

**DIVISION I - GENERAL REQUIREMENTS**

**SECTION 01000**

**SCOPE**

PART 1: **GENERAL**

1.01 **SCOPE**

- A. Work under Contract 2020-01 General/Mechanical covers the furnishing of all labor, material, plant, utilities and services required for the construction of sanitary sewage facilities and appurtenances. The project is located in Allegheny County. Plans and specifications shall be reviewed to determine detailed project scope for each area, but in general, the work shall consist of:

**CONTRACTOR SHALL NOTE THE CONTRACT HAS MULTIPLE DEDUCTS AS IDENTIFIED ON THE BID FORM.**

**THE BASE BID SCOPE OF WORK SHALL CONSIST OF ALL WORK IDENTIFIED WITHIN THE CONTRACT DOCUMENTS. THE DEDUCTS ARE IDENTIFIED BY DRAWING NUMBER ON THE BID FORM, AND ARE GENERALLY LISTED BELOW.**

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED BUILDING PERMITS AND THE HARMAR TOWNSHIP GRADINT PERMIT. THE REQUIRED HARMAR TOWNSHIP GRADING PERMIT APPLICATION IS LOCATED IN THE APPENDIX OF THESE SPECIFICATIONS.
2. Area 100: Headworks facility modifications (construction of an ionization system with ductwork distribution, extension of an existing equipment monorail beam, construction of a new monorail beam with manual trolley hoist).
3. Area 200: Primary Clarifier Modifications (furnish and install new main and cross collector drive units, construction of an ionization system with ductwork distribution, furnish and install FRP covers for the open portion of the tanks, reconstruction of the primary clarifier effluent splitter box).

4. Area 300: Aeration, Pipe Tunnel, Chemical Building Modifications (replace existing aeration tank equipment, construct two (2) new aeration tanks with equipment, construct two (2) new anoxic tanks with mixers, replace existing sump pumps and dewatering pumps in kind, furnish and install new RAS pumps, remove chlorine equipment and repurpose the chemical room for caustic chemical tank and appurtenances).
5. Area 400: Final Clarifiers modifications (replace traveling bridge clarifiers with square clarifiers including new equipment, replace existing clarifier 4 & 5 equipment, construct two (2) new square clarifiers in place of the chlorine contact tanks, and construct a new scum box with pumps and appurtenances).
6. Area 500: Digester modifications (replace anaerobic and aerobic digester equipment, replace the anaerobic digester covers complete with gas safety equipment, replace existing gas safety equipment throughout, and replace boiler and controls).
  - a. **DEDUCTS:**
    1. **AEROBIC DIGESTER WORK**
    2. **ANAEROBIC DIGESTER NO. 2 JET MIXING SYSTEM**
7. Area 600: Garage/Blower Building modifications (replace existing overhead rollup doors, replace digester blower package complete with bridge crane for blower removal, remove the methane/natural gas generator).
8. Area 700: Operations Building modifications (construct new sump pit with pumps and appurtenances, reroute drainage pipes to new sump pit, replace/remodel the existing lab, furnish and install ionization system).
  - a. **DEDUCTS: LABORATORY RENOVATIONS**
9. Area 800: SBR Headworks (construct a new SBR Headworks facility complete with screening, grit removal, ionization HVAC system, and raw sewage pumps and appurtenances).

10. Area 900: SBR's (construct new SBR tanks complete with equipment).
11. Area 1000: UV Disinfection (remove existing chlorine contact tanks and construct new UV Disinfection facility complete with two (2) channel UV disinfection system, furnish and install effluent water pumps and tie into existing effluent water piping system, construct effluent water box with effluent weir plate, construct cascade aeration outfall).
12. Area 1500: Cheswick PS (remove and abandon existing Cheswick PS, construct new Cheswick PS complete with screening and raw sewage pumps and appurtenances).
  - a. **DEDUCTS: CHESWICK PS DEMOLITION**
13. Area 1800: Colfax PS (remove and abandon existing Colfax PS)
  - a. **DEDUCTS: COLFAX PS DEMOLITION**
14. Area 1900: Duquesne PS (remove and abandon existing Duquesne PS)
  - a. **DEDUCTS: DUQUESNE PS DEMOLITION**
15. Area 2000: Acme PA (remove and abandon existing Acme PS)
  - a. **DEDUCTS: ACME PS DEMOLITION**
16. Area 2100: Guys Run PS (remove existing raw sewage pumps, comminutors, wet well deck and generator, furnish and install new raw sewage pumps, construct a monorail beam with electric hoist trolley for pump removal, construct divider wall to separate the wet well and control room, construct a new driveway with retaining wall).

B. In general, the work under Contract 2020-01 is all work shown on the plans and described in the specifications except for that work under the Electrical Contract (see below). This work shall consist of, but not necessarily be limited to:

structure, utility, and equipment demolition; site excavation and grading; erosion and sediment control; flow bypassing; construction of structures; equipment, equipment panels and controls purchase and installation; installation of underground, site and interconnecting piping and appurtenances; painting and coatings; site restoration and paving; coordination with Plant Staff; and coordination between all related work and contracts, resulting in a complete and operational facility except for what is required by the Electrical Contract.

- C. Also included in the work scope of this Contract is: assembling and setting up for the Project; mobilization; Contractor and Engineer's job trailers; the CONTRACTOR's necessary general plant; storage areas; temporary signs; sanitary; and any other facilities as required by the Specifications and special requirements of the CONTRACTOR, as well as by local or State law and regulation. The cost of required insurance and bonds, and/or any other expense required for the start of work.
  
- D. Work under Contract 2020-02 Electrical covers the furnishing of all labor, material, plant, utilities and services required for the construction of sanitary sewage facilities and appurtenances.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

- A. Not used.

**End of Section**

SECTION 01010

DRAWINGS INDEX

PART 1: GENERAL

1.01 DRAWINGS

- A. The separately bound drawings, dated JUNE 2021, prepared by the KLH Engineers, Inc. accompany these specifications and are a part thereof. The drawings are the property of the ENGINEER and shall not be used for any purpose other than that intended by the specifications. The CONTRACTOR shall be responsible for purchasing all sets of drawings and specifications to be used in the progress of the work. Specification documents will be available from Accu-Copy at the address shown on the Advertisement. Unauthorized reproduction of the drawings or the specifications by the CONTRACTOR shall not be permitted.
  
- B. The drawing index is located on drawings G2 and G3 bound separately from this book.

PART 2: PRODUCTS

A. Not used.

PART 3: EXECUTION

A. Not used.

**End of Section**

SECTION 01020

SUMMARY OF WORK

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and the General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this section.

1.02 PROJECT IDENTIFICATION

- A. The project consists of wastewater treatment plant and conveyance system upgrades. The work is shown on the Contract Documents prepared by KLH Engineers, Inc.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

3.01 SCOPE OF WORK

- A. All work shall be performed in accordance with the requirements of the Contract Documents. All materials and equipment furnished shall conform to the descriptions and requirements and all work shall be constructed complete in order to provide the OWNER with an operable installation which is ready for service.
- B. Work under Contract No. 2020-01 includes work shown on the Drawings and described in these Technical Specifications in: Division 1, Summary of Work; Division 2, Site Work; Division 3, Concrete; Division 4, Masonry; Division 5, Metals; Division 6, Woods, and Plastics; Division 7, Thermal and Moisture Protection; Division 8, Doors and Windows; Division 9, Finishes. Division 10, Specialties; Division 11, Equipment; Division 12, Furnishings; Division 13, Special Construction; Division 14 Conveying Systems, and Division 15, Mechanical. This CONTRACTOR is designated as the "coordinating contractor" and is responsible for overall scheduling, expediting, site supervision and all other duties required to maintain orderly construction.

- C. Work under Contract No. 2020-02 shall include all work shown on the drawings and defined in Contract Specifications, Division 1, Summary of Work, and Division 16, Electrical.
- D. Each CONTRACTOR shall consult the requirements of all Divisions and all contract drawings in determining the scope.
- E. Each CONTRACTOR shall make his own arrangements concerning requirements for field offices; utilities; tool, equipment, and material storage; and toilet facilities.

3.02 GENERAL CONSTRUCTION CONTRACT NO. 2020-01

- A. This Contract includes site, mechanical, and structural work and other activities traditionally recognized as general construction. It also includes administrative and coordination responsibilities. The work under this Contract includes but is not limited to the following:
  - 1. E&S controls as required to meet all State and local regulations.
  - 2. Excavation dewatering as required to complete the proposed work.
  - 3. Existing tank dewatering, solids removal/disposal and cleaning as required to complete the proposed work.
  - 4. All required State and local permits for site work, building construction and all other related work.
  - 5. Maintenance of flow through the existing treatment processes, at all times, until the proposed processes have been started up and accepted. At no time can untreated sewage be discharged.
  - 6. Flow by-passing, including use of pumps and ancillary equipment, as required to complete the proposed work while maintaining flow through the existing plant.



7. Maintenance of safe access for the existing bike trail throughout the entire duration of the Contract work.
8. Proper disposal of all excavated material, scrap material (only materials that Owner chooses not to keep), and potentially hazardous material.
9. Site demolition including structures, pavement, underground utilities, tanks, equipment, and all other items described in the Contract Documents including associated items that may not be specifically defined but whose demolition is required to complete the contract work.
10. Specific project area modifications as outlined in Specification Section 01000 in conjunction with the contract plans and specifications.
11. All site/process piping described in the Contract Documents including associated items that may not be specifically defined but are required for the processes to properly function.
12. Coordination with Owner to allow for all existing processes to maintain fully functional operation while the Contract work is completed.
13. Equipment startup and initial operation until acceptance by Owner.
14. Storm water controls, site grading, and restoration as required to meet the requirements of the Contract Documents and all State and local requirements.

### 3.03 ELECTRICAL CONSTRUCTION CONTRACT NO. 2020-02

- A. This Contract includes but is not limited to the following:
  1. Coordination with General Contractor.
  2. Supply of all temporary power required for Contract Nos. 2020-01 and 2020-02 work and as required to ensure that all plant processes remain fully operational such that PA DEP effluent limits can be met throughout construction.

