

**NOTICE TO BIDDERS
ADDENDUM #2
TOWNSHIP OF RANDOLPH
BUTTERWORTH III / MT. FREEDOM PUMP STATION
BID OPENING DATE – TUESDAY, DECEMBER 19, 2017, 11:00 A.M.**

NOTICE IS HEREBY GIVEN that sealed bids for the project entitled **BUTTERWORTH III / MT. FREEDOM PUMP STATION** for the Township of Randolph will include an acknowledgement of **ADDENDUM #2**. The **ACKNOWLEDGEMENT OF REVISIONS AND NOTICES** form included in the bid specifications must be completed and returned with the bid package. The Addendum shall become part of the original specifications and is to be attached hereto.

This addendum is being issued in response to the following vendor questions:

Q1: For bid Item #4, 6" HDPE Pipe 1,270 LF and as indicated on the drawings for the Force main, there is no specification for this pipe located in the bid documents that I can find. I'm assuming that HDPE is to be ISP DR-11. Please have your engineer provide a specification for the HDPE Pipe & Fittings.

A1: Attached is specification section "334110 HDPE FORCE MAIN SEWER SYSTEMS". HDPE sanitary force main shall be DR 11 – 200 psi DIPS.

Q2: For bid Item #6 – 8" DIP Gravity Sewer, can the excavated trench material be reused as backfill material? There is no trench detail provided for this line installation.

A2: Refer to "Trench & Bedding Detail" on Drawing C-203 for backfill requirements within paved areas and ROW. The sanitary sewer proposed in the 20-ft wide utility easement (see Drawing C-105) can be backfilled with the excavated trench material. Pipe bedding requirements shall be as per the "Trench & Bedding Detail" for all pipe.

Elizabeth Crescibene, RPPO, QPA
Purchasing Agent/MCCPC Administrator

SECTION 15080

HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Requirements of the Contract apply to this Section.

1.2 SUMMARY

- A. Provide and test process pipe, fittings, and appurtenances as indicated and specified.

1.3 REFERENCES

- A. For force mains:

1. C901 "AWWA Standard for Polyethylene (PE) Pressure Pipe and Tubing, 1/2" inch through 3 inches for Water Service."
2. C906 "AWWA Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 inches through 63 inches, for Water Distribution and Transmission."
3. AWWA Manual M55 "PE Pipe- Design and Installation."

1.4 SUBMITTALS

- A. Shop Drawings: Submit the following:

1. Submit manufacturer's certificates of conformance.
2. Submit certified copies of test reports.
3. Piping layouts in full detail.
4. Location of pipe hangers and supports.
5. Location and type of backup block or device to prevent joint separation.
6. Large scale details of wall penetrations and fabricated fittings.
7. Schedules of all pipe, fittings, special castings, flexible connectors, adapters, couplings, expansion joints, and other appurtenances.
8. Reports as required for welding certifications per ANSI B31.1 Paragraph 127.6.
9. Catalog cuts of joints, couplings, harnesses, expansion joints, gaskets, fasteners and other accessories.
10. Brochures and technical data on coatings and linings and proposed method for application and repair.
11. Manufacturer's descriptive literature and technical data on insulation and proposed method of installation.
12. Shop drawing data for accessory items.
13. Manufacturer's literature as needed to supplement certified data.
14. Shop and Field inspections reports.

