department within past year.
2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested, and certified by Pennsylvania department within past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
6. Measurement by Area: Measured by square dimension using mean length and width or radius.
7. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

H. Unit Price Schedule:

1. See attached unit price schedule.

1.7 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement. The Owner-Contractor Agreement may identify certain Alternates to remain an Owner option for a stipulated period of time.

B. Coordinate related Work and modify surrounding Work. Description for each Alternate is recognized to be abbreviated but requires that each change shall be complete for scope of Work affected.

1. Coordinate related requirements among Specification Sections as required.
2. Include as part of each Alternate: Miscellaneous devices, appurtenances, and similar items incidental to or necessary for complete installation.
3. Coordinate Alternate with adjacent Work and modify or adjust as necessary to ensure integration.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 012000

SECTION 014000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Quality control.

B. Tolerances.

C. References.

D. Labeling.

E. Mockup requirements.

F. Testing and inspection services.

G. Manufacturers' field services.

1.2 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.

B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform Work using persons qualified to produce required and specified quality.

D. Products, materials, and equipment may be subject to inspection by Engineer at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.

E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.

C. Obtain copies of standards and maintain on Site when required by product Specification Sections.

D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 LABELING

A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.

B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:

1. Model number.
2. Serial number.
3. Performance characteristics.

C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.

B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mockups shall be comparison standard for remaining Work.

D. Where mockup has been accepted by Architect/Engineer and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Architect/Engineer.

1.7 TESTING AND INSPECTION SERVICES

A. Owner will employ and pay for specified services of an independent firm to perform testing and inspection.

B. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Engineer.

1. Laboratory: Authorized to operate in State of Pennsylvania.
2. Laboratory Staff: Maintain full-time specialist on staff to review services.
3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Architect/Engineer or Owner.

D. Reports shall be submitted by independent firm to Architect/Engineer, Contractor, and authorities having jurisdiction, indicating observations and results of tests and compliance or noncompliance with Contract Documents.

1. Submit final report indicating correction of Work previously reported as noncompliant.

E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

1. Notify Architect/Engineer and independent firm 24 hours before expected time for operations requiring services.
2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.

F. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Architect/Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

H. Agency Responsibilities:

1. Test Samples of mixes submitted by Contractor.
2. Provide qualified personnel at Site. Cooperate with Architect/Engineer and Contractor in performance of services.
3. Perform indicated sampling and testing of products according to specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.

5. Promptly notify Architect/Engineer and Contractor of observed irregularities or nonconformance of Work or products.
6. Perform additional tests required by Architect/Engineer.
7. Attend preconstruction meetings and progress meetings.

I. Agency Reports: After each test, promptly submit two copies of report to Architect/Engineer, Contractor, and authorities having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results. Include the following:

1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and Specification Section.
6. Location in Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

J. Limits on Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

1.8 MANUFACTURER'S FIELD SERVICES

A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer is subject to approval of Architect/Engineer.

C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

D. Refer to Section 013300 - Submittal Procedures, "Manufacturer's Field Reports" Article.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 014000

SECTION 017000

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Examination.

B. Preparation.

C. Coordination of Owner's portion of the Work.

D. Field engineering.

E. Execution.

F. Cutting and patching.

G. Protecting installed construction.

H. Starting of systems.

I. Demonstration and instruction.

J. Testing, adjusting, and balancing.

K. Closeout procedures.

L. Project record documents.

M. Operation and maintenance data.

N. Manual for materials and finishes.

O. Manual for equipment and systems.

P. Spare parts and maintenance products.

Q. Product warranties and product bonds.

R. Maintenance service.

S. Final cleaning.

1.2 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual Specification Sections.

D. Verify that utility services are available with correct characteristics and in correct locations.

1.3 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

1.4 COORDINATION OF OWNER'S PORTION OF THE WORK

A. Site Access: Provide access to Project site for Owner's construction personnel.

1. Provide temporary facilities required for Owner-furnished, Contractor-installed products.
2. Refer to Section 011000 - Summary for other requirements for Owner-furnished, Contractor-installed products.

B. Coordination: Coordinate construction and operations of the Work with Work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's Work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

1.5 FIELD ENGINEERING

A. Employ land surveyor registered in State of Pennsylvania and acceptable to Engineer.

B. Locate and protect survey controls and reference points. Promptly notify Architect/Engineer of discrepancies discovered.

C. Control datum for survey is indicated on Drawings.

D. Prior to beginning Work, verify and establish floor elevations of existing facilities to ensure that new Work will meet existing elevations in smooth and level alignment except where specifically detailed or indicated otherwise.

E. Verify setbacks and easements; confirm Drawing dimensions and elevations.

F. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.

G. Submit copy of Site drawing and certificate signed by land surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.

H. Maintain complete and accurate log of control and survey Work as Work progresses.

I. On completion of foundation walls and major Site improvements, prepare certified survey illustrating dimensions, locations, angles, and elevations of construction and Site Work.

J. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.

K. Promptly report to Architect/Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.

L. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect/Engineer.

M. Final Property Survey: Prior to Substantial Completion, prepare final property survey illustrating locations, dimensions, angles, and elevations of buildings and Site Work that have resulted from construction indicating their relationship to permanent bench marks and property lines.

1. Show significant features (real property) for Project.
2. Include certification on survey, signed by surveyor, that principal metes, bounds, lines, levels, and elevations of Project are accurately shown.

1.6 EXECUTION

A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
2. Physically separate products in place and provide electrical insulation or protective coatings to prevent galvanic action or corrosion between dissimilar metals.
3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual effect choices to Architect/Engineer for final decision.

E. Allow for expansion of materials and building movement.

F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.

1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.

G. Mounting Heights: Where not indicated, mount individual units of Work at industry-recognized standard mounting heights for particular application indicated.

1. Refer questionable mounting height choices to Architect/Engineer for final decision.
2. Elements Identified as Handicap Accessible: Comply with applicable codes and regulations.

H. Adjust operating products and equipment to ensure smooth and unhindered operation.

I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

1.7 CUTTING AND PATCHING

A. Employ skilled and experienced Installers to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting the following:

1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight-exposed elements.
5. Work of Owner or separate Contractor.

C. Execute cutting, fitting, and patching**,** including excavation and fill. to complete Work and to accomplish the following:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and nonconforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products according to requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

J. Identify the hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

1.8 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.9 STARTING OF SYSTEMS

A. Coordinate schedule for startup of various equipment and systems.

B. Notify Engineer seven days prior to startup of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.

H. Submit a written report in accordance with Section 013300 - Submittal Procedures stating that equipment or system has been properly installed and is functioning correctly.

1.10 DEMONSTRATION AND INSTRUCTION

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

B. Demonstrate Project equipment and instructed by qualified who is knowledgeable about the Project.

C. Video Recordings: Provide high-quality color video recordings of demonstration and instructional sessions. Engage commercial videographer to record sessions. Include classroom instructions, demonstrations, board diagrams, and other visual aids. Include menu navigation.

D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

F. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.

G. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

H. Allot the required instruction time for each item of equipment and system as specified in individual Specification Sections.

1.11 TESTING, ADJUSTING, AND BALANCING

A. Owner will appoint, employ, and pay for services of independent firm to perform testing, adjusting, and balancing.

B. Reports will be submitted by independent firm to Architect/Engineer indicating observations, test results, and compliance or noncompliance with requirements of Contract Documents.

1.12 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:

1. Submit maintenance manuals, Project record documents, digital images of construction photographs, video recordings, and other similar final record data in compliance with this Section.
2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
6. Make final change-over of locks eliminating construction master-key **system** and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
7. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
8. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:

1. When Contractor considers Work to be substantially complete, submit to Engineer:

    a. Written certificate that Work, or designated portion, is substantially complete.
    b. List of items to be completed or corrected (initial punch list).

2. Within seven days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.
3. Should Engineer determine that Work is not substantially complete:

    a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
    b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer
    c. Engineer will reinspect Work.
    d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

4. When Engineer finds that Work is substantially complete, Engineer will:

    a. Prepare Certificate of Substantial Completion on AIA G704 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Architect/Engineer and Owner (final punch list).
    b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.

5. After Work is substantially complete, Contractor shall:

a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
b. Complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.

1. When Contractor considers Work to be complete, submit written certification that:

a. Contract Documents have been reviewed.
b. Work has been examined for compliance with Contract Documents.
c. Work has been completed according to Contract Documents.
d. Work is completed and ready for final inspection.

2. Submittals: Submit following:

a. Final punch list indicating all items have been completed or corrected.
b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
d. Accounting statement for final changes to Contract Sum.
e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens.
g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.

3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:

1. Within seven days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
2. Should Engineer consider Work to be incomplete or defective:

a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
c. Engineer will reinspect Work.
d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer’s inspection.

1.13 PROJECT RECORD DOCUMENTS

A. Maintain on Site one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, product data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates used.
3. Changes made by Addenda, bulletin, Change Order, and modifications.

F. Record Drawings [and Shop Drawings]: Legibly mark each item to record actual construction as follows:

1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
2. Include locations of concealed elements of the Work.
3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
5. Identify and locate existing buried or concealed items encountered during Project.
6. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
7. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
8. Field changes of dimension and detail.
9. Details not on original Drawings.

G. Submit marked-up paper copy documents to Engineer before Substantial Completion with claim for final Application for Payment.

H. Submit PDF electronic files of marked-up documents to Architect/Engineer before Substantial Completion with claim for final Application for Payment.

1.14 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment.

1. Employ experienced personnel or professional cleaning firm.

B. Clean Site; sweep paved areas, rake clean landscaped surfaces.

C. Remove waste and surplus materials, rubbish, and construction facilities from Site.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 017000

SECTION 310513

SOILS FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Subsoil.

2. Topsoil.

B. Related Requirements:

1. List other Sections directly related to or affecting Work of this Section. Include Sections specifying information expected to be found in this Section as well as Sections required to describe complete system or assembly requirements.

2. Section 310516 "Aggregates for Earthwork" for coarse and fine aggregate materials.

3. Section 312213 "Rough Grading" for removal of topsoil, rough grading, and filling associated with contouring of Site.

4. Section 312316 "Excavation" for excavating as required for building foundations and utilities within building perimeter.

5. Section 312316.13 "Trenching" for excavating as required for building foundations and utilities within building perimeter.

6. Section 312323 "Fill" for backfilling as required at building perimeter and Site structures to subgrade elevations.

7. Section 312500 "Erosion and Sedimentation Controls" for slope protection and erosion control.

8. Section 329119 "Landscape Grading" for placing, leveling, and compacting topsoil materials prior to final landscaping Work.

9. Section 329219 "Seeding" for fertilizing, seeding, hydroseeding, mulching, and maintenance.

10. Section 329300 "Plants" for preparation of subsoil and topsoil, topsoil bedding, trees, plants, ground cover, mulch, fertilizer, pruning, and maintenance.

1.02 UNIT PRICES

A. Use this article only when Work of this Section is performed under unit price payment method. Delete this article when payment is by Stipulated Sum/Price. Edit basis of payment to meet Project requirements.

B. Subsoil:

1. Basis of Measurement: By cubic yard.

2. Basis of Payment: Includes excavating existing subsoil, supplying subsoil materials, and stockpiling.

C. Topsoil:

1. Basis of Measurement: By lump sum.

2. Basis of Payment: Includes excavating existing topsoil, supplying topsoil materials, and stockpiling.

1.03 SUBMITTALS

A. Product Data:

1. Subsoil.

2. Topsoil.

B. Include following paragraph to submit physical samples to select finish, color, texture, and other properties.

C. Source Quality-Control Reports: For subsoil and topsoil materials. Owner may request samples prior to placement of imported materials. A clean fill certificate is required for imported soil material.

1.04 QUALITY ASSURANCE

A. Furnish each subsoil and topsoil material from single source throughout Work.

B. Perform Work according to PADEP and ACCD standards.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Perform Work according to:

1. The State of Pennsylvania Department of Transportation standards.

2. The Franklin Park Borough Department of Public Works standards.

3. PADEP and ACCD standards and requirements.

2.02 SUBSOIL

A. Type S1: Utilize on site materials placed in stockpile locations.

B. Type S2 Ordinary Borrow:

1. Ordinary borrow consists of well-graded mineral soil substantially free of organic materials, loam, wood, trash, and other objectionable material which may be compressible, or which cannot be compacted properly.

2. Ordinary borrow consist of a material satisfactory to the Geotechnical Engineer and not specified as gravel borrow, sand borrow, special borrow material, or other particular kind of borrow.

3. This material conforms to the physical characteristics of soils designated as group A-1, A-2-4, or A-3 under AASHTO M 145.