3. Supply and install temporary backup power generator to provide plant back power until new generators are operational.
4. Demolition of all conduit, wire, panels and all other electrical equipment and components associated with the proposed work.
5. Supply and installation of all electrical equipment, panels, wire, conduit, and all components required to power and control the proposed equipment supplied under Contract No. 2020-01.
6. Supply and installation of all instrumentation specified in Division 16.
7. Coordination with the power company for new electric service.
8. Coordination with the communications company for phone and internet service.
9. Supply and installation of all specified phone and internet equipment, conduit, wire, and related components.
10. Supply and installation of new standby generator and all associated panels, equipment, and components.
11. Coordination with Owner's integrator.

### 3.04 SEQUENCING OF CONSTRUCTION

- A. The CONTRACTORS shall schedule and coordinate construction activities and at no time during construction shall the CONTRACTORS bypass process flows from the treatment train. The General Contractor shall be responsible for that coordinative effort. CONTRACTORS shall be responsible for development and implementation of a detailed Sequence of Construction. CONTRACTORS shall be responsible for equipment/process operation from the item of initial startup through acceptance testing. The work shall be generally sequenced as follows:

1. Construct new Cheswick PS.
2. Construct new Guy's Run PS bypass pump piping.
3. Bypass around Guys Run PS while PS upgrades are completed.
4. Demolish Chlorine Contact Tank (CCT) No. 1 and No. 2.
  - a. Existing Clarifier No. 1-5 to flow by gravity, as existing, to the existing CCT's No. 3-6.
5. Construct and startup UV Disinfection, and construct SBR Headworks.
6. Construct temporary pump station (new scum box)
  - a. Modify existing Clarifier No. 1-5 to flow by gravity into temporary pump station.
  - b. Temporarily pump clarifier effluent to the new UV Disinfection.
7. Demolish CCT's No. 3-6.
8. Construct new Final Clarifier No. 5 and No. 6 including combined effluent channel.
9. Construct SBR's.
10. Construct Train 1A Anoxic Tank No. 1 & No. 2, and construct Aeration Tank No. 5 & 6.
11. Tie new Interceptor sewer into Cheswick PS and begin pumping with new Cheswick PS.
12. Startup SBR Headworks and SBR's. Begin pumping DCDBA and Guys Run PS to the SBR facilities.
13. Pump Cheswick PS to Train 1B.
14. Complete Train 1A miscellaneous improvements.
15. Pump all WWTP influent flow to SBR facilities.

16. Convert temporary pump station to new scum box.
  - a. Seal off the temporary openings from the Final Clarifiers.
17. Construct primary clarifier effluent splitter box.
18. Pump Cheswick PS to Train 1A.
19. Complete Train 1B miscellaneous improvements.
20. Finalize all work.

### 3.05 TEMPORARY ELECTRICAL

- A. Electrical Contractor (Contract No. 2020-02) shall be responsible for supply of all temporary power required for Contract Nos. 2020-01 and 2020-02 work and as required to ensure that all plant processes remain fully operational such that PA DEP effluent limits can be met throughout construction.
- B. Utility bill for temporary electric shall be paid by Owner.

**End of Section**

SECTION 01040

COORDINATION

PART 1: GENERAL

1.01 WORK INCLUDED

- A. The CONTRACTOR shall not have exclusive occupancy of the site of the work. Other contractors are involved in this project, as well as the OWNER'S employees in order to maintain operation of the treatment facilities at all times may enter and perform their duties on the site. The CONTRACTOR will conduct his work in such manner as not to prevent the operation of the treatment plant, pump stations, or conveyance system.
- B. The CONTRACTOR will be required to coordinate his work, to phase the construction operations, and provide, install, and maintain any temporary connections necessary to permit the operation of the OWNER'S facilities. Any construction work requiring the shut-down of facilities must be scheduled and performed only at such times as shall be authorized by the OWNER'S representative. Such work must be completed during the specific periods authorized by the OWNER'S representative. It is anticipated that most work may be performed with regular time; however, it may be necessary that work will be performed during several shut-down periods and/or during periods of premium time payment to accomplish the desired construction. All costs to perform the CONTRACTOR'S work, including premium time payments, shall be borne by the CONTRACTOR and are to be included in the contract price.
- C. The CONTRACTOR will be required to coordinate their work, with the following contracts:
1. Contract No. 2020-01 - Wastewater Treatment Plant and Conveyance System Upgrades: General/Mechanical
  2. Contract No. 2020-02 - Wastewater Treatment Plant and Conveyance System Upgrades: Electrical

3. Contract No. 2020-03 - Wastewater Treatment Plant and Conveyance System Upgrades: Force Mains and Acme Interceptor Sewer
  4. Contract No. 2020-04 - Wastewater Treatment Plant and Conveyance System Upgrades: Interceptor Sewers
- D. CONTRACTOR for Contract No. 2020-01 is the COORDINATING CONTRACTOR, responsible for coordination of work between the contracts, development and maintenance of an overall project schedule, and scheduling and coordinating performance testing and system startup where contractors from multiple contracts are involved. The overall Wastewater Treatment Plant and Conveyance System Upgrades Project recommended Sequence of Construction is as follows.
1. Construct new Tawney Run Interceptor
  2. Construct new Cheswick PS
  3. Construct new Cheswick PS Interceptor
  4. Construct new Cheswick PS force mains
  5. Construct Guys Run PS force main
  6. Construct new Guy's Run PS bypass pump piping
  7. Bypass around Guys Run PS while PS upgrades are completed
  8. Demolish Chlorine Contact Tank (CCT) No. 1 and No. 2
    - a. Existing Clarifier No. 1-5 to flow by gravity, as existing, to the existing CCT's No. 3-6.
  9. Construct and startup UV Disinfection, and construct SBR Headworks.
  10. Construct temporary pump station (new scum box)
    - a. Modify existing Clarifier No. 1-5 to flow by gravity into temporary pump station.

- b. Temporarily pump clarifier effluent to the new UV Disinfection.
  - 11. Demolish CCT's No. 3-6.
  - 12. Construct new Final Clarifier No. 5 and No. 6 including combined effluent channel.
  - 13. Construct SBR's.
  - 14. Construct Train 1A Anoxic Tank No. 1 & No. 2, and construct Aeration Tank No. 5 & 6.
  - 15. Tie new Interceptor sewer into Cheswick PS and begin pumping with new Cheswick PS.
  - 16. Startup SBR Headworks and SBR's. Begin pumping DCDBA and Guys Run PS to the SBR facilities.
  - 17. Pump Cheswick PS to Train 1B.
  - 18. Complete Train 1A miscellaneous improvements.
  - 19. Pump all WWTP influent flow to SBR facilities.
  - 20. Convert temporary pump station to new scum box.
    - a. Seal off the temporary openings from the Final Clarifiers.
  - 21. Construct primary clarifier effluent splitter box.
  - 22. Pump Cheswick PS to Train 1A.
  - 23. Complete Train 1B miscellaneous improvements.
  - 24. Finalize all work.
- E. The Notice to Proceed for all contracts will be issued simultaneously.
- F. The CONTRACTOR for all contracts is to include in the contract price any and all costs associated with down time or demobilization/remobilization that may be required to coordinate and schedule the construction of all improvements and placement of same into

successful operation. This includes, but is not limited to, sequencing of work with all contractors under the overall Wastewater Treatment Plant and Conveyance System Upgrades Project and incorporating time allotment/allowances that may be required to allow for the completion of work included under other contracts that are part of the overall Project.

PART 2: PRODUCTS

A. Not used.

PART 3: EXECUTION

A. Not used.

**End of Section**



SECTION 01041

SUPPLEMENTAL MECHANICAL CONDITIONS

PART 1: GENERAL

1.01 WORK INCLUDED

A. Accessibility

1. All work shall be installed so as to be accessible for operation, maintenance and repair with particular attention given to locating valves, controls and equipment requiring periodic operation, lubrication, cleaning, adjusting or servicing of any kind. Access panels shall be provided as specified and located on the Drawings when work is built in or concealed.

B. Field Measurements

1. The CONTRACTOR prior to ordering materials or starting construction shall verify existing elevations, building lines, pipe size and material, equipment connections, etc. All dimensions and clearances affecting the installation of work shall be verified in the field in relation to established datum and to the work of other trades.
2. Should interferences occur which will necessitate deviations from layout or dimensions shown on the Drawings, the OWNER shall be notified and any changes approved before proceeding with the work.

C. Equipment Guards

1. All rotating equipment furnished including couplings, flywheels, gear trains and belt drives shall be provided with adequate guards for personnel protection. Wherever possible, the guards shall be provided by the equipment manufacturer. Field fabricated guards shall consist of flattened expanded metal mesh with an angle iron frame. Small guards may be formed from solid sheet metal. The guards shall be supported to prevent vibration or interference with the rotating equipment and shall be removable.

D. Equipment Supports and Anchor Bolts

1. Equipment supports shall be provided where said equipment is shown on the Drawings. Wherever possible, support saddles, support legs and baseplates shall be furnished by the equipment manufacturer. The CONTRACTOR shall coordinate the setting of such items that may be concrete-embedded.

E. Grouting

1. Equipment shall be grouted to pads. Grout shall be an epoxy-based grout specifically designed for equipment pad installations and shall be in accordance with approved brands identified in Section 03600. The grout shall be mixed and applied as recommended by the manufacturer.

F. Lifting Attachments

1. All equipment requiring hoisting for installation and/or maintenance shall be provided with suitable lifting attachments by the Manufacturer and/or the CONTRACTOR.

G. Protection and Storage of Equipment

1. The CONTRACTORS shall assume full responsibility for all equipment received by them and shall provide adequate protection against exposure to the elements in accordance with the manufacturer's recommendation. The means of protection shall be subject to the OWNER's approval.

H. Lubrication and Tools

1. On all equipment, ample means of lubrication shall be provided for bearings and any other metallic parts in sliding contact. Alemite industrial type fittings, or approved equal, shall be used for grease lubrication except as otherwise noted herein.
2. The CONTRACTOR shall provide and apply lubricant in accordance with the manufacturer's recommendations to all equipment requiring lubrication prior to start-up.

I. Nameplates

1. All equipment shall have factory applied permanent nameplates indicating the manufacturer's name, model and serial numbers, temperature and pressure design and any other data necessary to conform with specified requirements.

J. Attachments and Supports

1. The methods of attaching or fastening equipment or equipment supports or hangers to structures shall be subject to approval by the ENGINEER. Shop drawings indicating such supports and attachments shall be submitted before proceeding with the work.
2. Drilling, welding, or the use of explosive driven fasteners on building structures shall require prior approval for each type of application unless specifically shown on the drawings.