15. List of recommended spare parts other than those specified.
 16. Recommendations for short and long term storage.
 17. Special tools.
 18. Shop and field testing procedures and equipment to be used.
 19. Manufacturer's product data and specifications for shop painting.
 20. Sample piece of the product (approximately twelve (12") inches long) in an outside diameter of choice.
 21. Provide a listing of the materials recommended for each service specified and indicated. Provide documentation showing compatibility with process fluid and service specified and as indicated.
 22. Material Certification:
 - a. Provide certification from the equipment manufacturer that the materials of construction specified are recommended and suitable for the service conditions specified and as indicated. If materials other than those specified are proposed based on incompatibility with the service conditions, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified, and indicated including an installation list of a minimum of five (5) documented installations in operation for a minimum of five (5) years. Provide proposed materials at no additional cost to the Owner.
 - b. Where materials are not specified, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified and indicated.
 23. Detailed drawings indicating the proposed coupling between all existing and new piping will be required as a shop drawing submittal.
- B. A copy of this specification section with addenda and all referenced specification sections with addenda, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations and clarifications from the specified requirements.
1. If deviations and clarifications from the specifications are indicated, therefore requested by the Contractor, provide a detailed written justification for each deviation and clarification.
 2. Failure to include a copy of the marked-up specification sections and or the detailed justifications for any requested deviation or clarification will result in the submittal's return without review until the marked-up specification and justification are resubmitted with the entire package.
- C. Provide certification that the stress regression testing has been performed on the specific product. The certification shall include a stress life curve as per ASTM D2837. The stress regression testing shall have been performed in accordance with ASTM D2837, and the manufacturer shall provide a product supplying a minimum Hydrostatic Design Basis (HDB) of 1,600 psi as determined by ASTM D2837.

- D. Provide a certification that the pipe was manufactured from a resin in compliance with these specifications. The certificate shall state the specific resin used and its source.

1.5 QUALITY ASSURANCE

- A. Provide as specified herein.
- B. Replace all materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic compounds, paint solvent, paint thinner, and acid solder at no additional cost.
- C. Coordinate dimensions and drilling of flanges with flanges for valves, pumps and other equipment to be installed in piping systems. Bolt holes in flanges to straddle vertical centerline.
- D. Qualification for Pipe Support Structural Attachment Welders: Provide certification that welders to be employed in work have satisfactorily passed A WS qualification tests. If recertification of welders is required, retesting is the Contractor's responsibility at no additional cost to the Owner.
- E. Protect piping from dirt, dust, oil, grease, and other foreign matter during installation to prevent debris from being left in piping.
- F. The Contractor's on-site personnel shall be certified for HDPE installation.
- G. The pipe manufacturer's trained representative shall be on-site to review butt joint creation every 5th force main installation work day.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Provide as specified herein.
- B. Shipping:
 - 1. Ship equipment, material and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.
 - 2. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended.
 - 3. Deliver spare parts at same time as pertaining equipment. Deliver to the Owner after completion of the Work.
- C. Receiving:
 - 1. Inspect and inventory items upon delivery to site.
 - 2. Store and safeguard equipment, material and spare parts in accordance with manufacturer's written instructions.

1.7 WARRANTY

- A. The manufacturer shall provide evidence that their standard Terms and Conditions of Sales for warranty and guarantee have been one (1) year from the date of manufacture for a period of at least five (5) years. It will not be permitted for a manufacturer to waive the date for the period of warranty and guarantee for this project to meet this specification.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Performance Pipe PE 4710 DIPS size DR 11 (200 psi), or approved equal.

2.2 MATERIAL

- A. High Density Polyethylene Piping Fittings

1. Materials used for the manufacture of polyethylene pipe and fittings shall be PE 4710 high density polyethylene meeting cell classification PE445574C for black per ASTM D3350; and shall be listed in the name of the pipe and fitting manufacturer in Plastics Pipe Institute (PPI) TR-4, *Recommended Hydrostatic and Design Stresses for Thermoplastic Pipe and Fittings Compounds*, with a standard grade HDB rating of 1600 psi at 73°F. The manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.
2. Polyethylene pipe and fittings shall be supplied by the same manufacturer.
3. Polyethylene pipe shall be manufactured in accordance with ASTM F714 and AWWA C906 for 4" and above DIPS.
4. Pipe supplied under this specification shall have a nominal DIPS (Ductile Iron Pipe Size) outside diameter unless otherwise specified.
The Dimension Ratio (DR) and pressure rating of the pipe at 73 °F shall match the following unless noted otherwise on the Drawings:

DR 7.3 – 317 psi	DR 16- 130 psi	DR 26 – 80 psi
DR 9-250 psi	DR 17-125 psi	DR 32.5 - 63 psi
DR 11-200 psi	DR 21 -100 psi	

5. The pipe and fittings shall have product traceability. The manufacturer shall include a print line on the pipe. This shall notate the manufacturer's name, date of manufacture, the lot and supplies of raw material, plant location, and production shift. The ASTM standard shall also appear as ASTM F714 with the material designation as PE 4710.