4. Must be readily spread and compacted for the formation of foundations, embankments, and other subgrade improvements.

5. Retain "Liquid Limit" Subparagraph and "Plasticity Index" Subparagraph below if required to further qualify satisfactory soil groups.

6. Liquid Limit: A-1 and A-3 = none or not measured, A-2-4 = 40 max.

7. Plasticity Index: A-1 = 6 max, A-3 = Non-Plastic (NP), A-2-4 = 10 max.

C. Type S2-a Special Borrow:

1. Special borrow consists of one or all of the following:

a. A native in-situ soil that is classified under AASHTO M 145 as A-3, or that portion of A-1 and A-2 with less than 12 percent passing the No. 200 sieve as determined by AASHTO T 311.
b. A crushed rock, either obtained from ledge excavation on the Project or other approved sources, that meets the following requirements:

1) Percent of Wear LA Abrasion Test: 50 percent.

2) Maximum Plasticity Index: 6 percent.

c. Percent Passing According to Sieve Size:

1) 3 Inches (75 mm): 100
2) 2 Inches (50 mm): 90 to 100
3) No. 4 (4.75 mm): 100 to 60
4) No. 200 (75 micro m): 0 to 12

D. Type S2-b Pipe Bedding Material and Drainage Layer:

1. Bedding and drainage material under loam and around utilities is comprised of natural mineral sand within the following gradation limits:

    a. Percent Passing According to Sieve Size:

        1) 1/2 Inch (12 mm): 100
        2) 3/8 Inch (10 mm): 100 to 85
        3) No. 4 (4.75 mm): 100 to 60
        4) No. 16 (1.18 mm): 80 to 35
        5) No. 50 (300 micro m): 55 to 10
        6) No. 200 (75 micro m): 10 to 2

2. Type S2-c Granular Fill:

3. Granular fill consists of sandy gravel or gravely sand, free of organic material, loam, snow, ice, frozen soil, and other objectionable materials, well-graded within the following limits:

    a. Percent Passing According to Sieve Size:

        1) 4 Inches (100 mm): 100
        2) 1/2 Inch (12 mm): 85 to 50
        3) No. 4 (4.75 mm): 75 to 40
        4) No. 100 (150 micro m): 30 to 5
        5) No. 200 (75 micro m): 20 to 0

E. Type S2-d Structural Fill:

1. Structural fill consists of processed fill material that is hard durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials. Gradation requirements as determined by AASHTO T11 and T27 conforms to the following gradation requirements:

    a. Percent Passing According to Sieve Size:

        1) 3 Inches (75 mm): 100
        2) 1/2 Inch (12 mm): 50 to 85
        3) No. 4 (4.75 mm): 40 to 75
        4) No. 50 (300 micro m): 8 to 2
        5) No. 200 (75 micro m): 0 to 8

F. Type S2-e Reclaimed Pavement Borrow Material:

1. Reclaimed pavement borrow material consists of crushed asphalt pavement or crushed cement concrete, and gravel borrow.

2. Provide material free of loam, clay, and deleterious materials such as brick, reinforcing steel, wood, paper, plaster, lathing, and building rubble.

3. Provide coarse aggregate with a percentage of wear not greater than 50 percent as measured by the Los Angeles Abrasion Test.

4. Determine gradation requirements in accordance with AASHTO T 311, except the material cannot be oven dried. Dry material by air drying, fan drying at low speed, or other low temperature heat so as not to liquefy the asphalt or cause the asphalt to adhere to the sieves. Water used for the No. 200 sieve analysis must be cold tap water.

5. The gradation requirements for reclaimed pavement borrow are as follows:

    a. Percent Passing According to Sieve Size:

        1) 3 Inches (75 mm): 100
        2) 1-1/2 Inches (37.5 mm): 70 to 100
        3) 3/4 Inch (19 mm): 50 to 85
        4) No. 4 (4.75 mm): 30 to 60
        5) No. 50 (300 micro m): 8 to-24
        6) No. 200 (75 micro m): 0 to 10

6. The liquid limit for the portion of materials passing the No. 40 sieve cannot be greater than 25 and the plasticity index not greater than 6.

7. Compact the reclaimed pavement borrow to a minimum of 95 percent of AASHTO T 180 proctor density.

8. Determine liquid limits by AASHTO T 90.

9. Process reclaimed pavement borrow material by mechanical means and blended to form a homogeneous material. Provide equipment for producing crushed material of adequate size and having sufficient adjustments to produce the desired materials. Blended materials that are stockpiled for more than three months will require rework to provide a uniform material and must be retested prior to use; however, the Engineer and Owner may require additional testing any time the materials appear excessively hard, wet, or segregated.

10. Provide reclaimed pavement borrow material from Geotechnical Engineer approved sources and stockpiles.

11. The amount of combined crushed asphalt pavement and crushed cement concrete should not exceed 50 percent by volume as determined by visual inspection, or by laboratory tests required by the Engineer.

G. Type S2-f Lightweight Aggregate Fill (LWAF):

1. LWAF is a rotary kiln expanded shale aggregate manufactured by Solite Corporation of Saugerties, NY, or Norlite Corporation of Chores, NY, or an approved equivalent. No byproduct slags, coal derived by-product aggregates (cinders, bottom ash, fly ash), or pumice, scoria, or tuff are permitted. The aggregate shall meet the requirements of ASTM C330 and consist of tough, durable, non-corrosive particles with the following gradation:

a. Percent Passing According to Sieve Size:

1) 1 Inch (25 mm): 100
2) 3/4 Inch (19 mm): 90 to 100
3) 3/8 Inch (10 mm): 10 to 50
4) No. 4 (4.75 mm): 0 to 15
5) No. 8 (2.36 mm): 0 to 5

2. The maximum soundness loss when tested in accordance with ASTM C88 with five (5) cycles of magnesium sulphate may not exceed 10 percent.

3. The maximum Los Angeles abrasion loss when tested in accordance with ASTM C131 (B-Grading) will be 50 percent.

4. The maximum chloride content when tested in accordance with the AASHTO T260 (acid solution) will be 100 ppm.

5. The maximum compacted moist density can not exceed 60 pcf when tested in accordance with ASTM D698 (one point test at typical moisture content when shipped to site).

6. The specific gravity when tested in accordance with ASTM C127 will be no less than 1.4.

7. The angle of internal friction will be no less than 40 degrees when tested in accordance with AASHTO T236.

2.03 TOPSOIL

A. Type S3: utilize on site topsoil placed in stockpiles then re-spread within the limits of grading or as directed by the engineer.

B. Type S4:

1. Excavated and reused material

2. Graded and single screened.

3. Free of roots, rocks larger than 1/2-inch, subsoil, debris, large weeds, and foreign matter.

4. Comply with ASTM D2487 Group Symbol OH, PT.

C. Type S5 Imported Base Loam:

1. Imported base loam is comprised of a naturally occurring soil from geological soil forming processes, without admixtures of sand or organic matter sources (composts). Provide imported base loam as required for blending with sand and compost.

2. Imported base loam that has been contaminated by incorporation of subsoil is not acceptable for use.

3. Imported base loam for the Work is required to be free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots, or other objectionable, extraneous matter or debris. Imported base loam composition is required to be free of quack-grass rhizomes, Agropyron repens, and the nut-like tubers of nutgrass, Cyperus esculentus, and other primary noxious weeds.

4. Do not deliver imported base loam for use or planting while in a frozen or muddy condition. Provide imported base loam for mixing which conforms to the following grain size distribution for material passing the No. 10 sieve:

a. Percent Passing According to Sieve Size:

1) No. 10 (2.2 mm): 100
2) No. 18 (1.0 mm): 85 to 100
3) No. 35 (500 micro m): 70 to 95
4) No. 60 (250 micro m): 50 to 85
5) No. 140 (106 micro m): 36 to 53
6) No. 270 (53 micro m): 32 to 42
7) 0.00008 inch (0.002 mm): 3 to 6

5. The organic content must be between 4.0 and 8.0 percent by weight.

6. pH must be between 5.8 and 7.0.

7. Undertake chemical analysis for phosphorus, potassium, calcium magnesium, aluminum, iron, manganese, lead, cation exchange capacity, soluble salts, acidity (pH) and buffer pH.

2.04 SOURCE QUALITY CONTROL

A. Testing and Analysis:

1. Subsoil Material: Comply with AASHTO T 180, ASTM D698, ASTM D1557, ASTM D6938.

2. Topsoil Material: Comply with AASHTO T 180, ASTM D698, ASTM D1557, ASTM D6938.

3. If tests indicate materials do not meet specified requirements, change material and retest.

B. Owner Inspection:

1. Make imported subsoil and topsoil available for inspection at source prior to packaging for shipment.

2. Notify Owner at least seven days before inspection is allowed.

C. Owner Witnessing:

1. Allow witnessing of source testing at supplier's test facility.

2. Notify Owner at least seven days before tests are scheduled.

D. Certificate of Compliance:

1. If supplier is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at source conforms to Contract Documents.

2. Specified source tests are not required for Work performed by approved supplier.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions with Installer present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting performance of the Work.

3.02 INSTALLATION OF SUBSOIL AND TOPSOIL

A. Excavation:

1. Excavate subsoil and topsoil from designated areas.

2. Strip topsoil to full depth of topsoil in designated areas.

3. Remove excess excavated materials subsoil and topsoil not intended for reuse from Site.

4. Remove excavated materials not meeting requirements for [subsoil] [and] [topsoil] materials from Site.

B. Stockpiling:

1. Stockpile excavated material meeting requirements for subsoil and topsoil materials.

2. Stockpile materials on Site at locations as indicated.

3. Stockpile in sufficient quantities to meet Project schedule and requirements.

4. Separate differing materials with dividers or stockpile apart to prevent intermixing of soil types or contamination.

5. Stockpile topsoil maximum 8 feet.

6. Direct surface water away from stockpile to prevent erosion or deterioration of materials.

7. Consider including following subparagraph for contaminated or hazardous materials awaiting transportation to be disposed of off-Site.

8. Stockpile unsuitable and hazardous materials on impervious material and cover to prevent erosion and leaching until they are disposed.

3.03 CLEANING

A. Stockpile:

1. Remove stockpile and leave area in clean and neat condition.

a. Grade Site surface to prevent freestanding surface water.

2. Leave unused materials in neat, compact stockpile.

END OF SECTION 310513

SECTION 310516

AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Coarse aggregate.

2. Fine aggregate.

B.Related Requirements:

1. Section 310513 "Soils for Earthwork" for granular fill, topsoil, and grading materials.

2. References in each of following subparagraphs refer to this Section for aggregate materials; coordinate and edit listing based on Project requirements.

3. Section 312213 "Rough Grading" for removal of topsoil, rough grading, and filling associated with contouring of Site.

4. Section 312316 "Excavation" for excavating as required for building foundations and utilities within building perimeter.

5. Section 312316.13 "Trenching" for excavating as required for building foundations and utilities within building perimeter.

6. Section 312323 "Fill" for backfilling as required at building perimeter and Site structures to subgrade elevations.

7. Section 312500 "Erosion and Sedimentation Controls" for slope protection and erosion control.

8. Section 329119 "Landscape Grading" for placing, leveling, and compacting topsoil materials prior to final landscaping Work.

9. Section 334200 "Stormwater Conveyance" for drainage facilities to collect and provide for the flow of stormwater.

1.02 UNIT PRICES

A. Fine and Coarse Aggregate:

1. Basis of Measurement: Incidental to the pipe installation.

2. Basis of Payment: Incidental to pipe installation.

1.03 SUBMITTALS

A. Product Data:

1. Fine aggregate.

2. Coarse aggregate.

3. Submit name of imported materials source.

B. Source Quality-Control Reports: For fine- and coarse-aggregate materials.

1.04 QUALITY ASSURANCE

A. Furnish each coarse and fine aggregate material from single source throughout Work.

B. Perform Work according to ACCD standards.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Perform Work according to:

1. The State of Pennsylvania Department of Transportation standards.

2. The Franklin Park Borough Department of Public Works standards.

3. PennDOT 408 standards.

2.02 COARSE AGGREGATE

A. Type A1: Comply with PennDOT 408 standards.

B. Type A2 Gravel Borrow:

1. Gravel borrow consists of processed inert fill material that is hard durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials. Gradation requirements are determined by AASHTO T11 and T27 and conform to the following gradation:

a. Percent Passing According to Sieve Size:

1) 2 Inches (50 mm):100
2) 1/2 Inch (12.7 mm): 50 to 85

3) No. 4 (4.75 mm): 40 to 75
4) No. 50 (300 micro m): 8 to 28
5) No. 200 (75 micro m): 0 to 8
6) Liquid Limit: Not greater than 25
7) Plasticity Index: Not greater than 6 according to ASTM D4318.