K. Motors

1. Motors furnished with equipment shall be of sufficient capacity to operate the driven equipment under all conditions of operation without loading beyond 90 percent of their nameplate current or power. The rating of motors shall not be less than the horsepower shown on the Drawings or specified herein. Both the rating and the characteristics of the motor shall be suitable for the successful operation of the equipment driven under maximum load conditions without exceeding the specified temperature limits.
2. Unless otherwise noted, all motors 1/2 horsepower and larger shall be 3 phase, squirrel cage induction type designed for service on a 460-volt, 60 Hertz.
3. Each motor shall have a cast iron frame and large cast iron conduit box with cast cover. Neoprene gaskets shall be provided between the conduit box and frame and between the box and its cover. A grounding lug shall be provided inside each conduit box.

4. Each motor shall be equipped with at least one lifting eye. All hardware shall be corrosion resistant, and motors shall be painted in accordance with the Painting Section of these Specifications.
5. Motor frames 213T and larger shall be drip proof or splash proof unless otherwise specified. Ventilation openings shall be arranged to prevent the entrance of liquid at any angle not greater than 90 degrees downward from the vertical. Motors smaller than frame 213T shall be totally enclosed and shall be provided with two 1/4-inch weep holes drilled in the bottom of the frame.
6. Motors installed in areas noted as "classified" shall bear the UL label for Class I, Division 1 hazardous locations. Explosion proof motors shall be equipped with a breather drain approved for the above hazardous location in lieu of weep holes.
7. The insulation system shall be Class B minimum and shall provide a high dielectric strength long life covering for the windings in a continually damp and chemically contaminated environment. The insulation shall be resistant to attack by moisture, acids, alkalis, abrasives, and mechanical and thermal shock. Leads shall be sealed with a nonwicking insulation of silicone elastomer.
8. Motor insulation resistance may be checked at any time during construction or during the warranty period in accordance with the Electrical Section of these Specifications. Any motor not meeting the requirements specified therein will be rejected.
9. NEMA Frames 213T through 445T: All motors requiring standard NEMA Frames 213T through 445T shall have stator windings completely encapsulated with a flexible epoxy compound.
10. Frames smaller than 213T or larger than 445T: All motors requiring frames smaller than 213T or larger than 445T shall have windings sealed with silicone elastomer or other premium system subject to acceptance by the ENGINEER.

11. All ratings shall be based on operation in a 40 degrees C ambient temperature. The temperature rise of the motor windings will not exceed 80 degrees C by resistance when operated continuously at rated horsepower. Motors shall be suitable for operation at rated load with voltage and frequency variations in accordance with AGMA-12.43-12.46. Starting KVA of motors 15 horsepower and larger shall not exceed 5.59 KVA per horsepower (Code Letter F) except by specific permission of the ENGINEER.
12. Power factor shall not be less than 0.85 when operating at full load. On motors with more than six poles, the CONTRACTOR may furnish capacitors in order to meet the above requirement. Capacitor equipment shall be in accordance with the Electrical Section of these Specifications.
13. All motors equipped with greasable ball or roller bearings unless otherwise noted. Hydraulic grease fittings and drain plugs shall be supplied and shall be located so as to be readily accessible in the completed machine using extension lines if necessary.
14. Fractional horsepower motors shall include all motors smaller than 1/3 horsepower. Fractional horsepower motors shall be totally enclosed or explosion proof as applicable. Bearing shall be sealed ball bearing type, factory lubricated for life. Motors shall be rated for service on a 120-volt, 60 Hertz, single phase distribution system.
15. Motor Data: The CONTRACTOR shall furnish motor data from each equipment supplier and shall submit six (6) copies of tabulation of all motors to be furnished under this Contract. The tabulation shall include:
  - a. Name of motor driven equipment
  - b. Horsepower
  - c. Voltage
  - d. Full load current
  - e. Hertz
  - f. Locked rotor KVA letter
  - g. Enclosure type
  - h. Motor manufacturer
  - i. Temperature rise in degrees C

16. Capacitors for Motors: Each 3-phase 460-volt motor 25 HP and larger, unless otherwise noted, shall be provided with a capacitor of the maximum KVAR size in accordance with the latest requirements of the National Electrical Code. Capacitors shall be furnished with each respective motor and shall be installed and wired by the Electrical CONTRACTOR. Each capacitor shall be suitable for 460 volts, 3-phase, 60 Hertz service. Capacitors shall not be furnished for motors connected to variable speed panels and/or reduced voltage starters.

L. Painting and Finishing

1. All purchased equipment shall have a factory applied gloss enamel finish of the manufacturer's standard color unless otherwise specified or unless arrangements are made to furnish the equipment with a factory applied primer which will be compatible with the finish specified in the painting section of these specifications.
2. Equipment which will be subject to abnormal conditions of high temperature, corrosive environment, etc., shall have finished and/or protective coatings suitable for the service as noted on the Drawings and/or in the Specifications.
3. All finishes on all delivered equipment (with the exception of electrical panels) shall be painted in the field with a final coat of a color selected by the OWNER.
4. Field fabricated bare iron or steel items required for installation of work shall have rough or sharp edges removed, be thoroughly cleaned of dirt, rust weld slag, grease or oil and be painted in accordance with the painting section of these contract specifications.

M. Night Work

1. Work after dark will not be permitted except under extreme emergency, or only under special directions, or if stated in the Special Requirements. The placing of concrete shall be started early enough in the daylight hours to insure completion of the section under construction before dark.

2. Whenever the CONTRACTOR finds it necessary or expedient to do work at night, such night work shall be performed by the CONTRACTOR without additional or extra cost to the OWNER, and only with the OWNER's approval. The CONTRACTOR shall provide all lights required for the proper and expeditious carrying on of any work.

N. Weather Conditions

1. No work shall be done when the weather is unsuitable. The CONTRACTORS shall take necessary precautions (in the event of impending storms) to protect all work, materials or equipment from damage or deterioration due to floods, driving rain, or wind and snowstorms. The OWNER reserves the right to order that additional protective measures over and beyond those proposed by the CONTRACTORS be taken to safeguard all components of the project. The CONTRACTORS shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the OWNER for damage to the work from weather elements. CONTRACTORS are cautioned that process tanks may be subject to floatation during periods of high ground water or flood conditions. CONTRACTOR shall take all precautions to prevent such occurrence.

O. Openings, Chases, Sleeves, Inserts, Etc.

1. The CONTRACTOR shall provide all openings, chases, etc., in his work to fit his own work and that of the other CONTRACTORS. All such openings or chases shown on the Contract Drawings, or reasonably implied thereby, or as confirmed or modified by shop, setting or erecting drawings approved by the ENGINEER, shall be provided.
2. Where pipes or conduits are to pass through slabs or walls, or where equipment frames or supports are to be installed as integral part of an opening, the sleeves opening forms or frames shall be furnished by the installer of the pipes, conduits, or equipment. Where hanger inserts and similar items are to be installed as an integral part of a slab or wall, they shall be furnished by the installer of the pipe or other equipment requiring the

hanger. The CONTRACTOR shall furnish all hardware, sleeves, wall pieces, etc. required for penetration through proposed and existing structure walls and for connection to outside piping.

3. The installer of the conduit or equipment shall furnish all necessary information, instructions, and materials to effect accurate installation of the required openings, chases, sleeves, frames, inserts, etc. When such items are secured in position and just prior to construction of the surrounding slab or wall, the CONTRACTOR shall ascertain the proper number, locations, and settings thereof, shall schedule his operations so as to provide a reasonable opportunity and time interval for such inspection.
4. Any cost resulting from correction of defective, ill timed or mislocated work, or for subsequent work which becomes necessary because of omitted openings, chases, sleeves, frames, inserts, etc., shall be borne by the CONTRACTOR.

P. Periodic Clean Up; Basic Site Restoration

1. During construction, the CONTRACTORS shall regularly remove from the site of the work all accumulated debris and surplus materials of any kind which result from their operations. Unused equipment and tools shall be reasonably stored.
2. Where the work involves installation of sewers, drains, water lines, manholes, underground structures, or other disturbance of existing features in or across access roadways, the CONTRACTOR shall (as the work progresses) promptly backfill, compact, grade and otherwise restore the disturbed area to a basic condition which will permit resumption of vehicular traffic and any other critical activity or function consistent with the original use of the roadways. Unsightly mounds of earth, large stones, boulders, and debris shall be removed so that the site presents a neat appearance.



3. The CONTRACTOR shall perform the clean up work on a regular basis and as frequently as ordered by the ENGINEER. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the ENGINEER, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.
4. Upon failure of the CONTRACTOR to perform periodic clean up and basic restoration of the site to the ENGINEER's satisfaction, the OWNER may, upon five (5) days prior written notice to the CONTRACTOR, without prejudice to any other rights or remedies of the OWNER, cause such work for which the CONTRACTOR is responsible to be accomplished to the extent deemed necessary by the ENGINEER, and all costs resulting therefrom shall be charged to the CONTRACTOR and deducted from the amounts of money that may be due him.

Q. Use of Facilities before Completion

1. The OWNER reserves the right and is required to enter and use certain portions of the constructed facilities before final completion of the whole work to be done under these contracts. However, only those portions of the facilities which have been completed to the ENGINEER's satisfaction shall be placed in service.
2. Consistent with the approved progress schedule, CONTRACTOR shall cooperate with the OWNER, his agents and the ENGINEER to accelerate completion of those facilities, or portions thereof, which have been designated for early use by the OWNER.

R. Codes and Ordinances

1. In addition to observing limitations of the easements and rights of way, the CONTRACTOR shall confine apparatus, storage of material and construction operations to the limits prescribed by ordinances or permits, or as may be directed by the Authority and shall not encumber the job site.

2. The CONTRACTOR agrees to conform to, comply with and abide by any and all laws, ordinances, rules and regulations of the Federal Government, State or local government which pertain to or in any way effect the work to be done by the CONTRACTOR, any and all instructions and regulations of the Authority pertaining thereto, including any laws, ordinances, rules, regulations and instructions regarding signs, advertising, fire and/or smoking.