6. Both pipe and fittings shall carry the same pressure rating. All fitting shall be pressure rated to match the system piping to which they are joined. At the point of fusion, the outside diameter and minimum wall thickness specifications of ASTM F714 for the same size pipe. Fittings shall be manufactured by the manufacturer of the pipe. Elbows, tees, and wyes shall be manufactured by mitered fabrication. For force mains or pressure rated fittings, all fittings shall be derated according to the manufacturer's written specifications, and clearly labeled on the fitting as such. For gravity or sanitary sewer, either direct bury or insertion lining fittings will be fully pressure rated. All fittings will have a quality control label as approved by the manufacturer.
7. Molded Fittings - Molded fittings shall be manufactured and tested in accordance with ASTM D 3267 and shall be so marked.
 - a. X-Ray Inspection - The manufacturer shall submit samples from each molded fittings production lot to x-ray inspection.
8. Fabricated Fittings - Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet rock, or molded fittings. Fabricated fittings shall be rated for internal pressure service at least equal to the full service pressure rating of the mating pipe.
9. Polyethylene Flange Adapters - Flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion-joining machine without the use of a sub-end holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves (serrations) to promote gasketless sealing, or restrain the gasket without blowout.
10. Back-up Rings and Flange Bolts - Flange adapters shall be fitted with back-up rings pressure rated equal to or greater than the mating pipe. The back-up ring bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.
11. MJ Adapters - MJ Adapters 4" thru 16" shall be provided with Stainless Steel Stiffener. MJ Adapters 14" and above shall be provided with Heavy Duty Backup Ring Kits.

PART 3- EXECUTION

3.1 JOINING

- A. Heat fusion joining systems: Pipe and fittings shall be thermal butt fusion, saddle fusion, or socket fusion according to the manufacturer's recommended procedures.
- B. The manufacturer shall provide fusion training. The Contractor and/or the guided boring contractor and the on-site joint inspector shall be trained by the manufacturer or the manufacturer's authorized representative.
- C. It will not be permitted to join unlike SDR's to one another. Transition from unlike SDR's shall be accomplished by mechanical couplings capable of identical pressure ratings or

machined polyethylene nipples where a thicker wall polyethylene has been matched to the companion pipe wall.

- D. Mechanical joining systems: Polyethylene pipe and fittings shall be connected by means of a polyethylene flange adapter and backup ring. The polyethylene flange adapter shall be made from black platestock. Mechanical compression couplings or full circle encasement clamps may be used depending on the test specification.
- E. Mechanical couplings shall be installed in accordance with the mechanical coupling manufacturer's recommended procedures.
- F. Equipment: The fusion equipment and operator shall be required to demonstrate successful field experience. Regarding fusion over thirty-six (36") inch capability, the fusion unit shall be field tested for a period of five (5) years and the fusion operator shall have pipe size experience of the same size pipe on this project for five (5) years or longer.