C.Type A3 Crushed Stone:

1. Crushed stone consists of one of the following materials:

   a. Durable crushed rock consisting of angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated, or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15 percent of the total weight.

      1) Thin stones are considered to be such stones whose average width exceeds four times their average thickness. Elongated stones are considered to be such stones whose average length exceeds four times their average width.

   b. Durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone with a minimum diameter before crushing of 8 inches.

2. Provide crushed stone reasonably free from clay, loam, or deleterious material with not more than 1.0 percent of satisfactory material passing a No. 200 sieve allowed to adhere to the crushed stone. Where crushed stone is to be used for surfacing, this requirement shall be not more than 0.5 percent of satisfactory material passing a No. 200 sieve.

   a. Percent Passing According to Sieve Size:

      1) 1-1/2 Inches (37.5 mm): 100
      2) 1-1/4 Inches (31.75 mm): 85 to 100
      3) 3/4 Inch (19 mm): 10 to 40
      4) 1/2 Inch (12 mm): 0 to 8

D. Type A3a Dense Graded Crushed Stone for Sub-base:

1. Graded crushed stone for sub-base material combines crusher-run coarse aggregates of crushed stone and fine aggregates uniformly premixed with a predetermined quantity of water. Coarse aggregate consists of hard, durable particles of fragments of stone. Materials that break up when alternately frozen and thawed or wetted and dried are not acceptable. Provide coarse aggregate with a percentage of wear, by the Los Angeles Abrasion Test, of not more than 45. Fine aggregate consists of natural or crushed sand. Provide the composite material free from clay, loam, or other plastic material, which conforms to the following gradation requirements:

   a. Percent Passing According to Sieve Size:

      1) 2 Inches (50 mm): 90 to 100
      2) 1-1/2 Inches (37.5 mm): 70 to 100
      3) 3/4 Inch (19 mm): 50 to 85

4) No. 4 (4.75 mm): 30 to 55
5) No. 50 (300 micro m): 8 to 24
6) No. 200 (75 micro m): 3 to 10

E. Type A4 Pea Gravel:

1. Stone: Natural and washed

2. Quality: Free of clay, shale, and organic matter.

3. Grading:

a. Comply with ASTM C136/C136M, ASTM D2487; Group Symbol GM, ASTM D2487; Group Symbol GC, ASTM D2487; Group Symbol.
b. Minimum Size: 1/4 inch
c. Maximum Size: 5/8 inch

2.03 FINE AGGREGATE

A. Type A5: Comply with PennDOT 408 standards

B. Type A6 Natural River or Bank Sand, Washed:

1. Quality: Free of silt, clay, loam, friable or soluble materials, and organic matter.

2. Grading: Comply with ASTM C136/C136M, ASTM D2487; Group Symbol SW, ASTM D2487; Group Symbol SP, ASTM D2487; Group Symbol SM, ASTM D2487; Group Symbol SC, ASTM D2487; Group Symbol.

3. Percent Passing According to Sieve Size:

a. No. 4 (4.75 mm): 100
b. No. 14 (1.4 mm): 10 to 100
c. No. 50 (300 micro m): 5 to 90
d. No. 100 (150 micro m): 4 to 30
e. No. 200 (75 micro m): Zero

C. Type A7 Blended Aggregate:

1. Produce blended aggregate by intermixing two or more fine or coarse aggregates to produce an aggregate combination with improved grading or other properties.

2. Percent Passing According to Sieve Size:

a. 3/8 Inch (9.5 mm): 100
b. 1/4 Inch (6.3 mm): 98 to 100
c. No. 4 (4.75 mm): 90 to 100
d. No. 10 (2.000 mm): 56 to 76
e. No. 20 (850 micro m): 40 to 54
f. No. 40 (425 micro m): 25 to 45

g. No. 80 (180 micro m): 13 to 29
h. No. 200 (75 micro m): 4 to 10

2.04 SOURCE QUALITY CONTROL

A. Testing and Analysis:

1. Coarse-Aggregate Material: Comply with AASHTO T 180, ASTM C136/C136M, ASTM D698, ASTM D1557, ASTM D4318, ASTM D6938.

2. Fine-Aggregate Material: Perform according to AASHTO T 180, ASTM C136/C136M, ASTM D698, ASTM D1557, ASTM D4318, ASTM D6938.

3. If tests indicate materials do not meet specified requirements, change material and retest.

B.Owner or Authority Inspection:

1. Make coarse aggregate and fine aggregate available for inspection at source prior to loading for shipment.

2. Notify Owner or Authority at least seven days before inspection is allowed.

C.Owner or Authority Witnessing:

1. Allow witnessing of source testing at supplier's facility.

2. Notify Owner or Authority at least seven days before tests are scheduled.

D. Certificate of Compliance:

1. If supplier is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at source conforms to Contract Documents.

2. Specified source tests are not required for Work performed by approved supplier.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions with Installer present for compliance with requirements for maximum moisture content installation tolerances and other conditions affecting performance of the Work.

3.02 INSTALLATION OF COARSE AGGREGATE AND FINE AGGREGATE

A. Excavation:

1. Excavate aggregate materials from Site locations as designated by Engineer and as specified in Section 312213 "Rough Grading."

2. Remove excess excavated coarse-aggregate and fine-aggregate materials not intended for reuse from Site.

3. Remove excavated materials not meeting requirements for coarse-aggregate and fine-aggregate from Site.

B.Stockpiling:

1. Stockpile materials on Site at locations as designated by Engineer.

2. Stockpile excavated material meeting requirements for coarse-aggregate and fine-aggregate materials.

3. Stockpile in sufficient quantities to meet Project schedule and requirements.

4. Separate different aggregate materials with dividers or stockpile apart to prevent intermixing of aggregate types or contamination.

5. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

6. Consider including following subparagraph for contaminated or hazardous materials to be disposed of off-Site and awaiting transportation.

7. Stockpile unsuitable, hazardous materials on impervious material and cover to prevent erosion and leaching until they are disposed.

3.03 CLEANING

A. Stockpile:

1. Remove stockpile and leave area in clean and neat condition.

    a. Grade Site surface to prevent freestanding surface water.

2. Leave unused materials in neat, compact stockpile.

END OF SECTION 310516

SECTION 310519.13

GEOTEXTILES FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Related Requirements:

1. Section 310513 "Soils for Earthwork" for fill and grading materials.

2. Section 310516 "Aggregates for Earthwork" for fill and base coarse materials, and for fill over woven geotextiles at roadway applications.

3. Section 312316.13 "Trenching" for soil and subsoil materials for fill and grading purposes.

4. Section 312323 "Fill" for backfilling required at building perimeter and Site structures to subgrade elevations; fill under slabs on grade, pavement, and landscaped areas.

5. Section 312500 "Erosion and Sedimentation Controls" for erosion and sedimentation control devices.

6. Section 329119 "Landscape Grading" for placing, leveling, and compacting topsoil materials prior to final landscaping.

1.02 UNIT PRICES

A. Geotextiles:

1. Basis of Measurement: By square yard in place.

2. Basis of Payment:

a. Includes materials, equipment, installation, and testing of geotextile material.
b. Securing pins.
c. No allowance will be made for overlaps, trenching, waste, and curves if applicable.

1.03 REFERENCES

A. Commonwealth of Pennsylvania Department of Environmental Protection Erosion and Sedimentation Control Manual, latest edition.

B. Commonwealth of Pennsylvania Department of Transportation (PennDOT) Specifications Publication 408, latest edition.

1.04 SUBMITTALS

A. Product Data: For the following:

1. Nonwoven geotextile materials.

2. Submit manufacturer information including tensile strength, elongation, thickness, UV resistance, and other material specifications.

B. Source Quality-Control Reports: For nonwoven geotextiles.

C. Qualifications Statements: For manufacturer, installer, and testing agency.

D. Manufacturer's Approval: For installer.

E. Provide shop inspection and testing of completed assembly. Comply with ASTM D4759.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of geotextile materials, including placement depth.

1.06 QUALITY ASSURANCE

A. Licensed Professionals Qualifications: Professional engineer experienced in design of specified Work and licensed in State of Pennsylvania.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Comply with ASTM D4873.

C. Store materials according to manufacturer instructions.

D. 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.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Perform Work according to:

1. The State of Pennsylvania Department of Transportation standards.

2. ACCD standards.

3. PADEP standards.

B. Ensure that terminology incorporated herein complies with ASTM D4439.

C. All Geotextile shall satisfy the requirements of Section 735, PennDOT Specifications Publication 408.

1. Class 1 – Subsurface Drainage.

1. Class 2 – Erosion Control.

2. Class 3 – Sediment Control.

3. Class 4 – Separation.

2.02 NONWOVEN GEOTEXTILE MATERIALS

A. Provide nonwoven geotextile that meets AASHTO M 288 Class 3 requirements for subsurface drainage, separation, and stabilization. Provide multipurpose fabrics with a felt-like appearance. The main functions for these products are filtration and separation. The most common nonwoven is a needle-punched product. Staple fibers or continuous filaments are bonded by mechanically entangling the fibers with barbed needles. Their optimum open area and three-dimensionality provide effective erosion control and vegetation reinforcement, as well as resistance against high flow-induced shear forces. Provide material that has high interlock and reinforcement capacities with both soil and root systems and is designed for erosion control applications on steep slopes and vegetated waterways.

B. Manufacturers:

1. TENCATE Mirafi.

2. Carthage Mills.

3. Hanes Geo Components.

4. Other manufacturers meeting PADEP requirements.

C. Furnish materials according to PADEP standards.

D. Non-biodegradable, UV-resistant, nonwoven geotextile fabric.

E. Performance and Design Criteria:

1. Verify that materials meet or exceed the manufacturer requirements.

2.03 ACCESSORIES

A. In accordance with manufacturer specifications.

2.04 SOURCE QUALITY CONTROL

A. Provide shop inspection and testing of completed assembly. Provide sampling of geosynthetics for testing in compliance with ASTM D4354.

B. Owner Inspection:

1. Make completed geotextile material available for inspection at manufacturer's factory prior to packaging for shipment.

2. Notify Owner at least seven days before inspection is allowed.

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

3.01 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances other conditions affecting performance of the Work.

B. Verify that underlying surface is smooth and free of ruts or protrusions that could damage geotextile material.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Subgrade Material and Compaction Requirements: As specified in Section 312316.13 – Trenching, 312323 – Fi ll.

B. 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 in accordance with Section 312300.

3.03 INSTALLATION OF GEOTEXTILES

A. Geotextile Material:

1. Lay and maintain smooth and free of tensile stresses, folds, wrinkles, or creases.

2. Ensure that material is in direct contact with subgrade.

3. Orientate with long dimension of each sheet transverse to direction of slope.

4. Minimum Unseamed Joints Overlap: 18 inches.

5. Place 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 if permitted. Provide a minimum overlap of 1 foot. Offset adjacent roll ends a minimum of 5 feet when lapped.

6. If permitted, anchor the fabric in place by securing pins or other acceptable methods, along sewn seams or overlaps at a spacing of 2 feet for slopes steeper than 3:1, 3 feet for 4:1 slopes, and 5 feet for slopes flatter than 4:1. Also place securing pins on a maximum 6-foot grid on the unsewn or unlapped portions of the fabric.

7. Where slopes are flatter than 6:1, if permitted, securing pins may be eliminated, provided that aggregate, rock or other acceptable means are used to secure the fabric.

8. Cover the fabric with the covering material as soon as possible, so the fabric is not exposed. Prevent slippage of the cover material on the fabric.

9. Do not drop rocks larger than 2 feet in diameter directly on the fabric from a height greater than 1 foot. Do not allow the rock placement procedure to puncture or damage the fabric.

B. Securement Pins and Seams

1. As recommended by geotextile manufacturer.

C. Repair Damaged Geotextiles:

1. Repair torn or damaged geotextile by placing patch of same type of geotextile over damaged area minimum of 12 inches beyond edge of damaged area and fasten as recommended by geotextile manufacturer.

2. Remove and replace geotextile rolls which cannot be repaired.

D. Fill and Cover:

1. Place fill to prevent tensile stress or wrinkles in geotextile.

2. Place fill from bottom of side-slopes upward.

3.04 PROTECTION

A. Ballast: Adequate to prevent uplift of material by wind.

B. UV Exposure: Do not leave material uncovered for more than 14 days after installation.

C. Do not use staples or pins to hold geotextiles in place where located adjacent to other geosynthetic layers that could be damaged.