S. Safety Regulations

1. The CONTRACTOR shall comply with the requirements and standards of all Federal, State, and local laws, ordinances, codes, rules, and regulations governing safety and health. Protection shall be afforded to all persons having access to the job site.
2. Nothing in any paragraphs of these Contract Documents shall be construed as relieving the CONTRACTOR from full responsibility for safe prosecution of the work at all times.

T. Potential of Exposure To Raw Wastewater

1. The construction activities required to be performed in conduct of the work will necessitate the interconnection, interception, of existing manholes, sewer pipes and appurtenances, process basins and interplant piping. Said manholes, sewer pipes and appurtenances, basins and WWTP piping are conveying all treated and untreated wastes and runoff discharged to the public sewer system within the area served, which wastes may contain and/or generate toxic, noxious, oxygen depleting or other liquid or gaseous substances harmful to human beings. The CONTRACTOR shall, therefore, thoroughly instruct all of his personnel and those of any subcontractor or materialman involved in such work so that appropriate and complete safety work practices are observed at all times. He shall also provide all personnel with all tools, clothing, and other devices necessary for such safe practice, including appropriate waterproof clothing, respirators, protective glasses, mechanical air blowing equipment to pre-ventilate manholes and

other chambers, explosive atmosphere detectors, ladders, safety harnesses, etc. No work shall be performed under any unsafe conditions and if same is detected at any time, the CONTRACTOR shall suspend operations immediately, and not resume his activities until remedial measures have been taken or until the unsafe situation has otherwise been completely overcome.

U. Hazardous Materials at Job Site

1. In accordance with the intent of the Federal Occupational Safety and Health Administration Standard Section 29CFR-1910.12, Hazard Communication with effective date of May 25, 1986, the OWNER hereby notifies the CONTRACTOR that work is to be performed on property where the CONTRACTOR's employees may be exposed to hazardous materials existing on the premises.
2. Chemicals known to be used or stored by the OWNER include the following:
  - a. Chlorine Gas
3. The OWNER, CONTRACTOR and any subcontractors will each provide or make available to the others and any of them any written hazard communication program required to be maintained with respect to the site and any material safety data sheet and other hazard communication information required to be provided in accordance with Laws and applicable Regulations. CONTRACTOR shall be responsible for coordinating any such required exchange of documents or information between or among Authority, CONTRACTOR, and any subcontractors, or any of them. CONTRACTOR shall include the provisions of this paragraph in any subcontract for any part of the work at the site.

V. Protection from Hazardous Substances and Contaminating Materials

1. CONTRACTOR shall take all measures to prevent the release, spillage or improper disposal of any hazardous substance or construction or waste materials which may contaminate the wastewater treatment process, equipment, tanks or piping, and

the OWNER's or adjacent properties or the environment or substantially endanger human health. The transportation, handling, storage and use of gasoline, oils, paints, residual cleaning solvents and other hazardous substances or contaminating materials by CONTRACTOR or any subcontractor shall be in such a manner to prevent release, spillage, or improper disposal. Should any such hazardous substances or contaminating materials be released, spilled, or improperly disposed of by the CONTRACTOR or any subcontractors, the CONTRACTOR shall immediately notify the OWNER, notify any applicable environmental agency as required by law, and immediately remedy or remove such substances or materials, and clean and restore the affected areas to a safe condition and to the satisfaction of the OWNER and any applicable environmental agency. The CONTRACTOR shall pay all costs for the remedy or removal of contaminated materials and the proper disposal of them at an approved and permitted site and the restoration of the affected area. The CONTRACTOR shall also be responsible for the payments of and shall indemnify, hold harmless and defend the OWNER, ENGINEER and ENGINEER'S Consultants from all penalties, fines and damage claims resulting from the release, spillage or improper disposal by CONTRACTOR or any subcontractor of any such hazardous substances or contaminating material.

PART 2: PRODUCTS

A. Not used.

PART 3: EXECUTION

A. Not used.

**End of Section**

SECTION 01090

REFERENCES

PART 1: GENERAL

1.01 WORK INCLUDED

- A. Where reference is made in these documents to Government Specifications or to those of recognized organizations such as ASTM, ASME, etc., the latest editions shall be used.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

- A. Not used.

**End of Section**

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## SECTION 01170

### SURVEYS

#### PART 1: GENERAL

##### 1.01 BENCHMARKS

- A. Benchmarks are available in the general vicinity of the project location. The CONTRACTOR shall furnish a competent survey crew, under the direction of a PA Licensed Surveyor, for the purpose of performing all necessary surveys required for construction stake out and place off-set stakes, determine elevations, prepare cut sheets, operate laser equipment or to perform similar work required to assure construction at the lines and grades shown on the Drawings, or as required in the field. In addition, it shall be the responsibility of the survey crew to replace property corners and property line pins disturbed by construction activities.

##### 1.02 GRAVITY SEWER CONSTRUCTION

- A. Construction of sewer lines by the use of laser beams shall not negate the field surveying which will still be required to be performed prior to excavation. The CONTRACTOR shall also make the survey crew available to the ENGINEER for checking grades and/or alignments when the ENGINEER deems it necessary to have such assistance.

##### 1.03 PRESSURE SEWER CONSTRUCTION

- A. The drawings indicate certain topographical features on which the location and construction of the proposed force main shall be based. The CONTRACTOR shall provide any and all additional field surveying required to control either line and/or grade and to assure installation of the facilities according to plans and details shown and described on the drawings. Inasmuch as the force main will operate under pressure, exact control of gradient will not be required. However, pipes shall be installed along the alignment and at the elevations indicated on the drawings.

1.04 PROCESS LINE AND UTILITY LINE CONSTRUCTION

- A. The drawings indicate certain topographical features on which the location and construction of the proposed pipelines shall be based. The CONTRACTOR shall provide any and all additional field surveying required to control either line and/or grade and to assure installation of the facilities according to plans and details shown and described on the drawings. However, pipes shall be installed along the alignment and at the elevations indicated on the drawings.

1.05 WATERLINE CONSTRUCTION

- A. The drawings indicate certain topographical features on which the location and construction of the proposed pipelines shall be based. The CONTRACTOR shall provide any and all additional field surveying required to control either line and/or grade and to assure installation of the facilities according to plans and details shown and described on the drawings. Inasmuch as the waterline will operate under pressure, exact control of gradient will not be required. However, pipes shall be installed along the alignment and at the elevations indicated on the drawings.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

- A. Not used.

**End of Section**



SECTION 01200

PROJECT MEETINGS

PART 1: GENERAL

1.01 PROGRESS MEETINGS

- A. Purpose: Regular monthly meetings are for the purpose of modifying work schedules and to arrive at an orderly sequence of operations agreeable to the parties of the Contract. Meetings shall serve to resolve conflicts, adjust work arrangements, etc., so that work stoppages and delays may be avoided.
  
- B. Scheduling Additional Meetings: In addition to regularly scheduled meetings, the ENGINEER may schedule a meeting when required by any party to the Contract. The ENGINEER will give to each party written notice of the time and place, and agenda of each such scheduled meeting.
  
- C. Meeting Representation: Each party to the Contract shall be represented at such meetings by a person or persons vested with the authority to make necessary decisions on their behalf, and such decisions shall commit that party to the agreed procedures, sequence of operations and time schedules.
  
- D. Where procedures, sequence of operations, time schedules and other matters have been agreed upon by each party concerned, it shall become binding upon each party to follow and comply with said procedures, sequence of operations, time schedules, and other matters, both as to time performance, and no claim of delay or damages by the CONTRACTOR if he fails to comply therewith will be entertained by the OWNER.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

- A. Not used.

**End of Section**

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SECTION 01300

SUBMITTALS

PART 1: GENERAL

1.01 WORK INCLUDED

A. Shop Drawings

1. Each CONTRACTOR shall submit to the ENGINEER Shop Drawings and information required for the work. All Drawings and information shall contain sufficient data to ascertain compliance with the Contract Documents. Incomplete, inadequate, or unidentified submittals will be rejected. The ENGINEER will examine submittals only after they have been properly identified, as described later in this clause, and signed by the CONTRACTOR to indicate that he has reviewed and endorsed them.
2. The ENGINEER will review submittals only for conformance with the design concept of the project and with the information given in the Contract Documents. Review of submittals shall not relieve the CONTRACTOR from responsibility for deviation from the Contract Documents unless specifically noted in the submittal and no exception is taken by the ENGINEER. The CONTRACTOR is responsible for confirming and correlating all quantities, dimensions, fabrication details and techniques, installation methods and performance of the work. The CONTRACTOR shall check and verify all field measurements.
3. All information, documents and drawings comprising a submittal shall be presented in English and utilize US units. Information presented in other languages and/or SI units will not be reviewed, and the submittal will be returned as "Rejected."
4. All submittals must be complete, accurate and provide sufficient detail to indicate item by item compliance with the Contract Documents. The ENGINEER will receive any submittal that the CONTRACTOR cares to present.

5. When shop drawings include wiring diagrams, piping, equipment or other data which must be coordinated with the work of other CONTRACTORS, additional copies of the submittal shall be furnished for review and for distribution by the ENGINEER.
  
6. To facilitate review, the CONTRACTOR shall number consecutively each submittal. This numbering system should be in order of submittal. Any resubmittal required shall have the same number as the original submittal, followed by notation signifying that it is a second (or third, etc.) submittal, e.g., #14 (2nd sub.). In addition, all submittals shall have the following information placed on them by the CONTRACTOR, and review of a particular submittal will be undertaken only if such information is provided:
  - a. Shop Submittal Number \_\_\_\_\_
  - b. Deviations: None \_\_\_\_\_: As Listed: \_\_\_\_\_
  - c. Reference Specification Number \_\_\_\_\_
  - d. Reference Drawing Number \_\_\_\_\_
  - e. Space Requirement: As Designed \_\_\_\_\_  
Different, as Listed \_\_\_\_\_
  - f. Contractor has reviewed and submitted for review  
Signature \_\_\_\_\_  
Date \_\_\_\_\_
  
7. Make the corrections indicated on the returned shop drawings and resubmit for final approval, furnishing such other copies that may be needed. **No work shown on shop drawings shall be started until same has been returned approved.**
  
8. Submittal Processing
  - a. To expedite the submittal review process, the Construction team shall process submittals electronically through the most current version of Newforma Project Cloud; a web-based construction administration software. Newforma Project Cloud is a method to transmit electronic submittals between the subcontractor, contractor, design team, engineers, and owner, as opposed to other methods such as email, FTP or paper.

