ADDENDUM NUMBER FOUR

DUPONT PUMP STATION AND BASIN IMPROVEMENTS – PHASE 2 (Contract B)
W-12-026-203

CITY OF CHATTANOOGA, TENNESSEE

The following changes shall be made to the Contract Documents, Specifications, and Drawings:

The bid opening date has been extended to **Thursday, January 16, 2019**. Same time and location.

I. CONTRACT DOCUMENT

- Replace Section 33 23 19 Fiberglass Pipe and Fittings with the attached.
- Add paragraph 2.01.H. to Section 01 51 43. “All bypass pumping units shall be critically silenced.”.

II. Q&A/COMMENTS

Note: Duplicate questions were provided by several potential bidders. While wording varied slightly, duplicates have been removed.

1. There is not a specification requiring critically silenced pumps and the pumps will be directly behind the homes on Memphis St. It would be good to specify critically silenced, otherwise the City will get a lot of noise complaints. Open Canopy 18 inch diesel pumps are pretty loud and they will be running 24/7 for up to a month.

   Response: Section 01 51 43 has been revised.

January 7, 2020

Justin C Holland, Administrator
City of Chattanooga

PART 1 GENERAL

1.01 DESCRIPTION:

A. Provide and test fiberglass pipe 48-inch in diameter, fittings and appurtenances as indicated and specified.

1.02 RELATED WORK:

A. Division 31 - Earthwork

1.03 REFERENCES:

A. American Society for Testing and Materials (ASTM):

1. D1599 – Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing and Fittings

2. D2105 – Standard Test Method for Longitudinal Tensile Properties of “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Tube

3. D2310 – Standard Classification for Machine-Made “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe

4. D2412 – Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading

5. D2924 – Standard Test Method for External Pressure Resistance of “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe

6. D2925 – Standard Test Method for Beam Deflection of “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Under Full Bore Flow

7. D2996 – Standard Specification for Filament-Wound “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe

8. D2997 – Standard Specification for Centrifugally-Cast “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe

9. D3262 – Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe

10. D3517 – Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pressure Pipe

11. D3567 – Standard Practice for Determining Dimensions of “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Fittings

12. D3754 – Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer and Industrial Pressure Pipe

13. D4024 – Standard Specification for Machine Made “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Flanges

14. D4161 – Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals

15. D5421 – Standard Specification for Contact Molded “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Flanges

16. F2686 – Standard Specification for Glass Fiber Reinforced Thermoplastic Pipe

B. American Water Works Association (AWWA):

1. C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

2. C950 – Fiberglass Pressure Pipe

3. M45 – Fiberglass Pipe Design

1.04 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 23 – Shop Drawings, Product Data, and Samples:

1. Certified shop and erection drawings. Contractor shall submit electronic files of the piping layout including the following.
   a. Pipe layouts in full detail.
   b. Location and type of anchors.
   c. Location of couplings and expansion joints.
   d. 1/2" = 1'-0" scale details of all wall penetrations and fabricated fittings or special fittings.
   e. Schedules of pipe, fittings, expansion joints and other appurtenances.
   f. Electronic files shall conform to the following minimum requirements:
      1) Electronic Files: AutoCAD latest version, drawn to scale.
      2) Submit electronic files as part of the Shop Drawing submittal.
      3) Drawings shall be in conformance with all other requirements as specified in this specification.

2. Signed shop tests attesting to compliance with appropriate standards.

3. Catalog cuts of joints, couplings, harnesses, expansion joints, gaskets, fasteners and other accessories.

4. Provide tag names and numbers for all sections of piping and fittings.

1.05 QUALIFICATIONS

A. All fiberglass reinforced plastic pipe and fittings shall be furnished by a single manufacturer who is experienced in the manufacture of the items to be furnished. The pipe and fittings shall be designed, fabricated, and installed, in accordance with the best practices and methods and shall be suitable for the intended service.