D. Do not operate equipment directly on top of geotextiles.

E. The Contractor shall be responsible for protecting geotextile fabric. Damage to any part of the geotextile at any time during the course of construction shall be repaired by the Contractor prior to the placement of any overlying materials, at no expense to the Owner, and to the complete satisfaction of the Owner or his representative.

END OF SECTION 310519.13

SECTION 311000

SITE CLEARING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removing surface debris.
2. Removing designated paving, curbs, and other incidental items noted on the plans or where indicated by the engineer.
3. Removing designated trees, shrubs, and other plant life.
4. Removing abandoned utilities.
5. Excavating topsoil.

B. Related Sections:

1. Section 024116 - Structure Demolition: Removing underground storage tanks and designated utilities.
2. Section 312213 - Rough Grading.
3. Section 312316.26 - Rock Removal.
4. Section 329300.00 - Plants

1.02 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Site Clearing:

1. Basis of Measurement: By lump sum.
2. Basis of Payment: Includes clearing site, loading and removing waste materials from site, applying herbicide to designated plant life.

1.03 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

1.04 SUSTAINABLE DESIGN SUBMITTALS

A. Section 018113 - Sustainable Design Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.

1. Materials Resources Certificates:

a. Certify source for regional materials and distance from Project site.

C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.

1. Provide cost data for the following products:

a. Regional products.

1.05 QUALITY ASSURANCE

A. Conform to all local, state and federal codes for environmental requirements, disposal of debris, burning debris on site,[use of herbicides.

B. Perform Work in accordance with PennDOT 408 specifications and standards.

C. Maintain one redline copy of the project drawings on site which documents changes to location of in-stream structures, locations and elevations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Engineer may request submission of materials slips for stone, erosion and sedimentation controls or other material submittals. Engineer will provide the contractor with a list of submittals for review prior to the pre-construction meeting.

B. Contractor to submit for approval alternate items for construction prior to installing of alternate products.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify existing plant life designated to remain is tagged or identified.

C. Identify salvage area for placing removed materials.

3.02 PREPARATION

A. Call Local Utility Line Information service at PA One Call not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

3.03 PROTECTION

A. Locate, identify, and protect from damage utilities indicated to remain.

B. Protect benchmarks, survey control points, utilities and existing structures from damage or displacement.

3.04 CLEARING

A. Clear areas required for access to site and execution of Work to minimum depth of 24 inches.

B. Remove trees and shrubs where indicated. Remove stumps, main root ball, root system to depth of 24 inches.

C. Clear undergrowth and deadwood, without disturbing subsoil.

D. Apply herbicide to remaining stumps to inhibit growth.

3.05 REMOVAL

A. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.

B. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.

C. Do not burn or bury materials on site. Leave site in clean condition.

3.06 TOPSOIL EXCAVATION

A. Do not excavate wet topsoil.

B. Stockpile in area designated on site to depth not exceeding 35 feet while maintaining 2H:1V slopes or flatter and protect from erosion. Stockpile material on impervious material until disposal.

END OF SECTION 311000

SECTION 312213

ROUGH GRADING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating topsoil.

2. Excavating subsoil.

3. Cutting, grading, filling, rough contouring, compacting, on site for Dam Removal and Stream Restoration.

B. Related Sections:

1. Section 024116 - Structure Demolition.

2. Section 310513 - Soils for Earthwork: Soils for fill.

3. Section 310516 - Aggregates for Earthwork: Aggregates for fill.

4. Section 311000 - Site Clearing: Excavating topsoil.

5. Section 312316.26 - Rock Removal.

6. Section 329119 - Landscape Grading: Finish grading with topsoil to contours.

1.02 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Coordinate unit price requirements when fill materials are specified by referring to Section 310513 and Section 310516 so unit prices are specified only once.

B. Topsoil Placement

1. Basis of Measurement: Topsoil will be removed within the limits of grading, stockpiled and then spread uniformly over all disturbed areas after reaching final grade.

2. Basis of Payment: Includes excavating existing soil, stockpiling, scarifying substrate surface, placing where required, and compacting.

C. Subsoil Cut placed as Fill:

1. Basis of Measurement: By the cubic yard

2. Basis of Payment: Includes excavating existing subsoil, supplying subsoil materials, stockpiling, scarifying substrate surface, placing where required, and compacting.

1.03 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).

3. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).

5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).

8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.04 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Materials Source: Submit name of imported materials suppliers.

C. Manufacturer's Certificate: Contractor to provide a clean fill certificate for imported soil materials if necessary.

1.05 CLOSEOUT SUBMITTAL

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C136, ASTM D2419, and ASTM D2434.

B. Perform Work in accordance with PennDOT 408 Specifications and Township ordinances and requirements.

PART 2 - EXECUTION

2.01 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify site conditions are generally accurate based on the existing conditions survey provided. The bidder understands that the project involves improvements within an active channel. The bidder further understands that stream channel may change over time. Bidder acknowledges they have reviewed the site conditions prior to construction and considered any channel changes in their bid.

C. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

2.02 PREPARATION

A. Call Local Utility Line Information service at PA One Call not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Protect utilities indicated to remain from damage.

D. Protect plant life, lawns, and other features remaining as portion of final landscaping.

E. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

2.03 TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded**,** without mixing with foreign materials for use in finish grading.

B. Do not excavate wet topsoil.

C. Stockpile in area designated on site to depth not exceeding not exceeding 35 feet while maintaining 2H:1V slopes or flatter and protect from erosion. Stockpile material on impervious material until disposal.

2.04 TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Top Surface of Subgrade: Plus or minus 6” from required elevation and maintain positive drainage without trapping of water.

2.05 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements

B. Section 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

C. Engineer reserves the right to request laboratory material tests, such as density testing for compaction of fills, if necessary.

D. When tests indicate work does not meet specified requirements, remove work, replace and retest.

END OF SECTION 312213

SECTION 312316

EXCAVATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Soil densification.
2. Excavating for building foundations.
3. Excavating for Dam Removal and Stream Restoration.
4. Excavating for slabs on grade.
5. Excavating for Site structures.
6. Excavating for landscaping.

B. Related Requirements:

1. Section 310513 "Soils for Earthwork" for stockpiling of fill and grading materials.
2. Section 310516 "Aggregates for Earthwork" for stockpiling of coarse- and fine-aggregate materials.
3. Section 312213 "Rough Grading" for topsoil and subsoil removal from Site surface.
4. Section 312316 "Excavating" for excavating for piling.
5. Section 312316.13 "Trenching" for excavating as required for building foundations and utilities within building perimeter.
6. Section 312316.26 "Rock Removal" for removal of rock during excavating.
7. Section 312323 "Fill" for backfilling at building perimeter and Site structures, and fill under slabs on grade, pavement, and landscaped areas.
8. Section 312500 "Erosion and Sedimentation Controls" for slope protection and erosion control.
9. Section 331416 "Site Water Utility Distribution Piping" for pipe materials, fittings, valves, meters, and backflow preventers.
10. Section 333100 "Sanitary Sewerage Piping" for pipe materials and accessories normally encountered with gravity sanitary building piping.

11. Section 333413.13 "Concrete Septic Tanks" for materials and installation requirements for concrete septic tanks.

12. Section 333413.23 "Fiberglass Septic Tanks" for materials and installation requirements for fiberglass septic tanks.

13. Section 333413.33 "Polyethylene Septic Tanks" for materials and installation requirements for polyethylene septic tanks.

14. Section 335216 "Gas Hydrocarbon Piping" for pipe materials, fittings, and valves normally encountered with Site-piped natural gas or propane gas distribution systems.

1.02 UNIT PRICES

A. Excavating Soil Materials:

1. Basis of Measurement: By cubic yard.

2. Basis of Payment:

a. Includes general excavating to required elevations, loading and placing materials in stockpile removing from Site.
b. Over-Excavating: Payment will not be made for over-excavated Work nor for replacement materials due to over-excavated Work.

1.03 SUBMITTALS

A. Shop Drawings:

1. Indicate soil densification grid for each size and configuration footing requiring soil densification.

2. Excavation Protection Plan:

a. Describe sheeting, shoring, and bracing materials and installation, as required, to protect excavations and adjacent structures and property.
b. Submit signed and sealed Shop Drawings with design calculations and assumptions to support plan.

B. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

C. Qualifications Statement: For licensed professional.

1.04 QUALITY ASSURANCE

A. Licensed Professionals Qualifications: Professional engineer experienced in design of specified Work and licensed in State of Pennsylvania.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Perform Work according to:

1. The State of Pennsylvania Department of Transportation 408 and RC standards.

2. The Franklin Park Borough grading requirements and standards.

3. PA Department of Environmental Protection and Allegheny County Conservation District standards and permit documents and conditions.

PART 3 - EXECUTION

3.01 PREPARATION

A. Utility Service Locator:

1. Call local utility service-line information at PA One Call not less than three working days before performing Work.

2. Request that underground utilities be located and marked within and immediately surrounding construction areas.

3. Identify required lines, levels, contours, and data.

B. Existing Utilities:

1. Protect from damage utilities indicated to remain.

C. Protect plant life, lawns, walkways, pavement and other features designated to remain as portion of final landscaping.

D. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E.Do not close or obstruct roadways, sidewalks, or hydrants without approval or detour signage.

F. Erect and maintain temporary barriers and security devices at indicated locations, including warning signs, warning lights, and similar measures, for protection of public, Owner, and existing improvements indicated to remain.

1. Insert vibrator to maximum specified depth, densify soils for 30 seconds or other time as directed by Civil and Environmental Consultants, Inc., and withdraw vibrator every 12 inches while repeating densification at each increment.

2. If subsurface obstruction prevents vibrator insertion to specified depth, request instructions from Civil and Environmental Consultants, Inc., compensate for obstruction.

3.02 EXCAVATION

A. Underpin adjacent structures which may be damaged by excavation Work.

B. Excavate subsoil to accommodate stream restoration and construction operations.

C. Excavate to working elevation for piling Work.

D. Slope banks with machine to angle of repose or less until shored.

E.Grade top perimeter of excavation to prevent surface water from draining into excavation.

F. Trim excavation and remove loose matter.

G. Removal of Deleterious Materials:

1. Remove lumped subsoil, boulders, and rock up to 4” diameter.

2. Remove larger material as specified in Section 312323 "Fill".

3. Remove excess and unsuitable material from Site.

H. Notify Architect/Engineer of unexpected subsurface conditions.

I. Correct over-excavated areas with structural fill as directed by Civil and Environmental Consultants, Inc. in accordance with geotechnical recommendations.

1. Remove excavated material from Site and transport to waste site. Contractor may temporarily stockpile topsoil or sub soil in designated stockpile areas with appropriate erosion and sedimentation controls.

2. Stockpile subsoil in area designated on Site to depth not exceeding 35 feet while maintaining 2H:1V slopes or flatter, and protect from erosion.

3. Stockpile excavated material in area designated on Site as specified in Section 310513 "Soils for Earthwork." and 310516 "Aggregates for Earthwork."

J. Repair or replace items indicated to remain that have been damaged by excavation.

3.03 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Request visual inspection of bearing surfaces by Civil and Environmental Consultants, Inc. before installing subsequent Work.

3.04 PROTECTION

A. Prevent displacement or loose soil from falling into excavation and 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 that may be created by earth operations.

END OF SECTION 312316

SECTION 312316.13

TRENCHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities from 5 feet outside building.

2. Compacted fill from top of utility bedding to subgrade elevations.

3. Backfilling and compaction.

B. Related Sections:

1. Section 310513 - Soils for Earthwork: Soils for fill.

2. Section 310516 - Aggregates for Earthwork: Aggregates for fill.

3. Section 312213 - Rough Grading: Topsoil and subsoil removal from site surface.

4. Section 312316 - Excavation: General building excavation.

5. Section 312316.26 - Rock Removal: Removal of rock during excavating.

6. Section 312323 - Fill: General backfilling.

7. Section 329119 - Landscape Grading: Filling of topsoil over backfilled trenches to finish grade elevation.

1.02 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Trenching:

1. Basis of Measurement: By linear foot of pipe installed, including excavation, bedding, backfill to approximate original contour.

2. Basis of Payment: Includes excavating to required elevations, protecting excavation, and stockpiling excavated materials, removing excavated materials from site. Over Excavating: Payment is not made for over excavated work nor for replacement materials.

B. Subsoil Fill:

1. Basis of Measurement: By linear foot of pipe installed, including excavation, bedding, backfill to approximate original contour.

2. Basis of Payment: Includes stockpiling, placing where required, and compacting. Payment will be made per linear foot of pipe installed.

1.03 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).

2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).

4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.04 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, or cable.

1.05 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent buildings, structures and property; include structural calculations to support plan.

C. Product Data: Submit data for geotextile fabric indicating fabric and construction.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with local, state and federal standards and regulations.