Newforma Project Cloud serves as a collaborative web environment, which expedites and organizes the review process and saves substantial resources by minimizing administration, printing, shipping, and courier costs.

- b. The GENERAL CONTRACTOR shall enter into an agreement with NewForma for the use of the Newforma Project Cloud for this project and pay the associated project fee. There is no separate user license as the onetime project fee covers unlimited users per project. The OWNER, ENGINEER and all CONTRACTORS shall utilize this system.
- c. Newforma Project Cloud shall provide a training session via web conference for the construction team.
- d. PDF mark-up software is included with the Newforma Project Cloud software for all users. No other shop drawing markup procedure shall be used.
- e. Newforma Project Cloud shall provide the project three sets of an independent electronic archive of all data at the end of the project via FTP or DVD(s).
- f. Visit [www.Newformaprojectcloud.com](http://www.Newformaprojectcloud.com) or call 800-303-4650 for additional information on Newforma Project Cloud.

## B. Instruction Manuals

- 1. The CONTRACTOR shall furnish, prior to initial testing, three (3) copies of an indexed maintenance manual on all equipment and suppliers' brochures on all specialty equipment, including performance curves with size, model, figure number, etc., indicated to identify unit furnished. Maintenance manuals are to be of hardback, loose-leaf type and of a durable quality. Each set to include the following:

- a. Manufacturer's parts list identified with the make, model and serial number of the equipment furnished.
  - b. Control and wiring diagrams.
  - c. Installation, operation, lubrication, and maintenance instructions.
  - d. Manufacturer's recommended spare parts lists.
2. The required instruction manuals shall be submitted to the OWNER or ENGINEER for review and approval in the same manner as shop drawings and additions, deletions, or modifications maybe required as a result of this review. The materials and equipment for which manuals are required will be determined by the OWNER and/or ENGINEER.

C. Record Drawings

1. The CONTRACTOR is responsible for maintaining two (2) sets of Record Drawings. One set of the Record Drawings shall be left with the OWNER at the completion of the project, while the other set shall be delivered to the ENGINEER before application for final payment.
2. All records shall be kept by the CONTRACTOR for all deviations in location or elevation of any installation from that shown on the Contract Drawings. Record Drawings shall include but not be limited to the following: structural locations, piping locations, equipment locations, revisions to schematic diagrams, etc. Records shall also be kept of any significant changes from approved shop drawings or Contract Drawings. Records shall consist of marked shop or Contract Drawings and shall be submitted to the OWNER at any time upon request.
3. Each record drawing shall be certified by the CONTRACTOR as an accurate representation of the completed work.

D. Photographs/Video Tape

1. The CONTRACTOR shall photograph (digital), and video record all work areas of the project. The still digital photographs and video shall be dated (month/day/year/time). The video shall be digital or (DVD) format, color and voice narrated to indicate the activity and/or facilities being constructed. Two (2) copies of the photographs and DVD shall be submitted monthly to the ENGINEER and will become the property of the OWNER.

PART 2: PRODUCTS

- A. Not Used.

PART 3: EXECUTION

3.01 SCOPE OF WORK

- A. The CONTRACTORS shall furnish submittals for all material utilized for construction.

**End of Section**

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SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1: GENERAL

1.01 TEMPORARY SERVICES

- A. GENERAL: Provide temporary services at the site of the Work throughout the entire period of construction and until the Work of the Contract is completed and the new facilities are placed in operation by the Owner's personnel.
- B. Temporary Water Control:
1. At all times during the construction of work of this Contract maintain the flow of storm water, naturally occurring water and wastewater in existing facilities and channels affected by the Work.
  2. Particular attention is directed to the above requirement regarding the maintenance of flow in the existing pump station during demolition, removal, and replacement of the pump station facilities.
  3. CONTRACTOR assumes risk from floods or other causes, and any damages done to the work in progress or to work completed under Contract. Make repairs and replacements to the satisfaction of the ENGINEER.
  4. CONTRACTOR assumes responsibility for damages to property caused by flooding or backflooding of property due to blocking or restriction of storm water passages, natural waterways, and wastewater facilities capacity during normal or excessive periods of water flow.
  5. At any time do not permit wastewater flow from existing sewers, basins (or WWTP piping) to flow into nearby waterways or to flow on surface areas. Furthermore, should an accidental discharge occur, notify the Department of Environmental Protection immediately.

6. The means and methods the CONTRACTOR employs to meet above requirements are at his discretion but will be subject to the ENGINEER's approval.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

3.01 REMOVAL

- A. CONTRACTOR shall dismantle (if required) and remove such temporary facilities as required during construction of the project.

**End of Section**

SECTION 01501

CONSTRUCTION FACILITIES

PART 1: GENERAL

1.01 OWNER/ENGINEER FIELD OFFICE

- A. Immediately after the Contract has been formally executed by the OWNER, the CONTRACTOR shall furnish a separate field office trailer with minimum dimensions of 30' long x 8' wide for the use of the OWNER's Representatives during the period of construction (Contract Time). The office shall be properly lighted, heated and air conditioned and shall be equipped with a telephone and fax machine (two phone lines) and DSL high speed internet connection with wireless router for the use of the OWNER's Representatives. It shall also be provided with suitable sanitary facilities and equipped with potable water. The costs of all utility services and all service and toll telephone charges shall be paid by the CONTRACTOR. It shall be provided with a computer, an all-in-one laser printer/copier/scanner/fax capability that is able to handle 11" x 17" paper, locked, four drawer filing cabinet and each of the following items: desk and chair, drafting table and stool, plan rack (hanging type), table, bookcase and bulletin board. The office shall not be vacated or moved from the construction site until the Contract time expires or approval of the final estimate by the OWNER's Representative, should the CONTRACTOR not complete the work in the Contract time. The trailer shall be located adjacent to the CONTRACTOR's office.

1.02 CONTRACTOR FIELD OFFICE

- A. Each CONTRACTOR shall provide and make his own arrangements for his field office facilities, change trailers, tool, equipment, material storage and toilet facilities. The CONTRACTOR's office facilities shall be separate from the OWNER's Field office facilities. It is recommended that the CONTRACTOR's office facilities include the same amenities required for the OWNER's office, as the project documents will be managed through web-based software.

PART 2: PRODUCTS

A. Not used.

PART 3: EXECUTION

A. Not used.

**End of Section**

SECTION 01550

TRAFFIC CONTROL

PART 1: GENERAL

1.01 WORK INCLUDED

- A. Whenever in the ENGINEER's judgment it is reasonably possible to do so, a minimum of one lane of traffic shall be maintained on all streets, roadways, and other traveled ways at all times during construction of this project in order to accommodate the residents of the area as well as emergency fire, ambulance and similar vehicular traffic. Suitable and adequate barricades shall be erected and properly maintained by the CONTRACTOR at all times during the course of construction work to clearly and properly caution and protect traffic and pedestrians from open excavations. An adequate number of flagmen shall be utilized to guide traffic along all areas where work is being performed or where hazardous driving conditions prevail. Advance notice to the general public, the School District (for bus routing) and the Municipal Office shall be given by the CONTRACTOR before actual excavation in any particular area is commenced.
- B. Where pipelines and/or other facilities are constructed along State Highways, Municipal streets, and where construction activities may otherwise impede normal vehicular traffic patterns on said streets, the control of traffic shall be accomplished in accordance with the details set forth in Publication 213 of the Pennsylvania Department of Transportation, the title of which is "Temporary Traffic Control Guidelines".
- C. The position of work zone signs, erection of signs, sizes of signs, details and configuration of signs, traffic channelizing, tapered lengths/spacing, cones, drums, vertical panels, lighting devices, arrow boards and all flagging conduct and activities shall conform to the details described therein. The location and configuration of traffic control methods shall conform to those graphically illustrated in the referenced PennDot Publication 213. The CONTRACTOR shall submit a traffic control plan and procedure (conforming to the above referenced Publication 213) to the OWNER and to the Pennsylvania Department of Transportation for approval, prior to commencing with field construction.

PART 2: PRODUCTS

2.01 TRAFFIC CONTROL DEVICES

- A. The CONTRACTOR shall be responsible to furnish all required flags, cones, signs etc. and all items shall meet the requirements of the PA Department of Transportation.

PART 3: EXECUTION

- A. Reference Section 01551: Barriers and Enclosures.

**End of Section**

SECTION 01551

BARRIERS AND ENCLOSURES

PART 1: GENERAL

1.01 WORK INCLUDED

- A. CONTRACTOR shall provide all required warning signs, lights, and barricades during the course of construction and said facilities shall be maintained by the CONTRACTOR at all times during the course of the construction work to clearly caution and protect traffic and pedestrians from open excavations, unstable filled areas, obstructions and other hazards directly or indirectly resulting from construction activities. Warning signs, barricades, and handrails shall be erected, and a sufficient number of high intensity warning lights shall be appropriately located for use at night and at times when visibility is poor.
  
- B. Trenches at any and all locations where pedestrian or vehicular traffic hazards would result, shall not be left open during non construction hours, unless they are suitably covered with a steel plate which is adequately anchored and reinforced to sustain traffic loads which may be imposed. All excavations within road rights of way shall be closed overnight and over weekends and marked with a flashing traffic marker to warn motorists and pedestrians. Except in cases of emergencies, no roadways streets, alley, or driveways shall be left impassable overnight.
  
- C. Reference Section 02150 (Shoring).

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

- A. Not used.