1.06 DELIVERY, STORAGE AND HANDLING:

A. Provide in accordance with Section 01 66 10 – Delivery, Storage and Handling.

B. During loading, transportation and unloading prevent damage to pipes and coatings. Load and unload each pipe under control at all times. Under no circumstances will a dropped pipe be used unless inspected and accepted by the Owner or Owner's Representative. Place skids or blocks under each pipe in the shop and securely wedge pipe during transportation to protect pipe, lining, and coating.

C. Materials, if stored, shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times.

D. Pipe shall not be stacked higher than the limits recommended by its manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Stacking shall conform to manufacturer's recommendations.

E. Pipe shall be properly supported according to the manufacturer's instructions to avoid damage due to flexural strains.

PART 2 PRODUCTS

2.01 FIBERGLASS PIPE

A. Pipe:

1. The pipe shall be manufactured in accordance with ASTM D3262 with a minimum pipe stiffness of F/y = 72 psi. The pipe shall meet the following cell limits: Type 1, Liner 2, Grade 3, or Type 1, Liner 1, Grade 1 as described by Section 4.2 and Table 1 of ASTM D3262. The stiffness is to be measured in accordance with ASTM D2412. The corrosion liner shall not be considered as contributing to the structural strength of the pipe.

2. The pipe shall be manufactured by the centrifugal casting or filament wound process resulting in a dense, nonporous, corrosion-resistant, consistent, composite structure to meet the operating conditions as shown on the Drawings. The pipe shall also meet the strain corrosion-resistant requirements of ASTM D3681 for a maximum long-term deflection of 5 percent.

The pipe shall meet or exceed the 50 year strain requirements of ASTM D3262 when tested in accordance with ASTM D3681. The corrosion liner/interior surface shall have a minimum thickness of 0.06-inch resin. The liner/interior surface may be non-reinforced resin or resin reinforced with chopped fiberglass as determined by the manufacturer.

3. Stiffening ribs or rings shall not be used.

B. Couplings:

1. Unless otherwise specified, the pipe shall be field connected with filament-wound fiberglass exterior sleeve couplings or bell-spigot couplings that utilize elastomeric sealing rings, meeting requirements of ASTM F477, as the sole means to maintain joint watertightness. The joints must meet the performance requirements of ASTM D4161.

C. Manhole Connections

1. Pipe connections and stubs for all manhole structures and manhole connections shall not be less than 4 feet in length. Submit a shop drawing detailing the method of connecting the proposed pipe to the manhole.

D. Pipe shall be furnished in standard laying lengths not exceeding 40 feet.

E. All fittings and accessories shall be furnished by the pipe supplier and shall have joint configurations compatible with the pipe.

F. Each length of pipe shall be marked with the nominal size, the pipe stiffness designation, name of manufacturer, date of manufacture and/or acceptance.

G. Complete records of inspections, examinations and tests performed by the manufacturer shall be kept and submitted to the Engineer.

2.02 TRACER WIRE

A. Provide minimum 12 gauge solid copper tracer wire encased in 30 mils of HDPE insulation for all fiberglass pipe. Provide blue wire for water pipe and green wire for sewer pipe.

B. Provide tracer wire connection point at each isolation valve location for water or forcemains and at each manhole and cleanout for sanitary sewers. See drawings for additional details.

PART 3 EXECUTION

3.01 LAYING FIBERGLASS PIPE AND FITTINGS

A. Fiberglass sewer pipe shall be laid in accordance with the instructions of the manufacturer, as specified herein, and as specified in Section 31 23 33. Embedment of pipe shall conform to the details shown on the Drawings and the requirements in ASTM D2321. Proper selection and placement of bedding and backfill materials are necessary to minimize deflection of the pipe diameter. No blocking under the pipe will be permitted.

B. Use care in handling and installing pipe and fittings in accordance with manufacturer's recommendations. Handling of the pipe with chains or wire cables shall not be permitted. Storage of pipe on the job site shall be done in accordance with the pipe manufacturer's recommendation and with approval of the Engineer. Under no circumstances shall pipe or fittings be dropped either into the trench or during unloading. The interior of the pipe shall be kept clean of oil, dirt, and foreign matter, and the machined ends and couplings shall be wiped clean immediately prior to jointing.