1.07 QUALIFICATIONS

A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in Pennsylvania.

1.08 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.09 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

A. Subsoil Fill: Contractor to utilize excavated trench materials as fill in lawns areas and above the stone backfill surrounding the pipe.

2.02 ACCESSORIES

A. Manufacturers:

1. Bonar Inc.; a Low & Bonar company.

2. Huesker Inc.

3. Propex Fabrics Inc.

4. Tenax Corporation - USA.

5. TenCate Geosynthetics.

6. Tensar Earth Technologies, Inc.

PART 3 - EXECUTION

3.01 PREPARATION

A. Call Local Utility Line Information service at PA One Call not less than three working days before performing Work.

1. Request underground public AND private utilities to be located and marked within and surrounding construction areas.

2. Private utilities will be marked by the facility owner.

B. Identify required lines, levels, contours, and datum locations.

C. Protect plant life, lawns, and other features remaining as portion of final landscaping.

D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

F. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work. Signage for walkways and sidewalk closures may require signage and work zone protection. Advance warning signage for roadways in accordance with Publication 213 is required.

3.02 TRENCHING

A. Excavate subsoil required for utilities to install storm sewers or other sub-surface facilities.

B. Remove lumped subsoil, boulders, and rock equal to or greater than 6” in diameter.

C. Perform excavation within 24 inches of existing utility service in accordance with utility’s requirements.

D. Do not advance open trench more than 200 feet ahead of installed pipe.

E. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.

F. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.

G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.

H. Do not interfere with 45 degree bearing splay of foundations.

I. 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.

J. When subsurface materials at bottom of trench are loose or soft notify Engineer, and request instructions.

K. Cut out soft areas of subgrade not capable of compaction in place. Backfill with 12" of AASHTO #1 stone and compact to density equal to or greater than requirements for subsequent backfill material.

L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Engineer.

M. Remove excess subsoil not intended for reuse, from site.

N. Stockpile excavated material in area designated on site or at the designated waste area.

3.03 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 more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, 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.

3.04 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Employ placement method that does not disturb or damage foundation perimeter drainage, utilities in trench.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Do not leave more than 50 feet of trench open at end of working day.

F. Protect open trench to prevent danger to the public.

3.05 FIELD QUALITY CONTROL

A. Contractor shall be required to place and compact material in the trench and compact to prevent settlement and provide positive surface flow.

B. When Work does not meet specified requirements, remove Work, replace and re-compact.

3.06 PROTECTION OF FINISHED WORK

A. Section 017000 - Execution and Closeout Requirements: Protecting finished work.

B. Reshape and re-compact fills subjected to vehicular AND pedestrian traffic during construction.

3.07 SCHEDULE

A. Storm and Sanitary Piping:

1. Cover pipe and bedding with native soil material to subgrade elevation, then place 4-6” of topsoil.

2. Compact uniformly to minimum 95 percent of maximum density.

END OF SECTION 312316.13

SECTION 312316.26

ROCK REMOVAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removing identified and discovered rock during excavation.

2. Expansive tools to assist rock removal.

B. Related Sections:

1. Section 312213 - Rough Grading.

2. Section 312316 - Excavation: Building excavation.

3. Section 312316.13 - Trenching: Trenching and backfilling for utilities.

4. Section 312323 - Fill: Backfill materials.

1.02 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Rock Removal

1. Basis of Measurement: Per Day

2. Basis of Payment: Includes preparation of rock for removal, mechanical removal from position, loading and removing from site. For over excavation, payment will not be made for over excavated work nor for replacement materials.

3. Rock removal will be completed by mechanical methods only, such as a ripper or hoe ram or other mechanical means discussed with the engineer prior to removal.

1.03 DEFINITIONS

A. Site Rock: Solid mineral material with volume more than 1/3 cu yd or solid material that cannot be removed with 3/4 cu yd capacity excavator.

1.04 PROJECT CONDITIONS

A. Conduct survey and document conditions of buildings near locations of rock removal, prior to excavation and photograph existing conditions identifying existing irregularities.

B. Advise engineer and owners of adjacent buildings or structures in writing, prior to executing rock removal, especially where near buildings, roads, bridges, structures and utilities.

C. Obtain seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.

1.05 SCHEDULING

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Schedule Work to avoid disruption to occupied buildings nearby.

PART 2 - EXECUTION

2.01 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify site conditions and note subsurface irregularities affecting Work of this section.

2.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

2.03 ROCK REMOVAL BY MECHANICAL METHOD

A. Excavate and remove rock by mechanical method.

1. Drill holes and use expansive tools and wedges to fracture rock.

B. Cut away rock at bottom of excavation to form level bearing.

C. Remove shaled layers to provide sound and unshattered base.

D. Remove excavated materials from site.

E. Correct unauthorized rock removal as directed by Architect/Engineer.

2.04 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements; 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

END OF SECTION 312316.26

SECTION 312319

DEWATERING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Dewatering system.

2. Surface water control system.

3. System operation and maintenance.

4. Water disposal.

B. Related Requirements:

1. Section 310516 - Aggregates for Earthwork: Filter sand.

2. Section 312316 - Excavation: Excavation for structures below ground water table.

3. Section 312500 - Erosion and Sedimentation Controls: Surface water runoff control.

1.02 DEFINITIONS

A. Dewatering:

1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations and streambeds.

2. Reducing piezometric pressure within strata to prevent failure or heaving of excavations and streambeds

3. Disposing of removed water.

B. Piezometer: A tube inserted into a vessel or pipe to indicate the height (pressure) that a liquid can rise in the tube.

C. Pitometer: A measuring device that transforms a differential pressure into an electrical output current proportional to the flow rate.

D. Surface Water Control: The removal of surface water within open excavations.

1.03 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Dewatering Pumps:

1. Basis of Measurement: By lump sum

2. Basis of Payment: Includes pump, power unit, fuel, discharge header pipe, connections, fittings, and pump operation and maintenance to dewater the work zone.

B. Bypass Pumps:

1. Basis of Measurement: By lump sum

2. Basis of Payment: Includes pump, power unit, fuel, discharge header pipe, connections, fittings, and pump operation and maintenance to bypass pump the active channel flows around the work area.

1.04 REFERENCE STANDARDS

A. AASTM International

1. ASTM C33/C33M - Standard Specification for Concrete Aggregates.

1.05 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section to permit following construction operations to be completed on dry and stable substrate:

1. Excavation for structures as specified in Section 312316 - Excavation.

2. Trenching for utilities as specified in Section 312316.13 - Trenching.

3. Drilled piers and shafts as specified in Section 316329 - Drilled Concrete Piers and Shafts.

1.06 PRECONSTRUCTION MEETINGS

A. Section 013000 - Administrative Requirements: Requirements for preconstruction meeting.

B. Contractor to discuss plans for dewatering and bypass pumping at the preconstruction meeting. Contractor to provide adequate bypass pump or pumps to bypass work operations during normal flows and during a 1-year storm event. The nature of this work is understood that the contractor is experienced with bypass operations and understands that larger storm flows may require equipment be removed from flood prone areas during weather events. Equipment shall be removed and reinstalled with no additional costs to the owner.

1.07 SEQUENCING

A. Section 011000 - Summary: Requirements for sequencing.

B. Sequence Work of this Section to obtain review and discuss dewatering and bypass pumping of work zones if different from the approved permit drawings. Pump sizing is the responsibility of the contractor.

C. Sequence Work of this Section to install and test dewatering and surface water control systems minimum **2** days before starting excavation.

1.08 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit sizes, capacities, priming method, and engine characteristics for dewatering and bypass pumps.

2. Submit pumping equipment for control of surface water within excavation.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.09 QUALITY ASSURANCE

A. Comply with authorities having jurisdiction for following:

1. Approved NPDES permit packages and documents

2. PADEP plans and permit requirements.

B. The Engineer has obtained an NPDES permit from the ACCD.

C. Perform Work according to state, local standards.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Furnish dewatering and surface water control systems to permit Work to be completed on a relatively dry and stable subgrade. It is understood sediment laden water will remain within the work zone and will be pumped to a filter bag. Dewatering and bypass pumps will be turned off at the end of each workday.

B. Standby Equipment:

1. Store at Site and ready for immediate use upon failure of dewatering equipment.

2. Dewatering Pumps: One for every three installed pumps.

3. Bypass Pumps: Adequate pumps for storm events up to the 1 year storm event.

4. Commercial Electric Power: 100 percent standby electric generating equipment.

2.02 PERFORMANCE AND DESIGN CRITERIA

A. Design:

1. The base flood will continue through the work areas during construction and will be dewatered using the work zone pumps.

2. The bypass pumps will be adequate to re-direct the active channel and upstream drainage areas to downstream of the current work zone.

3. Prevent damage to adjacent properties, buildings, structures, utilities, and other facilities from construction operations.

4. Prevent loss of fines, quick condition, or subgrade.

5. Maintain stability of sides and bottoms of excavation, sides and bottoms of excavations and trenches.

6. Surface Water Control System: Collect and remove surface water and seepage entering excavation.

2.03 DEWATERING EQUIPMENT

A. Select dewatering equipment to meet specified performance requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Utility Service Locator:

1. Call local utility service-line information at PA One Call not less than three working days before performing Work.

2. Request that underground utilities be located and marked within and immediately surrounding Site.
3. Identify required lines, levels, contours, and data.

3.02 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Protect existing adjacent buildings, structures, and improvements from damage that may be caused by dewatering operations.

3.03 DEWATERING SYSTEM

A. Install dewatering system according to Drawings. Contractor to review phasing and dewatering zones and account for dewatering and bypassing based on means and methods of the contractor.

B. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.

1. Cover and seal top of well until pump is installed.

C. Pumps:

1. Install according to manufacturer instructions.

2. Connect pumps to discharge header.

3. Install valves to permit pump isolation.

4. Install energy dissipators at the discharge points for each bypass pump.

5. Dewatering of the work zone shall occur thru a filter bag.

3.04 SURFACE WATER CONTROL SYSTEM

A. Provide ditches, berms, and other devices to divert and drain surface water from excavation area, as specified in Section 312500 - Erosion and Sedimentation Controls.

B. Divert surface water and limit seepage water within excavation areas into sumps and pump water into drainage channels, storm drains, settling basins, according to requirements of authorities having jurisdiction.

C. Control and remove unanticipated water seepage into excavation.

3.05 SYSTEM OPERATION AND MAINTENANCE

A. Operate dewatering system continuously until backfilling is complete.

B. Provide 24-hour supervision of dewatering system by personnel skilled in operation, maintenance, and replacement of system components.

C. Monitoring:

1. Conduct daily observation of dewatering system and monitoring system.

2. Make required repairs and perform scheduled maintenance.

D. Fill fuel tanks before tanks drop to 25 percent capacity.

E. Start emergency generators at least twice each week to check operating condition. If power is not available at the site.

F. System Failure:

1. If dewatering system cannot control water within excavation, notify Architect/Engineer and stop excavation Work.

2. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.

3. Demonstrate that dewatering system operation complies with performance requirements before resuming excavation operations.

G. Modify dewatering and surface water control systems if operation causes or threatens to cause damage to new construction, existing Site improvements, adjacent property, or adjacent water wells.

H. Correct unanticipated pressure conditions affecting dewatering system performance.

I. Do not discontinue dewatering operations without approval of Architect/Engineer.

3.06 WATER DISPOSAL

A. Discharge water into downstream drainage channels.

3.07 SYSTEM REMOVAL

A. Remove dewatering and surface water control systems after dewatering operations are discontinued.

3.08 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Testing:

1. After dewatering system is installed, perform pumping test to determine at what point selected pumping rate lowers water level in well below pump intake.

2. Adjust pump speed, discharge volume, or both to ensure proper operation of each pump.

C. Monitoring and Recording:

1. Daily:

a. Note average discharge flow rate for each deep well, eductor header, well point, and ground water elevation.

2. Contaminates:

a. Monitor ground water discharge visually for contamination while performing pumping in vicinity of potentially contaminated sites.

3. Existing Adjacent Buildings, Structures, and Improvements:

a. Survey weekly during dewatering to detect movement in comparison to original elevations.
b. Notify Architect/Engineer immediately of measured movement.

3.09 PROTECTION

A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect monitoring well standpipes from damage by construction operations.

END OF SECTION 312319

SECTION 312323

FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cut placed as fill and stockpiling of excess materials.