**End of Section**

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SECTION 01570

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1: GENERAL

1.01 DESCRIPTION

- A. The CONTRACTORS shall conduct their activities and shall program trenching and restoration operations in compliance with the Commonwealth of Pennsylvania, Title 25 (Clean Stream Law) Chapter 102 (Erosion and Sediment Control Rules & Regulations) and any rules and regulations by Federal, State, County and/or Municipal law or organization in such a manner as to minimize pollution of the creeks from erosion of the freshly excavated and/or backfilled materials during periods of excavation and surface water runoff. CONTRACTORS shall reduce the area and duration of exposure of all erodible soils by the greatest extent practicable and to that end, hydromulching, reseeding and other specified surface restoration shall be required to closely follow backfilling operations. The type of seeding/ restoration required for the various job locations is listed on the Erosion and Sedimentation Pollution Control Plan Drawing. Where the Erosion and Sedimentation Pollution Control Plan calls for runoff devices or the OWNER's Representative so directs additional installation of controls in the field, such as silt fence, filter fabric socks, waterbars, sediment traps, and/or other means to retard runoff rates shall be installed as specified. Installation of a Pumped Discharge Sediment Trap ("filter bag") or other approved sediment trap arrangements shall also be required to be installed at the discharge of dewatering pumps as detailed on the Erosion and Sedimentation Pollution Control Plan. Stream crossings as shown for this project have been approved by the appropriate agencies involved. Specific details related to each crossing are shown upon the Erosion and Sedimentation Pollution Control Plan for this project. Additional crossings, movement of the location and/or changing of the construction details are not permitted without approval from the appropriate agency. Discretion shall be exercised in encroachments during the construction both in and along the creeks such that a minimum of stream

disturbance and erosion pollution results. The Soil Erosion and Sediment Pollution Controls deemed as adequate or as approved by the County Soils Conservation Service and the Pennsylvania Department of Environmental Protection are identified in the contract drawings. The CONTRACTOR shall be responsible for all fines, fees, penalties, and subsequent obligations related to violations, etc. imposed upon the OWNER as a result of the CONTRACTOR's construction activities, methods/procedures and/or the lack of construction activities methods/procedures.

#### 1.02 APPROVED PLAN

- A. The Contract Drawings contain the deemed as adequate or approved Erosion and Sediment Control Requirements pertaining to the project construction.
- B. The CONTRACTOR shall implement and maintain the Erosion and Sediment Controls, or Best Management Practice (BMP) devices as shown upon the Contract Drawings.
- C. The CONTRACTOR shall have available at the project site at all times a copy of the approved plan.
- D. The CONTRACTOR is advised to become thoroughly familiar with the provisions of the Appendix 64, Erosion Control Rules and Regulations, Title 25, Part 1, Department of Environmental Protection, Subpart C, Protection of Natural Resources, Article III, Water Resources, Chapter 102, Erosion Control.
- E. CONTRACTOR shall secure approved Erosion and Sedimentation Pollution Control Plan or other required environmental permits for work outside the indicated NPDES Permit Boundary (limit of disturbance) such as CONTRACTOR dump sites, staging areas, etc.

### PART 2: PRODUCTS

#### 2.01 SEED AND SOD

- A. Seed, sod, mulches, fertilizer, topsoil, soil conditioner, and other materials shall be as specified within the Contract Document and or the Erosion and Sedimentation Pollution Control Plan.

## 2.02 MATERIAL FOR EROSION AND SEDIMENT CONTROL DEVICES

- A. Geotextiles, silt fence, erosion control blankets, surge stone, rip rap, filter bags, silt fence post, and other materials as may be specified on the approved drawings and chain link fence for super silt fence shall be in accordance with the Erosion and Sedimentation Pollution Control Plan and the requirements of Chapter 102 Erosion and Sediment Control. Any change from the Erosion and Sediment Control Plans must be approved by the appropriate controlling agency.

## PART 3: EXECUTION

### 3.01 GENERAL REQUIREMENTS

- A. Implement all Best Management Practices (BMP's), including General Notes, Sequencing, and Staging of Construction as described on Erosion and Sedimentation Pollution Control Plan.
- B. Delineate project boundary limits, clearly marking all pertinent features in the field.
- C. Install sediment control or BMP devices as shown upon the Contract Drawings or as directed by the OWNER's Representative prior to initial clearing and grubbing operations.
- D. Clear only areas designated on drawings within such time limits as set forth on the Erosion and Sedimentation Pollution Control Plan and as designated by the NPDES Permit Boundary (limit of disturbance) and/or within areas such as rights of ways, easements or work limits as specified herein and as directed by the OWNER's Representative.
- E. Protect excavated material and disturbed areas from erosion into waters or onto adjacent land. Stockpile excavated material on high side of trench.
- F. The CONTRACTOR shall assure that the approved Erosion and Sedimentation Pollution Control Plan is properly and completely implemented.

- G. Until the site achieves final stabilization, the CONTRACTOR shall assure that the best management practices are implemented, operated, and maintained properly and completely. Maintenance shall include inspections in a time frame as specified on the Contract and Plans of all best management practice facilities. The CONTRACTOR shall maintain and make available to local Conservation District a complete, written inspection log of all those inspections. All maintenance work, including cleaning, repair, replacement, and/or re-stabilization shall be the responsibility of the CONTRACTOR and shall be performed immediately. If erosion and sediment control BMP's fail to perform as expected. Replacement BMPs or modifications of those installed will be required.
- H. Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the CONTRACTOR shall implement appropriate best management practices to eliminate potential for accelerated erosion and/or sediment pollution.
- I. Before initiating any revisions to the approved Erosion and Sedimentation Pollution Control Plan or revisions to other plans which may affect the effectiveness of the approved E&S Control Plan, the operator must receive approval of the revisions from the local Conservation District.
- J. All pumping of sediment laden water shall be through a sediment control BMP, such as a Pumped Discharge Sediment Trap (water filter bag) discharged on a well vegetated (grassy) or onto a stable, erosion resistant area and in strict accordance with the approved Contract Erosion and Sedimentation Pollution Control Plan.
- K. Immediately after earth disturbance activities cease, the CONTRACTOR shall stabilize any areas disturbed by the activities as set forth on the Erosion and Sedimentation Pollution Control Plan. During non-germinating periods, mulch must be applied at the specified rates in the Contract and Erosion and Sedimentation Pollution Control Plan. Disturbed areas which are not at finished grade must be stabilized in accordance with the permanent vegetative stabilization specifications.

- L. Sediment must be removed from the storm water inlet protection after each runoff event.
- M. Stream crossings require specific measures as described on the Erosion and Sedimentation Pollution Control Plan. Compliance with the guidelines is required. In addition, the 50' buffer areas should be maintained. In buffer areas, clearing, vegetation disturbances, excavation, and equipment traffic should be minimized. Activities such as stacking logs, burning cleared brush, welding pipe sections, refueling and maintaining equipment should be accomplished outside of buffers.
- N. Mulch must be applied as specified on the Contract Erosion and Sedimentation Pollution Control Plan.
- O. Erosion control blankets must be installed as specified on the Contract Erosion and Sedimentation Pollution Control Plan.
- P. Straw mulch shall be applied as set forth on the Contract Erosion and Sediment Control Plan.
- Q. Sediment removed from BMP's shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains, or drainage swales and immediately stabilized, or placed in topsoil stockpiles.
- R. The CONTRACTOR shall remove from the site, recycle, or dispose of all building materials and waste in accordance with the Department's Solid Waste Management Regulations at 25 Pa. Code 260.1 et seq., 271.1 et seq. The CONTRACTOR shall not illegally bury, dump, or discharge any building material or waste at the site.
- S. Upon completion of earth moving activities and establishment of a 70% uniform perennial vegetated cover, remove all temporary BMP's in accordance with the Contract Plan unless otherwise directed by the OWNER's Representative.
- T. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other permanent non-vegetative cover with a density sufficient to resist sliding, erosion, and other earth movements.

### 3.02 STABILIZATION OF DISTURBED AREAS

- A. Following initial disturbance, complete permanent or temporary stabilization according to restoration schedule on Erosion and Sedimentation Pollution Control Plan.
- B. Stabilization:
  - 1. Temporary: Shall consist of temporary seeding, anchored straw mulch, erosion control netting and/or blankets, mulch netting, jute, excelsior blankets, wood chips, stone rip rap and other temporary control BMP's as necessary to implement the intent of the Plans.
  - 2. Permanent: An area shall be considered to have achieved final permanent stabilization when it has a minimum uniform 70% perennial vegetative cover or other permanent non-vegetative cover with a density sufficient to resist sliding, erosion, and other earth movements.

### 3.03 EROSION AND SEDIMENT CONTROL DEVICES

- A. Install all BMP devices shown on Drawings, or as directed by OWNERS Representative and following Standard Details. Maintain sediment control schedule and devices to contain surface drainage and prevent sediment from leaving confines of work site.
- B. Silt Fence
  - 1. Definition: Temporary continuous barrier constructed of sediment control geotextile supported by posts, placed at level to grade, used to trap sediment but allow surface runoff to filter through.
  - 2. Construction: See Erosion and Sedimentation Pollution Control Plan Drawings.
  - 3. Maintenance: Remove sediment deposits as required.
    - a. Areas where construction activities have changed natural contour and drainage runoff: Review daily silt fence locations to ensure effectiveness.

- 1) Where deficiencies exist, install additional silt fences under ESC Inspector's direction.
  - 2) Filter fabric fence should be inspected weekly and after each runoff event.
  - 3) Immediately repair or replace damaged or otherwise ineffective silt fence.
- b. Areas where construction activities have not changed natural contour and drainage runoff: Periodically, inspect and repair damage to silt fence to ensure effectiveness.
4. Removal upon notice by OWNER's Representative restoration is complete and acceptable. Fill depressions and restore area following restoration schedule.

C. Super Silt Fence

1. Definition: Temporary continuous barrier of sediment control geotextile placed over chain link fencing, placed at level to grade used to intercept sediment.
2. Construction: See Erosion and Sedimentation Pollution Control Plan Drawings.
3. Maintenance: See silt fence specification.
4. Removal and Restoration: Follow silt fence specification and replace with silt fence when directed by OWNER's Representative.

D. Rip Rap Stream Bank Protection at Utility Stream Crossing

1. Definition: Placement of ungrouted riprap on stream banks for permanent stabilization at each utility stream crossing.
2. Construction: Follow Standard Detail and as specified below.
  - a. Install stream diversion in all stream channels regardless of flow per Plan.
  - b. Riprap as specified in Section 02230.

3. Restoration: The stream crossing must be completed within 72 hours (from start to finish) including backfilling and stabilization 50' back from the top of the stream.

E. Control Turf Reinforcement Mat at Utility Stream Crossings

1. Definition: Placement of a rolled erosion control product as specified on Erosion and Sedimentation Pollution Control Plan mechanically formed and/or bonded into the synthetic nettings to produce a permanent three-dimensional structure.
2. Construction and restoration shall be in accordance with the Erosion and Sedimentation Pollution Control Plan and the provisions of Chapter 102 Erosion and Sediment Control.