3.2 INSTALLATION

- A. Install items in accordance with manufacturer's printed instructions and as specified herein and as indicated and specified and in accordance with ASTM D2774.
- B. Ensure interior lines parallel to building walls wherever possible. Install piping to accurate lines and grades, and support. Provide pipe supports as required. Where temporary supports are used, ensure rigidity, to prevent shifting or distortion of pipe. Provide for expansion.
- C. Support piping laid in trenches on a bed of selected backfill material which maintains desired line and grade.
- D. Trenches should be backfilled immediately after the pipe has been laid.
- E. Before assembly, remove all dirt and chips from inside pipe and fittings.
- F. Provide concrete thrust blocking at all tees and bends.
- G. The pressure of the force mains shall follow the installation procedures as approved by the Engineer.
- H. Copper tracer wire shall be installed along the entire force main length to allow ease of locating in the future.
 - 1. Products used shall be compatible with the piping and installation methods being employed.

3.3 TESTING

- A. After installation, test all pipelines for water tightness. Furnish testing plugs or caps,

pressure pumps, pipe connections, gauges, all equipment, all labor, and all water.

- B. Do not cover joints in underground piping with backfill material until piping has successfully passed the pressure test.
- C. Repair faulty joints even to extent of disassembling and remaking joint, remove defective pipe and fittings and replace in manner satisfactory to the Owner.
- D. Testing Procedure:
 - 1. Contractor shall furnish all testing equipment, including but not limited to, water, pump(s), gauges, and necessary fittings, at no additional cost to the Owner.
 - 2. Provide sufficient backfill prior to filling with water and field testing to prevent shifting of the pipe due to pressure.
 - 3. Testing shall be carried out after backfilling has been completed, but before placement of permanent surface.
 - 4. Allow at least seven (7) days to elapse after the last concrete thrust block has been cast.
 - 5. Cap and properly brace all test ends to withstand the thrust created by the pressure tests.
 - 6. Test procedure must be 150% of the normal operating pressure at the lowest elevation of the system, or the pressure class rating of the pipe, whichever is less.
 - 7. Apply specified test pressure by means of a pump connected to the pipe in a manner satisfactory to the Engineer.
 - 8. Test pressure must be maintained by additional pumping for the specified time, during which the amount of leakage is determined by measuring the amount of additional water pumped into the line.
 - 9. If leakage exceeds established limits, the Contractor shall repair or remove and replace defective elements and the test shall be repeated until the pipeline withstands the test pressure and the allowable leakage requirements have been met. This work shall be done without an increase to Contract Time or the Contract Price.
 - 10. Conduct combined pressure and leakage test in pipelines.
 - 11. Furnish and install temporary testing plugs or caps; pressure pumps, pipe connections, meters, gauges, equipment, and labor.
 - 12. Test when desired and comply with the Engineer's orders and specifications.
 - 13. Test pipe lines in excavation or embedded in concrete before backfill or placing of concrete and test exposed piping before field painting.
 - 14. Fill sections of pipe with water and expel all air. If hydrants or blow-offs are not available at high points for releasing air, make necessary taps and plug after test completion.
 - 15. Maintain section full of water for twenty-four (24) hours before conducting combined pressure and leakage test.
 - 16. Conduct pressure and leakage test consisting of first raising water pressure (based on elevation of lowest point of section under test and corrected to gage location) to pressure in pounds per square inch (psi) as specified below:
 - a. 160psi.
 - 17. If unable to achieve and maintain specified pressure for one (1) hour with no

- additional pumping, section fails test.
18. If section fails pressure and leakage test, locate, uncover, and repair or replace defective pipe, fitting, or joint, at no additional expense and without time extension. Conduct additional tests and repairs until section passes test.
 19. Modify test procedure only if permitted by Engineer.
 20. Joint Destructive Field Testing
 - a. To confirm joint integrity, operator procedure and fusion machine set-up, Contractor shall perform joint destructive field testing on a minimum of one (1) of every fifty (50) joints joined utilizing electrofusion or butt fusion pipe joining methods.
 - b. Destructive laboratory tests of joints prepared from butt fusion or electrofusion joined pipes shall be performed per ASTM D638 or ASTM F2634
 21. Upon acceptance by Owner of successful water-tightness/pressure testing, operation of new force main operation shall be adequately demonstrated to satisfaction of the Owner.

END OF SECTION 15080