2. Fill for over-excavation.

B. Related Requirements:

1. Section 310513 - Soils for Earthwork: Soils for fill.

2. Section 310516 - Aggregates for Earthwork: Aggregates for fill.

3. Section 310519.13 - Geotextiles for Earthwork: Geotextile fabric for placement over fill.

4. Section 312213 - Rough Grading: Site filling.

5. Section 312316 - Excavation: Backfilling of building foundations and utilities within building perimeter.

6. Section 312316.13 - Trenching: Backfilling of utility trenches.

7. Section 313716.13 - Rubble-Stone Riprap: Riprap and rock lining placed loose for soil stabilization and slope protection.

8. Section 329119 - Landscape Grading: Placing, leveling, and compacting topsoil materials prior to final landscaping Work.

9. Section 333100 - Sanitary Sewerage Piping: Pipe materials and accessories normally encountered with gravity sanitary building piping.

10. Section 334113 - Foundation Drainage: Filter aggregate.

11. Section 334200 - Stormwater Conveyance: Drainage facilities to collect and provide for flow of stormwater.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Fill Type Clean fill:

1. Basis of Measurement: By cubic yard.

2. Basis of Payment: Includes supplying fill materials, cut placed as fill, stockpiling, scarifying substrate surface, placing where required, and compacting.

1.3 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 (10-lb) Rammer and a (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft-lbf/ft3.

2. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.

3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft-lbf/ft3.

4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

5. ASTM D6031/D6031M - Standard Test Method for Logging In Situ Moisture Content and Density of Soil and Rock by the Nuclear Method in Horizontal, Slanted, and Vertical Access Tubes.

6. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information for geotextile fabric, indicating fabric and construction.

C. Materials Source: Submit name of imported materials suppliers.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements. A clean fill certificate is required for any imported fill.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

1.5 QUALITY ASSURANCE

A. Perform Work according to PennDOT 408 standards.

B. Maintain copies of each standard affecting the Work of this Section on Site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Subsoil Fill: Shall utilize on site fill materials, cut placed as fill or as directed by a qualified geotechnical engineer.

B. Import fill: Clean fill shall be imported as directed by the engineer where unsuitable materials are encountered.

C. Export Soil: Soil shall be exported to waste areas. All export shall be transported in equipment capable of containing all water or sludge. Contractor shall remove soils from roadways along haul route if leaks occur during transport. The contractor is encouraged to allow ample drying time for the excavated material to dewater and prevent spills along the haul route.

2.2 ACCESSORIES

A. Geotextile Fabric: As specified in Section 310519.13 - Geotextiles for Earthwork.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that fills are placed in accordance with the drawings and specifications, including PennDOT 408 requirements.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Compact subgrade to specified density requirements for subsequent backfill materials.

C. Soft Subgrade:

1. Cut out soft areas of subgrade not capable of compaction in place.

2. Backfill with AASHTO #1 stone and compact to density equal to or greater than specified requirements for subsequent fill material.

3.3 BACKFILLING

A. Backfill areas to contours and elevations.

B. Systematically backfill to allow maximum time for natural settlement.

C. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces, and do not backfill with frozen materials.

D. Place fill material in continuous layers and compact in accordance with PennDOT 408 specifications.

E. Use placement method that does not disturb or damage roads, bridges, buildings, utilities or other existing site improvements.

F. Maintain optimum moisture content of fill materials to attain required compaction density.

G. Make gradual grade changes and blend slope into level areas.

H. Remove surplus backfill materials from Site.

I. Leave fill material stockpile areas free of excess fill materials.

3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Top Surface of General Backfilling: Plus or minus 6” from required elevations and providing positive drainage without areas of ponding.

3.5 FIELD QUALITY CONTROL

A. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

B. Inspecting: Request visual inspection of bearing surfaces by Engineer before installing subsequent Work.

C. Testing:

1. Laboratory Material Testing: Comply with AASHTO T 180; ASTM D698; ASTM D1557; ASTM D6938.

2. In-Place Compaction Testing:

a. Density Tests: Comply with ASTM D1556/D1556M.

b. Moisture Tests: Comply with ASTM D6031/D6031M.

3. If tests indicate that Work does not meet specified requirements, remove Work, replace, compact, and retest.

4. Proof-roll compacted fill surfaces under all pavement, foundations, or structures.

3.6 PROTECTION

A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Reshape and recompact fills subjected to vehicular traffic during construction.

3.7 ATTACHMENTS

A. Fill Under Grass Areas: Fill Type Native soils; to 6 inches below finish grade; compacted uniformly to 95 percent of maximum density.

B. Fill Under Landscaped Areas: Fill Type Native soils; to 12 inches below finish grade; compacted uniformly to 95 percent of maximum density percent of maximum density.

C. Fill to Correct Over-Excavation:

1. Fill Type Native soils; flush to specified elevation; compacted uniformly to 95 percent of maximum density.

D. Fill over Drainage Piping Gravel Cover: Fill Type Native soils; to 12 inches below finish grade; compacted uniformly to 95 percent of maximum density.

E. Fill over Excavation of soil Material: Fill Type soil material; to 6 inches below finish grade; compacted uniformly to 95 percent of maximum density.

END OF SECTION 312323

SECTION 312500

EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rock energy dissipator.
2. Rock construction entrance.
3. Rock filter
4. Compost filter sock
5. Inlet protection
6. Erosion control blanket.

B. Related Sections:

1. Section 310513 - Soils for Earthwork.
2. Section 310516 - Aggregates for Earthwork.
3. Section 311000 - Site Clearing.
4. Section 312316 - Excavation.
5. Section 312323 - Fill.
6. Section 329113 - Soil Preparation.
7. Section 329119 - Landscape Grading.
8. Section 329219 - Seeding.
9. Section 334200 – Stormwater Conveyance

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Rock Energy Dissipator:

1. Basis of Measurement: ton.

2. Basis of Payment: Includes excavating and placement of R-5 riprap and class IV non-woven geotextile fabric in accordance with rock outlet details per PADEP standards.

B. Rock Construction Entrance:

1. Basis of Measurement: each.

2. Basis of Payment: Includes excavating, geotextile fabric, clearing, placing rock in accordance with PADEP and adding additional rock during construction as required by ACCD and approved project drawings and NPDES permit.

C. Rock Filter:

1. Basis of Measurement: each.

2. Basis of Payment: Includes placing rock, and coarse aggregate filter blanket as required by ACCD and approved project drawings and NPDES permit.

D. Compost Filter Sock:

1. Basis of Measurement: linear foot

2. Basis of Payment: Includes installation, staking and removal of compost filter socks in accordance with the project drawings, NPDES permit and ACCD requirements.

E. Inlet Protection:

1. Basis of Measurement: per each.

2. Basis of Payment: Includes installation and removal, replacement inlet filter bags, removal and sediment and disposal of sediment and other debris in system.

F. Erosion Control Blanket:

1. Basis of Measurement: square yard.

2. Basis of Payment: Includes installation in accordance with manufacturer's recommendations for straw blankets.

G. Erosion Control Matting:

1. Basis of Measurement: square yard.

2. Basis of Payment: Includes installation in accordance with manufacturer's recommendations, staking, 700# Coir Matting in accordance with the approved details.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T88 - Standard Specification for Particle Size Analysis of Soils.

2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.

C. ASTM International:

1. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.

2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).

3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).

4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

D. Precast/Prestressed Concrete Institute:

1. PCI MNL-116S - Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on compost filter socks and inlet protection.

1.5 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with requirements of Section 310513, Section 310516, Section 311000, Section 312316, Section 312323, Section 329119, Section 329113, Section 329219, and Section 334200.

B. Perform Work according to Allegheny County Conservation District standards and Pennsylvania Department of Environmental Protection requirements.

C. The erosion and sedimentation controls shall be ABACT and in accordance with the approved NPDES permit drawings and permit.

1.7 PRECONSTRUCTION MEETINGS

A. Section 013000 - Administrative Requirements: preconstruction meeting.

B. Review erosion and sedimentation controls at the pre-construction meeting.

PART 2 - PRODUCTS

2.1 ROCK AND GEOTEXTILE MATERIALS

A. Furnish materials according to PennDOT standards.

2.2 SOURCE QUALITY CONTROL (AND TESTS)

A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.

B. Perform tests on cement, aggregates, and mixes to ensure conformance with specified requirements.

C. Make rock available for inspection at producer's quarry prior to shipment, i.e., imbricated limestone. Notify engineer at least seven days before inspection is allowed.

D. Allow witnessing of inspections and test at manufacturer's test facility. Notify engineer at least seven days before inspections and tests are scheduled.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting Work.

B. Verify compacted subgrade is acceptable and ready to support devices and imposed loads.

C. Verify gradients and elevations of base or foundation for other Work are correct.

3.2 ROCK ENERGY DISSIPATOR

A. Excavate to indicated depth of rock lining or nominal placement thickness as follows. Remove loose, unsuitable material below bottom of rock lining, then replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.

1. Nominal Placement Thickness per Pennsylvania Department of Environmental Protection requirements:

    a. R8: 63 Inches.
    b. R7: 45 Inches.
    c. R6: 36 Inches.
    d. R5: 27 Inches.
    e. R4: 18 Inches.
    f. R3: 9 Inches.

B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope Provide a minimum overlap of 1 foot. Offset adjacent roll ends a minimum of 5 feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than 4 weeks.

C. Carefully place rock on geotextile fabric to produce an even distribution of pieces, with minimum of voids and without tearing geotextile.

D. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and to avoid displacement of underlying material. Arrange individual rocks for uniform distribution.

3.3 ROCK CONSTRUCTION ENTRANCE

A. Remove topsoil and remove loose, unsuitable material below bottom of rock lining, then replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.

1. Minimum Nominal Placement Thickness per Pennsylvania Department of Environmental Protection requirements:

    a. AASHTO #1: 8 Inches.

B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope Provide a minimum overlap of 1 foot. Offset adjacent roll ends a minimum of 5 feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than 4 weeks.

C. RCE shall be ABACT and be installed either with wash racks or a minimum of 100 feet in length. RC shall be in accordance with the approved NPDES permit plans.

D. Carefully place rock on geotextile fabric to produce an even distribution of pieces, with minimum of voids and without tearing geotextile.

E. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and to avoid displacement of underlying material. Arrange individual rocks for uniform distribution

3.4 ROCK FILTER

A. Construct generally in accordance with rock filter requirements to indicated shape and depth per Pennsylvania Department of Environmental Protection requirements and approved NPDES permit drawings and permit condition.

B. Height of rock courses placed based on channel depth.

C. A minimum thickness of 1 foot AASHTO #57 on the upstream side of the filter is required. For channels with a total between 2 and 3 feet, a minimum thickness of 1 foot of R-3 rock is required. For channels with a total depth greater than 3 feet, a minimum thickness of 1 foot of R-4 rock is required.

D. In special protection watersheds, a 6" layer of compost should be placed and anchored on the top of the filter stone. The compost layer is required since this site is ABACT.

3.5 ROCK BARRIER

A. Determine length required for ditch or depression slope and excavate, compact and foundation area to firm, even surface.

B. Produce an even distribution of rock pieces, with minimum voids to the indicated shape, height and slope.

C. Construct coarse aggregate filter blanket against upstream face of rock barrier to the indicated thickness.

3.6 COMPOST FILTER SOCKS

A. Install in accordance with the requirements of the Pennsylvania Department of Environmental Protection and manufacturer requirements and approved NPDES permit drawings and permit conditions.

B. Compost filter sock shall be placed at exiting grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignments.

C. Stakes shall be installed immediately downslope of the sock if specified by the manufacturer.

3.7 INLET PROTECTION

A. Install in accordance with the requirements of manufacturer requirements and approved NPDES permit drawings and permit conditions.

B. At a minimum, the fabric shall have a minimum grab tensile strength of 120 lbs., a minimum burst strength of 200 psi, and a minimum trapezoidal tear strength of 50 lbs. Filter bags shall be capable of trapping all particles not passing a No. 40 sieve.

3.8 EROSION CONTROL BLANKET AND MATTING

A. Install in accordance with the requirements of manufacturer requirements and approved NPDES permit drawings and permit conditions.

B. General. Place erosion control materials after final grading and after applying designated soil supplements, seed, and mulch, as indicated. Install erosion control materials to conform to shape of soil surface.

C. Unroll, place, and anchor mat evenly and smoothly, without stretching, to maintain contact with mulch surface at all points.

D. Use appropriate anchoring devices and follow installation directions of the mat manufacturer.

E. If staples are used, drive staple flush with the top of the mat or the mulch blanket surface so that the staple does not extend above the mat.

3.9 SITE STABILIZATION

A. Place erosion control systems in accordance with Drawings or as may be dictated by site conditions in order to maintain the intent of the specifications and permits at no additional cost to Owner.

B. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct Contractor to provide immediate permanent or temporary pollution control measures. Contractor will be required to incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls. Permanently seed and mulch cut slopes as excavation proceeds to extent considered desirable and practical.