F. Stone Outlet Sediment Trap

1. Definition: Temporary basin formed by excavating a depression in ground or by building earth embankment or dike that collects runoff and traps sediment allowing filtered runoff to leave site through stone outlet.
2. Construction and maintenance shall be in accordance with the Erosion and Sedimentation Pollution Control Plan and the provisions of Chapter 102 Erosion and Sediment Control.

G. Stone Outlet Structure

1. Definition: Stone berm used in conjunction with earth or other approved material to provide sediment filtering device for runoff and discharge onto well stabilized area.
2. Construction and maintenance shall be in accordance with the Erosion and Sedimentation Pollution Control Plan and the provisions of Chapter 102 Erosion and Sediment Control.

H. Stabilized Construction Entrance

1. Definition: Temporary construction entrance constructed of 8" of aggregate on top of roadway geotextile, used to reduce or eliminate tracking of soils materials onto paved streets and other paved areas.



2. Location: Install at locations where construction traffic enters and leaves construction site from or onto paved street or paved area.
3. Construction and maintenance shall be in accordance with the Erosion and Sedimentation Pollution Control Plan and the provisions of Chapter 102 Erosion and Sediment Control.

I. Inlet Protection

1. Definition: Fabric or Rock device installed in existing storm inlets along paved areas and are used to prevent sediment from entering existing storm drains.
2. Construction and maintenance shall be in accordance with the Erosion and Sedimentation Pollution Control Plan and the provisions of Chapter 102 Erosion and Sediment Control.

J. Stream Crossing

1. The Erosion and Sedimentation Pollution Control Plan contains detailed stream crossing measures that are required to be implemented.
2. At locations shown on the construction drawing, the proposed pipelines will cross a stream. Said crossings shall be accomplished by installing the sewer pipe (as shown on the Contract Drawings) to the specified grade and depth. The sewer pipe shall then be encased in concrete with a minimum thickness of 6" of concrete surrounding the pipe. The concrete encasement of the sewer pipe shall extend between the tops of the stream banks or, where such banks are not evident, a minimum distance of 10 feet beyond the normal stream channel.
3. It is important that the stream crossing be constructed quickly to minimize disturbance in the stream. The stream crossing must be completed within 72 hours (from start to finish) including backfilling and stabilization 50' back from the top of the stream.
4. All stream crossings will require a flume pipe or coffer dam.

5. All stream crossings shall be constructed according to the procedure outlined on the Erosion and Sedimentation Pollution Control Plan. Dewatering of trenches shall be done in accordance with the requirements set forth in these specifications and the Erosion and Sedimentation Pollution Control Plan and Narrative. Backfill shall consist of the excavated material unless the same is deemed unsuitable by the OWNER's Representative at the time of excavation. A temporary sedimentation control device as shown on the Erosion and Sedimentation Pollution Control Plan drawing shall also be utilized in the stream during installation of said sewer line crossings.
6. Permanent erosion and sedimentation control devices shall be required along those portions of stream banks disturbed by the installation of the sewer line crossings. The stream crossing must be completed within 72 hours (from start to finish) including backfilling and stabilization 50' back from the top of the stream. Such stabilization shall include control turf reinforcement mat or rip rap as specified and shall be placed along the banks and bottoms of the streams shown on the Contract Drawings.
7. The erosion control turf reinforcement mat shall be North American Green SC 250, C 350 & P 550 and others as may be shown upon the Erosion and Sedimentation Pollution Control Plan Drawing or approved equal, having consistent thickness with fibers evenly distributed over the entire area of the mat. Mat must be secured in place in accordance with manufactures recommendations.

K. WETLAND CROSSING

1. Wetland crossing shall be as specified on the Erosion and Sedimentation Pollution Control Plan Drawings.

3.04 CONSTRUCTION OPERATIONS

- A. Follow Sequencing and Staging for Construction notes on Erosion and Sedimentation Pollution Control Plan.
- B. Implement all Best Management Practices (BMP's), including General Notes, Sequencing, and Staging of Construction as described on Erosion and Sedimentation Pollution Control Plan.

- C. Delineate project boundary limits, clearly marking all pertinent features in the field.
- D. Install sediment control or BMP devices as shown upon the Contract Drawings or as directed by the OWNER's Representative prior to initial clearing and grubbing operations.
- E. Clear only areas designated on drawings within such time limits as set forth on the Erosion and Sedimentation Pollution Control Plan and as designated by the NPDES Permit Boundary (limit of disturbance) and/or within areas such as rights of ways, easements or work limits as specified herein and as directed by the OWNER's Representative.
- F. Pennsylvania Department of Environmental Protection must approve changes to approved Erosion and Sedimentation Pollution Control Plan.

### 3.05 FIELD CONDITIONS

- A. Immediately notify ENGINEER or the OWNERS Representative if conditions arise in field that renders Drawings, these specifications, or requirement of the approved Erosion and Sedimentation Pollution Control Plan inappropriate or inadequate. ENGINEER will furnish additional Drawings or modifications, when required, which will become part and condition of Erosion and Sedimentation Pollution Control Plan.

**End of Section**

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SECTION 01650

FACILITY START-UP/COMMISSIONING

PART 1: GENERAL

1.01 WORK INCLUDED

- A. The CONTRACTOR shall provide, complete and ready for use, all of the equipment, machinery, apparatus, motors, drives, tools, charts and other accessories and shall perform such operations and tests, all as specified herein and as indicated on the drawings.
  
- B. All equipment shall be installed by skilled mechanical erection labor in accordance with manufacturer's instructions. The installation of each equipment item listed shall be inspected, adjusted, tested, approved, and certified as satisfactory by manufacturer's representative. Manufacturer's certificates regarding equipment installation shall be furnished to the OWNER prior to initial treatment facility operations and the conduct of mechanical performance tests described.

PART 2: PRODUCTS (not applicable)

PART 3: EXECUTION

3.01 INSTALLATION

A. Inspection and Tests

- 1. Tests shall be performed on all piping, equipment, and complete systems. The CONTRACTOR shall provide labor, materials, tools, air, water, power, and supplies of any kind required for testing and adjusting of equipment and systems. Each CONTRACTOR is responsible for testing equipment and/or material which he has furnished.
  
- 2. Material or equipment damaged or shown to be defective shall be repaired or replaced to the satisfaction of the OWNER.
  
- 3. All tests shall be made only after notification to and in the presence of the OWNER.

4. Records shall be kept for each test showing the date, system or equipment tested, method of test, test results, and approval signature of the OWNER.

B. Start up

1. Before starting up any system, each piece of equipment comprising a part of the system shall be checked for proper lubrication, drive rotation, belt tension and any other condition which may cause damage to equipment or endanger personnel. A competent service representative trained in servicing the respective equipment shall be present to supervise the start-up and test runs of equipment for which he is responsible.
2. Test runs shall be made over the full design load range where possible and continue for as long as necessary to demonstrate that systems will operate as designed. During this period, all necessary adjustments shall be made, controls checked for proper operation, motors checked for possible overload and the entire system checked for any abnormal condition.
3. Any building equipment or system placed in temporary operation for testing or for the convenience of the CONTRACTOR during construction and before the OWNER takes over operation shall be properly operated and maintained by the CONTRACTOR.
4. After test runs have been concluded and systems have been demonstrated to be satisfactory and ready for permanent operation, all pipeline strainers and filters shall be cleaned, air filters cleaned or replaced, valve and pump packings properly adjusted, belt tensions adjusted, drive guards secured in place, lubrication checked and replenished, if required.
5. All equipment and systems shall be protected against freezing, flooding, corrosion, or other form of damage prior to acceptance by the OWNER.

C. Initial and Interim Operation and Performance Tests

1. Due to the construction sequence, certain processes or equipment may require to be placed into service prior to substantial completion of the project. The CONTRACTOR shall be the coordinator of the start up and performance test activities. Upon completion of all work as well as the installation and adjustment of equipment, the testing of each system in a manner satisfactory to the OWNER, the CONTRACTOR, with his own forces, including such equipment manufacturers and other experts as may be necessary (hereinafter collectively referred to as CONTRACTOR's "Personnel"), shall place the facilities in operation. Interim operating procedures during said period shall be subject to Paragraph 3.01 F of this Specification Section.

D. Manufacturer's Services

1. After substantial completion and the final performance test, the CONTRACTOR at the request of the OWNER, shall furnish the OWNER with services of respective equipment manufacturer's representatives for instruction of operating and maintenance procedures. Said services shall be for a time period of 8 hours (during the regular workday) for each item of equipment listed on the bid form unless otherwise specified. All other small equipment items shall have 2 hours of onsite instruction. Said services shall be additional to those furnished in connection with equipment erection, installation, testing and the correction of deficiencies. Services provided shall consist of furnishing detailed instructions to personnel of the OWNER regarding equipment operation and maintenance after personnel of the OWNER have had an opportunity to become familiar with the equipment.
2. The OWNER's intent is to have a structured training program held over a reasonable time period. The CONTRACTOR will set times and dates with manufacturers to provide the training for the time specified above. The training will consist of: (1) presentation and review of the

equipment O & M Manuals and (2) classroom and field instruction on equipment operation and maintenance. The OWNER, CONTRACTOR, SUPPLIER and ENGINEER shall all sign prepared forms agreeing on the completion of the training and said forms shall be incorporated into the final written start-up report.

E. Final Start-up and Installation Certification Report

1. The CONTRACTOR shall submit to the OWNER a Final Start-up and Installation Certification Report.
2. The Final Start-up and Installation Certification Report at a minimum shall include:
  - a. start-up procedures followed;
  - b. any and all written interim start-up reports;
  - c. any issues encountered and corrective actions taken to solve any such issues;
  - d. CONTRACTOR maintenance records during the interim operation period;
  - e. equipment testing and results;
  - f. performance testing and results;
  - g. OWNER training completion certifications received from the manufacturer of equipment.
  - h. Certification or approval issued by the authorities having jurisdiction over the process or equipment that the installation is complete and acceptable and that there are no outstanding installation or final maintenance measures required.
3. Three hard copies of the Final Start-up and Installation Certification Report shall be furnished to the OWNER for their signature of approval that shall represent the formal transfer of final ownership of the equipment.
4. The release of retainage and/or final payment for the equipment shall be contingent upon submission of an approved Final Start-up and Installation Certification Report.