C. Use a pipe cutter where necessary to cut and machine all pipe in the field. A "full insertion mark" shall be provided on each field-cut pipe end. Field-cut pipe shall be beveled with a beveling tool in accordance with the manufacturer's recommendations. Bevels shall be in accordance with the manufacturer's requirements.

D. Rubber gaskets shall be marked with manufacturer's identification sizes and proper insertion direction.

E. Before being laid, all pipe and specials shall be thoroughly examined for defects, and no piece shall be installed which is known to be defective. If any defective piece should be discovered after having been installed, it shall be removed and replaced with a sound one in a satisfactory manner at no additional cost to the Owner.

F. For open-trench construction, the laying of the pipe in finished trenches shall begin at the lowest point, with the coupling/bell ends pointing opposite to the direction of flow. The interior of the pipe and the jointing seal shall be free from sand, dirt, and trash before installing in the line. Extreme care must be taken to keep the couplings of the pipe free from dirt and rocks so joints may be properly assembled without overstressing the coupling. The jointing of the pipe shall be done in strict accordance with the pipe manufacturer’s instructions and shall be done entirely in the trench.

G. The pipe shall be thoroughly cleaned before it is laid and shall be kept clean until it is accepted in the completed work. Special care shall be exercised to avoid leaving bits of wood, dirt, and other foreign particles in the pipe. If any such particles are discovered before the final acceptance of the work, they shall be removed and the pipe cleaned at no additional cost to the Owner.

H. Each time the work is halted for more than 1 hour, the ends of the pipe shall be sealed to prevent foreign material from entering the pipe.

I. Jointing

1. Clean ends of pipe and coupling components.

2. Check pipe ends and couplings for damage. Correct any damage found.

3. Coupling grooves must be completely free of dirt.

4. Apply joint lubricant to pipe ends and rubber seals of coupling. Use only lubricant approved by the pipe manufacturer.

5. A sleeve hole shall be made in the bedding material prior to joint assembly. When joint has been made, the sleeve hole shall be filled with bedding material.

6. Use suitable auxiliary equipment, such as a wire rope puller, to pull pipe joints together. The jointing force should be applied to the pipe wall and not to the coupling.

7. Do not apply excess force in jointing the pipe. If excessive force is required, remove coupling, determine source of problem, and correct it before reassembling the joint.

8. In the process of jointing the pipe, joint the pipe in a straight, non-deflected alignment. Angular deflection of the joint shall be accomplished after the joint is homed to the mark. Do not allow the deflection angle to exceed the maximum deflection permitted by the manufacturer.

J. Install tracer wire at the 12 o'clock position on the pipe exterior. Secure the tracer wire to the pipe with adhesive tape (duct tape or similar) at minimum every 10 feet on center. See Drawings for additional details. Install tracer wire connection and termination points as shown on the Drawings. Following installation of tracer wire, the Contractor shall verify the continuity of the wire, repair any damaged sections and demonstrate the tracer wire system is providing an accurate location of the pipe.

3.02 ALLOWABLE DEFLECTION TEST

A. Pipe deflection measured not less than 30 days after the backfill has been completed as specified shall not exceed 3.33 percent. Deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

B. Deflection shall be measured with a rigid mandrel (Go/No Go) device cylindrical in shape and constructed with a minimum of nine evenly spaced arms or prongs. Drawings of the mandrel with complete dimensions shall be submitted to the Engineer for each diameter of pipe to be tested. The mandrel shall be hand pulled through all sewer lines.

C. Any section of sewer not passing the mandrel shall be uncovered at no additional cost to the Owner and the bedding and backfill replaced to prevent excessive deflection. Repaired pipe shall be retested at no additional cost to the Owner. Retested pipe shall not deflect more than 3 percent.

END OF SECTION