C. Maintain temporary erosion control systems as directed by Owner or governing authorities to control siltation during life of contract. Contractor shall respond to maintenance or additional work ordered by Owner or governing authorities within 48 hours or sooner if required.

D. Slopes that erode easily or that will not be graded for a period of 4 days or more shall be temporarily seeded as work progresses in accordance with the landscape plans and specifications unless otherwise specified on the Drawings and approved NPDES permit.

3.10 FIELD QUALITY CONTROL

A. Sections 014500 Quality Requirements and 017700 Closeout Procedures: Field inspecting, testing, adjusting, and balancing.

B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

C. Compaction Testing: As specified in Section 312323 Fill.

3.11 CLEANING

A. Section 017700 Closeout Procedures: Requirements for cleaning.

B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.

C. Do not damage structure or device during cleaning operations.

D. Do not permit sediment to erode into construction or site areas or natural waterways.

E. Clean channels when depth of sediment reaches approximately one-half channel depth.

3.12 PROTECTION

A. Section 017700 Closeout Procedures: Requirements for protecting finished Work.

END OF SECTION 312500

SECTION 329113

SOIL PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparation of subsoil.
2. Soil testing.
3. Placing topsoil.

B. Related Sections:

1. Section 312213 - Rough Grading: Rough grading of site.
2. Section 312316.13 - Trenching: Rough grading over cut.
3. Section 329119 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.
4. Section 329219 - Seeding
5. Section 329300 - Plants.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Grassed Areas:

1. Basis of Measurement: By square foot.
2. Basis of Payment: Includes preparation of topsoil and placing topsoil.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and application rates.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform Work according to Allegheny County Conservation District standards and Pennsylvania Department of Environmental Protection requirements and permit documents.

1.5 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate with installation of underground sprinkler system piping and watering heads.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Topsoil: Excavated from site and free of debris or other large organic matter, woody materials, trash, or other similar materials, etc.

2.2 SOURCE QUALITY CONTROL

A. Section 014500 - Quality Control: Testing, inspection and analysis requirements.

B. Analyze to ascertain percentage of nitrogen, phosphorus, potassium, soluble salt content, organic matter content, and pH value.

C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.

D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013100 – Project Management: Verification of existing conditions before starting work.

B. Verify prepared soil base is ready to receive the Work of this section.

3.2 PREPARATION OF SUBSOIL

A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, woody debris, weeds and undesirable plants and their roots. Remove contaminated sub-soil.

C. Scarify subsoil to depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.3 PLACING TOPSOIL

A. Spread topsoil to minimum depth of 6 inches over area to be seeded. Rake until smooth.

B. Place topsoil during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.

D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

E. Install edging at periphery of seeded areas in straight lines to consistent depth.

END OF SECTION 329113

SECTION 329119

LANDSCAPE GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Final grade topsoil for finish landscaping.

B. Related Sections:

1. Section 312213 - Rough Grading: Site contouring.

2. Section 312316.13 - Trenching: Backfilling trenches.

3. Section 312323 - Fill: Backfilling at building areas.

4. Section 329219 - Seeding and Soil Supplements: Finish ground cover.

5. Section 329300 - Plants: Topsoil fill for trees, plants and ground cover.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Topsoil:

1. Basis of Measurement: By lump sum.

2. Basis of Payment: Includes excavating existing topsoil, stockpiling, preparing and scarifying substrate surface, re-placing where required, and rolling.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures

B. If existing topsoil is in-adequate, the engineer may request import of topsoil from an outside source. It is anticipated the on-site topsoil will be adequate and suitable for the disturbed areas.

1.4 QUALITY ASSURANCE

A. Furnish each topsoil material from single source throughout the Work.

B. Perform Work in accordance with PADEP and ACCD requirements for removal and replacement of topsoil and in accordance with the approved NPDES permit documents.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Topsoil: Utilize existing native materials on site. If requested by the engineer, topsoil may be imported to the site. It is assumed import will not be needed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify building and trench backfilling have been inspected.

C. Verify substrate base has been contoured and compacted. Areas of settlement will need to be re-compacted and additional restoration will be performed at the contractors expense.

3.2 PREPARATION

A. Protect landscaping and other features remaining as final Work.

B. Protect existing structures, fences, sidewalks, bridges, utilities, paving, curbs or other existing features within and around the project area..

3.3 SUBSTRATE PREPARATION

A. Eliminate uneven areas and low spots.

B. Remove debris, roots, branches, stones, more than 2 inch in size. Remove contaminated subsoil.

C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.4 PLACING TOPSOIL

A. Place topsoil in areas where seeding and planting to thickness as scheduled. Place topsoil during dry weather.

B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.

C. Remove roots, weeds, rocks, and foreign material while spreading.

D. Manually spread topsoil close to plant material and structure to prevent damage.

E. Lightly compact placed topsoil.

F. Remove surplus subsoil and topsoil from site.

G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.5 TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Top of Topsoil: Plus or minus 1/2 inch.

3.6 PROTECTION OF INSTALLED WORK

A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Prohibit construction traffic over topsoil.

3.7 SCHEDULES

A. Compacted topsoil thicknesses:

1. Seeded Grass: 6 inches

END OF SECTION 329119

SECTION 329219

SEEDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fertilizing.
2. Seeding.
3. Hydroseeding.
4. Mulching.
5. Maintenance.

B. Related Sections:

1. Section 312213 - Rough Grading: Rough grading of site.
2. Section 312316.13 - Trenching: Rough grading over cut.
3. Section 320513 - Soils for Earthwork: Topsoil material.
4. Section 329113 - Soil Preparation
5. Section 329119 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.
6. Section 329300 - Plants.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Grassed Areas:

1. Basis of Measurement: By lump sum
2. Basis of Payment: Includes seeding, watering and maintenance to specified time limit.

1.3 REFERENCES

A. ASTM International:

1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

1.4 DEFINITIONS

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

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.

C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.7 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

B. Perform Work according to PADEP and USACE standards and permit conditions.

1.8 QUALIFICATIONS

A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum 3 years documented experience.

B. Installer: Company specializing in performing work of this section approved by manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - 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.

1.10 MAINTENANCE SERVICE

A. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition for two cuttings.

PART 2 - PRODUCTS

2.1 SEED MIXTURE

A. Furnish materials according PADEP and USACE standards.

B. Description:

1. Percentages of seed mixtures specified on Drawings or by Ernst Seeds.

2. Seed Types:

a. Merion Blue Grass.
b. Kentucky Blue Grass.
c. Creeping Red Fescue Grass.
d. Streambark Wheat.
e. Red Top.
f. Norlea Perennial Rye.
g. Clover.

2.2 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay is acceptable.

B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil. Proportions of nitrogen, phosphoric acid, soluble potash specified on plans of by Ernst Seeds.

C. Lime: ASTM C602, Class T or Class O agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.

D. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.

E. Erosion Fabric: Jute matting, open weave.

F. Herbicide: Specified by Ernst Seeds.

G. Stakes: Softwood lumber, chisel pointed.

H. String: Inorganic fiber.

2.3 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.

B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.

D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify prepared soil base is ready to receive the Work of this section.

3.2 FERTILIZING

A. Apply lime at application rate recommended by soil analysis. Work lime into top 6 inches of soil.

B. Apply fertilizer at application rate recommended by soil analysis.

C. Apply after smooth raking of topsoil and prior to roller compaction.

D. Do not apply fertilizer at same time or with same machine used to apply seed.

E. Mix fertilizer thoroughly into upper 2 inches of topsoil.

F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.3 SEEDING

A. Apply seed per PADEP and Ernst Seed specifications evenly in two intersecting directions. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

C. Seeding Season: Following September 15th – November 1st.

D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

E. Roll seeded area with roller not exceeding 112 lbs/linear foot.

F. Immediately following seeding and compacting, apply mulch to thickness of 1/8 inches Maintain clear of shrubs and trees.

G. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

3.4 HYDROSEEDING

A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder evenly in one pass. Hydraulic seeder at rate dependent on slope gradient conditions per manufacturer specifications.

B. 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.

3.5 SEED PROTECTION

A. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

B. Lay fabric smoothly on surface, bury top end of each section in 6 inches 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.

3.6 MAINTENANCE

A. Mow grass at regular intervals to maintain at maximum height of 2-1/2 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. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.

G. Immediately reseed areas showing bare spots.

H. Repair washouts or gullies.

I. Protect seeded areas with warning signs during maintenance period.

3.7 SCHEDULE

A. Front Seeded Area: Grass seed mixture specified, 3 inch top soil.

B. Rear Seeded Area: Grass seed mixture specified except substitute Clover for Kentucky Blue Grass, 2 inch top soil.

END OF SECTION 329219

SECTION 329300

PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparation of subsoil and topsoil.
2. Topsoil bedding.
3. Trees, plants, and ground cover.
4. Mulch.
5. Fertilizer.
6. Pruning.
7. Maintenance.

B. Related Sections:

1. Section 312316.13 - Trenching: Rough grading over trench cut.
2. Section 312323 - Fill: Rough grading of site.
3. Section 329113 - Soil Preparation.
4. Section 329119 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this Section.
5. Section 329219 - Seeding.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Plants:

1. Basis of Measurement: Lump sum, refer to planting plans and details
2. Basis of Payment: Includes placing topsoil, planting, and warranty maintenance to specified time period.

1.3 REFERENCES

A. American National Standards Institute:

1. ANSI A300 - Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices.

2. ANSI Z60.1 - Nursery Stock.

B. Forest Stewardship Council:

1. FSC Guidelines - Forest Stewardship Council Guidelines.

1.4 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass other invasive species as identified by the PADEP present in the region.

B. Plants: Living trees, plants, and ground cover specified in this Section and described in ANSI Z60.1.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit list of plant material sources, data for fertilizer, and other accessories.

C. Submit minimum 10 oz sample of topsoil proposed. Forward sample to testing laboratory in sealed containers to prevent contamination.

1.6 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

1.7 QUALITY ASSURANCE

A. Tree Pruning: ANSI A300 Pruning Standards for Woody Plants.

B. Perform Work according to PADEP and USACE standards and permit conditions.

1.8 QUALIFICATIONS

A. Nursery: Company specializing in growing and cultivating native plants with three years documented experience.

B. Installer: Company specializing in installing and planting plants with 3 years documented experience and approved by nursery.

C. Maintenance Services: Performed by installer.

1.9 PRE-INSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing Work of this Section.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Protect and maintain plant life until planted.

D. Deliver plant life materials immediately prior to placement. Keep plants moist.

E. Plant material damaged as a result of delivery, storage or handling will be rejected.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.

B. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.

C. Do not install plant life when wind velocity exceeds 30 mph.

1.12 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Install plant life within the planting season and discussion with the engineer to determine dates of planting.

1.13 WARRANTY

A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish one year manufacturer warranty for trees, plants, and ground cover.

1.14 MAINTENANCE SERVICE

A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.

B. Maintain plant life for three months after Date of Substantial Completion.

C. Maintain plant life immediately after placement until plants are well established and exhibit vigorous growing condition. Continue maintenance until termination of warranty period.

D. Maintenance includes:

1. Cultivation and weeding plant beds and tree pits.

2. Applying herbicides for weed control. Remedy damage resulting from use of herbicides.

3. Remedy damage from use of insecticides.

4. Irrigating sufficient to saturate root system.

5. Pruning, including removal of dead or broken branches.

6. Disease control.

7. Maintaining wrapping, guys, turnbuckles, and stakes. Repair or replace accessories when required.

8. Replacement of mulch.

PART 2 - PRODUCTS

2.1 TREES, PLANTS, AND GROUND COVER

A. Planting Stock:

1. Species: According to Standardized Plant Names, official code of American Joint Committee on Horticulture Nomenclature.

2. Identification: Label individual plants or each bundle of plants when tied in bundles.

3. Plants: No. 1 Grade conforming to "American Standard for Nursery Stock" of American Association of Nurserymen (AAN); well-branched, vigorous and balanced root and top growth; free from disease, injurious insects, mechanical wounds, broken branches, decay, and other defects.

4. Trees: Furnish with reasonably straight trunks, well balanced tops, and single leader.

5. Deciduous plants: Furnish in dormant state, except those specified as container grown.

B. Trees, Plants, and Ground Cover: Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the Work.

2.2 SOIL MATERIALS

A. Topsoil: Excavated from site.

2.3 MULCH MATERIALS

A. Mulching Material: Composted, shredded hardwood bark, dark brown in color.

2.4 ACCESSORIES

A. Wrapping Materials: Burlap.

B. Stakes: Softwood lumber, pointed end.

C. Cable, Wire, Eye Bolts: Non-corrosive, of sufficient strength to withstand wind pressure and resulting movement of plant life.