F. Interim Operations of Facilities

1. CONTRACTOR Responsibility

- a. Due to the construction sequence, certain processes or equipment may require to be placed into service prior to substantial completion of the project. To this end, the CONTRACTOR is hereby notified that the proper operation and maintenance of newly installed equipment between the initial start-up date and the final acceptance of the same shall be the responsibility of the CONTRACTOR.
- b. This responsibility shall include all proper cleaning, lubrication, recommended exercising of valves and other intermittently run equipment, and general maintenance and safety provisions to improve or correct issues identified during initial start-up and through the interim operations period and subsequent inspection efforts prior to substantial completion.
- c. The CONTRACTOR shall be responsible for the coordination of interim operations with the OWNER and shall supply all applicable maintenance records to the OWNER with the Start-up and Installation Certification Report.

2. OWNER Responsibility

- a. All process decisions that may affect the overall treatment process or impact effluent quality shall be made by the OWNER.
- b. The OWNER shall provide adequate staff, assistance, and oversight during the interim operations period to properly achieve acclimation of newly installed or reinstated biological processes as well as effluent quality requirements and coordination of the operations between newly installed or reinstated and existing equipment or facility processes.
- c. During the interim operations period, the OWNER shall be responsible for all facility utility costs associated with the interim operation of newly installed or reinstated processes or equipment.

G. Final Clean Up; Site Rehabilitation

1. Before finally leaving the site, the CONTRACTOR shall wash and clean all exposed surfaces which have become soiled or marked. CONTRACTOR shall remove from the site of the work all accumulated debris and surplus materials of any kind which result from his operations, including construction equipment, tools, sheds, sanitary enclosures, etc. CONTRACTOR shall leave all equipment, fixtures, and work, which he has installed, in a clean condition. The completed project shall be turned over to the OWNER in a neat and orderly condition.
2. The site of the work shall be rehabilitated or developed in accordance with other Sections of the specifications and the Drawings. In the absence of any portion of these requirements, CONTRACTOR shall completely rehabilitate the site to a condition and appearance equal or superior to that which existed just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or ordered by the OWNER.

H. Final Inspection

1. Final cleaning and repairing shall be so arranged as to be finished upon completion of the construction work.
2. The ENGINEER will make his final inspection of the work during the progress of final cleaning and repairing, and any portion of the work finally inspected and accepted by the ENGINEER shall be kept clean by the CONTRACTORS, until the final acceptance of the entire work.
3. When the CONTRACTORS have finally cleaned and repaired the whole, or any portion of the work, they shall notify the ENGINEER that they are ready for final inspection of the whole or a portion of the work, and the ENGINEER will thereupon inspect the work. If the work is not found satisfactory, the ENGINEER will order further cleaning, repairs, or replacement.

4. When such further cleaning or repairing is completed, the ENGINEER, upon further notice, will again inspect the work. The "Final Payments" will not be processed until the CONTRACTOR has complied with the requirements set forth and the ENGINEER has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

**End of Section**

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SECTION 01651

UTILITY PIPELINE/COMMISSIONING

PART 1: GENERAL

1.01 WORK INCLUDED

- A. The CONTRACTOR shall provide, complete and ready for use, all of the pipeline system and appurtenances and shall perform such operations and tests, all as specified herein and as indicated on the drawings.
- B. All pipelines shall be installed by skilled mechanical erection labor in accordance with manufacturer's instructions.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

3.01 INSTALLATION

A. Inspection and Tests

- 1. Tests shall be performed on all piping, equipment, and complete systems. The CONTRACTOR shall provide labor, materials, tools, air, water, power, and supplies of any kind required for testing and adjusting of equipment and systems. Each CONTRACTOR is responsible for testing systems which he has furnished.
- 2. Material and/or equipment damaged or shown to be defective shall be repaired or replaced to the satisfaction of the OWNER.
- 3. All tests shall be made only after notification to and in the presence of the OWNER.
- 4. Records shall be kept for each test showing the date, system and/or equipment was tested, method of test, test results and approval signature of the OWNER. Three copies of the test records, along with any certificates of final inspection

or approval issued by the authorities having jurisdiction, shall be furnished to the OWNER at the successful completion of each test.

B. Commissioning

1. Pipelines shall be put in operation upon successful testing and upon authorization by the OWNER's Representative.

C. Final Clean Up; Site Rehabilitation

1. Before finally leaving the site, the CONTRACTOR shall wash and clean all exposed surfaces which have become soiled or marked. CONTRACTOR shall remove from the site of the work all accumulated debris and surplus materials of any kind which result from his operations, including construction equipment, tools, sheds, sanitary enclosures, etc. CONTRACTOR shall leave all equipment, fixtures, and work, which he has installed, in a clean condition. The completed project shall be turned over to the OWNER in a neat and orderly condition.
2. The site of the work shall be rehabilitated or developed in accordance with other Sections of the specifications and the Drawings. In the absence of any portion of these requirements, CONTRACTOR shall completely rehabilitate the site to a condition and appearance equal or superior to that which existed just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or ordered by the OWNER.

D. Final Inspection

1. Final cleaning and repairing shall be so arranged as to be finished upon completion of the construction work.
2. The ENGINEER will make his final inspection of the work during the progress of final cleaning and repairing, and any portion of the work

finally inspected and accepted by the ENGINEER shall be kept clean by the CONTRACTORS, until the final acceptance of the entire work.

3. When the CONTRACTORS have finally cleaned and repaired the whole, or any portion of the work, they shall notify the ENGINEER that they are ready for final inspection of the whole or a portion of the work, and the ENGINEER will thereupon inspect the work. If the work is not found satisfactory, the ENGINEER will order further cleaning, repairs, or replacement.
4. When such further cleaning or repairing is completed, the ENGINEER, upon further notice, will again inspect the work. The "Final Payments" will not be processed until the CONTRACTOR has complied with the requirements set forth and the ENGINEER has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

**End of Section**

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SECTION 01700

RIGHTS-OF-WAY

PART 1: GENERAL

1.01 RIGHTS-OF-WAY

- A. The proposed construction activities and appurtenances shall be installed along rights-of-way under the jurisdiction of the Allegheny Valley Joint Sewage Authority. The OWNER has, or will have, acquired the necessary rights-of-way for construction of the proposed facilities, however, if the CONTRACTOR desires ingress or egress to the construction site over private properties or land for which the OWNER obtained no such rights-of-way, the CONTRACTOR shall make all necessary arrangements. Information regarding rights-of-way obtained from private property owners is available from the OWNER. Identification of property owners and the location of the respective property lines were obtained from various sources as noted on the plans and may not be accurately or currently represented. The OWNER has acquired, in most cases, a temporary construction easement suitable for construction of the proposed facilities and a permanent easement as shown on the Contract Drawings. The CONTRACTOR is cautioned to work only within the granted easements and to minimize the area of disturbance of his activities.
- B. The proposed construction activities may also encroach upon rights-of-way owned and occupied by the utility companies listed on the plans. Existing utility lines are indicated on the Drawings at locations which have been determined from either field markers or from records on file in the respective utility offices. CONTRACTORS shall conduct the construction work very carefully to avoid disturbance of those utility lines and shall advise his personnel (and those of any subcontractor) the hazards inherent in working near underground gas lines and/or overhead high voltage electric lines. Any and all damages caused to existing utility lines, or resulting from the exposure of, and contact with said lines or from other construction activities, shall be rectified by that CONTRACTOR which is responsible for same.

PART 2: PRODUCTS

A. Not used.

PART 3: EXECUTION

A. Not used.

**End of Section**

SECTION 01740

CLEAN UP OF WORK SITE

PART 1: GENERAL

1.01 WORK INCLUDED

- A. Immediately after all construction operations have been completed on any section, the CONTRACTOR shall thoroughly clean the area of all excess materials, debris, plant, and equipment for which he is responsible. The OWNER's Project Representative will designate and fix the limits of each "section" of construction area in the field, under each contract for clean-up purposes. While it is intended to cooperate with the CONTRATOR in establishing such section limits, it shall be required that clean-up activities reasonably progress with construction progress. The determination of what is reasonable shall be made by the ENGINEER. The CONTRACTOR shall also restore to its original condition and to the satisfaction of the OWNER's Project Representative, all grounds, fences, lawns, driveways, streets, roadways, banks, ditches, and all other areas and shall leave the premises in a neat and operable condition.
- B. All sewer lines and manholes shall be thoroughly flushed and cleaned and all dirt, construction materials, sediment and other materials shall be completely removed from the system prior to connection of all services and operation of the sewers.
- C. All water or mains shall be tested, disinfected, and flushed and the CONTRACTOR shall be responsible for properly disposing of all water required as a result of testing and disinfecting activities.
- D. All lines, manholes and basins shall be thoroughly flushed and cleaned and all dirt, construction materials, sediment and other materials shall be completely removed from the system prior to connection of all services and operation.

PART 2: PRODUCTS

A. Not used.

PART 3: EXECUTION

A. Not used.

**End of Section**

SECTION 01741

DUST AND MUD CONTROL

PART 1: GENERAL

1.01 WORK INCLUDED

- A. Dust control palliatives shall be utilized where and when necessary, to satisfactorily maintain roads, streets, alleys, berms, and other traveled ways for vehicular traffic. In addition, the accumulation of mud and/or dirt from the excavation, backfill and trenching operations shall be cleaned off the surfaces of traveled ways by machines and/or hand labor as frequently as is necessary to properly maintain the roadways and minimize construction nuisance and traffic safety problems.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

- A. Not used.

**End of Section**

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SECTION 01800

SUBSTANTIAL COMPLETION

PART 1: GENERAL

1.01 WORK INCLUDED

- A. The CONTRACTOR is hereby notified and alerted the Contract Technical Specifications are specific to construction of wastewater treatment plant and raw sewage pumping station facilities, with site restoration throughout the whole of the work area, and to that end, the interpretation for Substantial Completion for this Contract is a point where the whole of the work for all items specified in Division 1 through Division 16 inclusive, herein, have reached a point whereby the OWNER recognizes that all parts of the specified work have progressed for utilization for the purposes which it is intended. The intention of this specification is the newly constructed facilities function for their intended purpose for the OWNER and all areas of construction are restored back to use for their intended purpose for the Government Body and Property Owners who have granted rights of way to permit this project to go forward.

PART 2: PRODUCTS

- A. Not used.

PART 3: EXECUTION

- A. Not used.

**End of Section**

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