D. Plant Protectors: Rubber sleeves over cable to protect plant stems, trunks, and branches.

E. Tree Protectors: Plastic with galvanized rings.

2.5 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.

B. Test and analyze imported topsoil.

C. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt and organic matter; pH value.

D. Provide recommendation for fertilizer and soil amendment application rates for specified planting as result of testing.

E. Testing is not required when recent tests are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting Work.

B. Verify prepared subsoil is ready to receive Work.

C. Saturate soil with water to test drainage.

D. Verify required underground utilities are available, in proper location, and ready for use.

3.2 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.

C. Scarify subsoil to depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

D. Dig pits and beds three times wider than plant root system.

3.3 PLACING TOPSOIL

A. Spread topsoil to minimum depth of 6 inches over area to be planted. Rake smooth.

B. Place topsoil during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.

D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

E. Install topsoil into pits and beds intended for plant root balls, to minimum thickness of 6 inches.

3.4 FERTILIZING

A. Apply starter fertilizer in accordance with the project plans, details and soil testing results.

B. Apply after initial raking of topsoil.

C. Mix thoroughly into upper 2 inches of topsoil.

D. Lightly water soil to aid dissipation of fertilizer.

3.5 PLANTING

A. Place plants for best appearance for review and final orientation by Civil and Environmental Consultants, Inc..

B. Set plants vertical.

C. Remove non-biodegradable root containers.

D. Set plants in pits or beds, partly filled with prepared plant mix, at minimum depth of 6 inches indicated on Drawings under each plant. Remove burlap, ropes, and wires, from top half of root ball.

E. Place bare root plant materials so roots lie in natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.

F. Saturate soil with water when pit or bed is half full of topsoil and again when full.

3.6 PLANT RELOCATION AND RE-PLANTING

A. Relocate plants as directed by Civil and Environmental Consultants, Inc.

B. Ball or pot removed plants when temporary relocation is required.

C. Replant plants in pits or beds, partly filled with prepared topsoil mixture, at minimum depth of 6 inches as indicated on Drawings under each plant. Remove burlap, ropes, and wires, from top half of root ball.

D. Place bare root plant materials so roots lie in natural position. Backfill soil mixture in 6 inch layers. Maintain plant materials in vertical position.

E. Saturate soil with water when pit or bed is half full of topsoil and again when full.

3.7 PLANT SUPPORT

A. Brace plants vertically with plant protector wrapped guy wires and stakes.

B. Tree Support Method per Tree Caliper:

1. 1 Inch: One stake with one tie.

2. 1 to 2 Inches: Two stakes with two ties.

3. 2 to 4 Inches: Three guy wires.

4. Over 4 Inches: Four guy wires.

3.8 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements, 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Plants will be rejected when ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

END OF SECTION 329300

SECTION 334200

STORMWATER CONVEYANCE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stormwater drainage piping.

2. Manhole.

3. Outlet Structure.

4. Bedding and cover materials.

B. Related Requirements:

1. Section 310513 - Soils for Earthwork: Soils for backfill in trenches.

2. Section 310516 - Aggregates for Earthwork: Aggregate for backfill in trenches.

3. Section 310519.13 - Geotextiles for Earthwork: Geotextile filter fabric.

4. Section 312316 - Excavation: Product and execution requirements for excavation and backfill as required by this Section.

5. Section 312316.13 - Trenching: Execution requirements for trenching as required by this Section.

6. Section 312323 - Fill: Requirements for backfill to be placed under this Section.

1.2 DEFINITIONS

A. ABS: Acrylonitrile butadiene styrene.

B. Bedding: Aggregate placed under, beside and directly over pipe.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012900 Payment Procedures: Contract Sum/Price modification procedures.

B. Pipe and Fittings:

1. Basis of Measurement: By linear foot.

2. Basis of Payment: Includes excavating, trimming, removing soft subsoil, bedding and fill, geotextile fabric, pipe and fittings, accessories, existing pipe removal.

C. Manhole:

1. Basis of Measurement: By feet.

2. Basis of Payment: Includes excavating, bedding and fill, trimming, foundation pad, unit installation with accessories, and connecting to piping.

D. Outlet Structure:

1. Basis of Measurement: By feet.

2. Basis of Payment: Includes excavating, bedding and fill, trimming, foundation pad, unit installation with accessories, and connecting to piping.

1.4 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO M036 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.

2. AASHTO M196 - Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains.

3. AASHTO M245 - Standard Specification for Corrugated Steel Pipe, Polymer-Precoated, for Sewers and Drains.

4. AASHTO M252 - Standard Specification for Corrugated Polyethylene Drainage Pipe.

5. AASHTO M274 - Standard Specification for Steel Sheet, Aluminum-Coated (Type 2), for Corrugated Steel Pipe.

6. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.

7. AASHTO M294 - Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter.

B. ASTM International:

1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.

2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

3. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

4. ASTM A746 - Standard Specification for Ductile Iron Gravity Sewer Pipe.

5. ASTM B745/B745M - Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains.

6. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.

7. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe [Metric].

8. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

9. ASTM C76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe [Metric].

10. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

11. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets [Metric].

12. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

13. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

14. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

15. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.

16. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

17. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.

18. ASTM D2680 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping.

19. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

20. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.

21. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

22. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

23. ASTM F405 - Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings.

24. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

25. ASTM F667/F667M - Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings.

1.5 COORDINATION

A. Section 013000 - Project Management: Requirements for coordination.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information describing pipe and pipe accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Instructions: Submit special procedures required to install specified products.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

F. Qualifications Statement:

1. Submit qualifications for manufacturer.

1.7 CLOSEOUT SUBMITTALS

A. Section 017700 Closeout Procedures: Requirements for submittals.

B. Project Record Documents: Record actual locations of existing and proposed utilities, connections, inlet, slope gradients, and invert elevations.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.8 QUALITY ASSURANCE

A. Perform Work according to Pennsylvania Department of Transportation standards.

1.9 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. Store materials according to manufacturer instructions.

D. Protection:

1. Provide additional protection according to manufacturer instructions.

1.10 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.

2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 STORM DRAINAGE PIPING

A. Smooth-line Corrugated Polyethylene Pipe (SLCPP) or High Density Polyethylene Pipe (HDPE):

1. Pipe:

a. Comply with ASTM D2321.

b. Inside Nominal Diameter: as specified on Drawings.

B. Perforated HDPE Piping:

1. Pipe:

a. Comply with ASTM M252.

b. Comply with manufacturer standards.

c. Inside Nominal Diameter: as specified on Drawings.

2. Bedding:

a. Place bedding material at the bottom of the excavations made for the storm sewer piping. Place the material in continuous loose layers not exceeding 6-inches thick of AASHTO #57 crushed limestone. Compact bedding material to a minimum of 75%

of its relative density. Refer to Drawings for minimum bedding thicknesses under pipes.

b. Pipe trench backfill: PennDOT Type 2A limestone crushed limestone from springline of the pipe to a minimum of 6” above the crown of the pipe

2.2 MANHOLES

A. Manhole Sections: Reinforced precast concrete in accordance with ASTM C478 with minimum compressive strength of 4,000 psi.

B. The manholes shall be constructed in accordance with the requirements of Section 605 of PennDOT Specifications Publication 408 as referenced from the PennDOT Standards for Roadway Construction.

2.3 OUTLET CONTROL STRUCTURES

A. Outlet Control Structure Sections: Reinforced precast concrete in accordance with ASTM C478, class A concrete, with a minimum compressive strength of 4,000 psi

B. To be constructed in accordance with the requirements of PennDOT Specifications Publication 408.

C. Trash rack: Stormrax peak rood structure trash rack or approved equal.

2.4 STORM SEWER APPURTENANCES

A. Underdrains: The storm sewer underdrains shall consist of perforated PVC pipe that conforms to the requirements of ASTM D2729. Solvent cement used for perforated PVC pipe and fittings shall comply with the requirements of ASTM D2564. The geotextile used to construct the underdrains shall be Class 1 geotextile that satisfies the requirements of PennDOT Specifications Publication 408, Section 735.

2.5 MATERIALS

A. Backfill:

1. Bedding: Fill Type AASHTO #57, as specified in Section 310516 Aggregates for Earthwork.

2. Cover: Fill Type as specified in Section 310516 - Aggregates for Earthwork.

3. Soil Backfill from above Pipe to Finish Grade: Soil Type as specified in Section 310513 Soils for Earthwork.

4. Subsoil: No rocks more than 6 inches in diameter, frozen earth, or foreign matter.

2.6 FINISHES

A. Steel Galvanizing:

1. Comply with ASTM A123/A123M.

2. Hot-dip galvanized after fabrication.

B. Galvanizing for Nuts, Bolts, and Washers: Comply with ASTM A153/A153M.

2.7 ACCESSORIES

A. Geotextile Filter Fabric: As specified in Section 310519.13 - Geotextiles for Earthwork

2.8 EXAMINATION

A. Section 017700 Closeout Procedures: Requirements for installation examination.

B. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

C. Verify that the utility trenches are in conformance with the Drawings.

D. Verify foundations thicknesses are in conformance with the Drawings.

2.9 PREPARATION

A. Section 017000 Closeout Procedures: Requirements for installation preparation.

B. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.

C. Verify location of structures with the Drawings.

2.10 INSTALLATION

A. Excavation and Bedding:

1. Install pipe on compacted subgrade meeting bedding requirements, and cradle bottom 20 percent of diameter.

B. Piping:

1. Pipe, Fittings, and Accessories in accordance with manufacturer's instructions and comply with ASTM D2321.

2. Seal joints watertight.

3. The pipe shall be uniformly supported throughout its entire length by the bedding material.

4. Accurately place pipe to line and grade.

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

6. Backfilling and Compaction:

    a. As specified in Section 312323 - Fill.

    b. Do not displace or damage pipe while compacting.

    c. Backfill around sides and to a minimum depth of one foot above the top of the pipe with the bedding material. Compact the bedding material to at least 75 percent of its relative density.

C. Manhole Structure:

1. Place manhole sections plumb and level on the foundation material. Trim to correct elevations.

2. Set frames and covers level without tipping, to correct elevations.

3. Connect to storm pipes as shown on the Drawings.

4. Installation Standards: Install Work according to PennDOT standards.

D. Outlet Control Structure:

1. Form bottom of excavation clean and smooth, and to indicated elevation.

2. Form and place cast-in-place concrete base pad, with provision for storm sewer pipe end sections.

3. Level top surface of base pad.

4. Sleeve concrete shaft sections to receive storm sewer pipe sections.

5. Establish elevations and pipe inverts for inlets, outlets, and orifices as indicated on Drawings.

6. Mount trash rack level in grout, secured to top section to indicated elevation.

7. Installation Standards: Install Work according to PennDOT standards.

2.11 TOLERANCES

A. Section 014500 Quality Control: Requirements for tolerances.

B. All pipes shall be accurately laid to the lines and grades shown on the Drawings. Allowable tolerances shall be one-quarter (1/4) inch on grade and one (1) inch on-line in any section of pipe between structures, except that the allowable tolerance shall be one-eighth (1/8) inch on grades of 2.0% or less. Deviations from these tolerances shall be a basis for rejection of the line of pipe. Any line, which has been rejected, shall be rebuilt to the correct line and grade by the Contractor at his own expense.

2.12 FIELD QUALITY CONTROL

A. Section 014500 Quality Control: Requirements for inspecting and testing.

B. Section 017000 Closeout Procedures: Requirements for testing, adjusting, and balancing.

C. Inspection prior to placing aggregate cover over pipe.

D. Inspection:

1. The Owner or his representative shall inspect the installations of pipes, inlets, etc. prior to and immediately after placing bedding material cover.

2. The Owner or his representative shall visually observe the placement of bedding materials to verify that lift thicknesses and final bedding dimensions comply with the specified requirements

E. Testing:

1. Pipe Welding: Comply with AASHTO T241.

2. Compaction Test: Comply with ASTM D2216, ASTM D2922, and/or ASTM D3017.

3. Testing Frequency: Perform compaction testing at a rate of one test per lift per 40 lineal feet of bedding placed, or portion thereof or as required by the Owner or his representative.

4. If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.

2.13 PROTECTION

A. Section 017700 Closeout Procedures: Requirements for protecting finished Work.

B. During the suspension of the work at night or other times, suitable stoppers shall be placed in the end pipes to prevent materials from entering the pipe.

C. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

2.14 ATTACHMENTS

A. Storm Sewer: Connect catch basin at location along existing storm sewer pipe as noted on Drawings.

END OF SECTION 334200