

A. MATERIALS

The following items are particular to this job. Any item not specified below shall be as specified in the Contract General Specifications.

1. Pipe (PVC)

Pipe for open cut and directional borings shall meet the requirement of American Water Works Association C-900, DR 14 "Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4" through 12" for Water" and shall be furnished in Cast Iron Pipe equivalent outside diameters with rubber-gasketed separate couplings as listed in that standard Pressure class 305 psi.

2. Fire Hydrants

a. All hydrants shall conform to AWWA C-502 (latest revision), "Standards for Fire Hydrants."

b. Hydrants shall be three-way with 4-1/2" X 2-1/2" X 2-1/2" threads.

Hydrant: Mueller A-423 5 1/4" Main Valve, "Super Centurion" 3 Way, Color: Red
Buffalo Township: Open Left Freeport Borough: Open Right

Threads: 2 1/2" Hose Connections – Gauge 6-297 (Pittsburgh 6)
4 1/2" Pumper Connection – 4" Integral Storz Connection
(Harrington HIHS – MLR 40-45, no substitutions, Harrington Inc. 2630
West 21st Street, Erie, PA 16506, 1-800-553-7339.
Available as a factory option from Mueller)

Misc: Operating nut is 1 1/2" pentagon
Shoe is 6"
Bury depth varies from 4' to 5'

c. Hydrants shall be furnished with traffic flange.

d. Hydrants shall be painted red.

e. Hydrants shall be Mueller A-423 5 1/4" Main Valve Super Centurion "20" 3 Way, Open Right; Threads: 2-1/2" Hose Connections – Gauge 6-297 (Pittsburgh 6), 4-1/2" Pumper Connection – 4" Integral Storz Connection. Operating nut is a 1-1/2" pentagon, open left; shoe is 6" aquagrip restraint.

f. The Contractor shall also furnish traffic repair kit compatible with the hydrants supplied.

3. Fittings

Fittings shall be cast iron, cement-lined, Class 250, conforming to AWWA Standard C-153, and seal coated in accordance with AWWA 21.4. All fittings shall be mechanical joint in accordance with AWWA/ANSI 21.11. All cast iron fittings shall be wrapped with 8-mil polyethylene film and held in place by means of 2" wide plastic-backed adhesive tape as specified in these material requirements. All T-Head Bolts and nuts shall be Corten or equal. All bolts shall have zinc cap, sacrificial anode protecto caps or equal. Caps shall be extra heavy size. All fittings shall be restrained using megalug apparatus, or equal, along with standard blocking.

4. Gate Valves 200 psi and less

- a. General - All valves 2" through 12" nominal pipe size, shall be resilient seated gate valves and meet all requirements of AWWA Standard C509-80 or its latest revision. In addition, the valves shall have an interior coating conforming to AWWA Standard C550-81 or its latest revision. The exterior shall have a minimum 8-mil epoxy coating applied to the bonnet and body surface for corrosion protection.
- b. Type - Mueller A-2370-20 resilient wedge or approved equal
- c. Opening - Valves shall open left (counterclockwise)
- d. Valve Ends - Valves shall be available in mechanical joint, flanged, PVC and flanged end tapping.

5. Valve Boxes

Shall be cast iron adjustable telescope type with 5" or greater shaft when installed in a paved or concrete street and shall be a rigid combination of polyolefin with fibrous inorganic reinforcing component and U.V. stabilizer additives to assure resistance to material degradation from ultraviolet light. The entire upper section of the box shall be made of a polyiron magnetically locatable material. Box shall have a cast iron ring, a cast iron traffic lid and No. 6 round base, for use outside the cartway of the road. Type - Bingham & Taylor Series 8500 Screw or 8750 Sliding Type, Ametek No. 5-155-36 or approved equal. All Cast Iron Boxes shall be Bingham and Taylor No. 4906 Screw or 4907 Sliding Type with No. 6 Base, Ford Arch Pattern, or approved equal.

6. Roadway Boxes

Shall be made of cast iron telescope type with 4" or greater shaft, and shall be screw type. The length of the shaft shall vary, depending on the depth of pipe at each valve or curb stop installation. Each box shall be provided with a cover of the deep socket type with the work "WATER" cast thereon. Bingham and Taylor, East Jordan Iron Works 8550 Series, or approved equal.

7. Curb Boxes

Shall be made of cast iron screw type, new style with 2 1/2" or greater shaft, C.I. lid and rim (standard Buffalo New Style Design). The length of the shaft shall vary, depending on the depth of the pipe at each curb stop installation. Each box shall be provided with a new style cover with the word "WATER" cast thereon.

8. Extension Sections

Extension Sections for valve boxes, roadway boxes and curb boxes shall be furnished to bring the top of the box to the level of the finished grade as required.

9. Butterfly valves Class 250 - 12" and larger.

- a. General - All valves shall be designed, manufactured and tested in accordance with American Water Works Association Specifications for Class 250 psi rating as per C-504 or its latest revision.
 - 1) Type - Kennedy, Pratt, or approved equal
 - 2) Opening - Valves shall open to the left (counterclockwise)

- 3) Valve End Connections - Both valve ends shall be Class 250 mechanical joint ends per ANSI A21.11 and include M/J end accessories or if specified in drawings, flanged end valves faced and drilled per ANSI B16.1 Class 250.
- 4) Body - Valve body shall be ductile iron per ASTM A536 Grade 65-45-12 and include a stainless steel seat ring that is mechanically retained without use of clamping devices, adjusting segments or other hardware being in the waterway. valve disc shall be solid type ductile iron without any external vanes, bids, etc., to obstruct flow. Resilient seat shall be located on edge of disc, offset from shaft and seal against mating stainless steel body seal with 360° continuous seating, resilient seat fully adjustable and replaceable, valve shaft shall be per ASTM A564 Type 630/110/1150.

Minimum diameter shall conform to Table 3 of AWWA C-504 or its latest revision. Shaft shall have nylon sleeve or woven teflon fiberglass-backed sleeve for bearing surfaces. Bearings shall be self-lubricated. Manual actuators shall be designed with field adjustable stops and be capable of holding disc stationary in any position under full rated pressure. Each valve shall be hydrostatically tested at 500 psi with disc in open position and at 250 lbs. in closed position with no visible leakage.

- 5) Operator - Valve operator shall be of the traveling nut type, sealed gasketed and lubricated for underground service. It shall be capable of withstanding an overload input torque of 450 ft. lbs. at full open or closed position without damage to the operator or valve.

All valves shall be epoxy coated on the exterior and interior.

10. Polyethylene Encasement

The ductile iron pipe, fittings, valves and other appurtenances shall be wrapped with 8-mil thickness polyethylene film, using the following recommended minimum flat tube widths for the specified pipe sizes.

The polyethylene film shall be of virgin polyethylene and shall be manufactured in accordance with AWWA C-105 A21.5-82:

<u>Nominal Pipe Size</u>	<u>Flat Tube Width</u>
4"	16"
6"	20"
8"	24"
10"	27"
12"	30"
14"	34"
16"	37"
18"	41"
20"	45"
24"	54"
30"	67"
36"	81"

11. Corporation Stops

Corporation Stops shall be for insertion in water mains under pressure and shall be, depending on specified size, shall be Mueller 15000, Ford, or approved equal, **with dielectric washer.**

12. Curb Stops

Curb Stops shall be, depending on specified size, Mueller 15204, Ford, or approved equal.

13. Pack Joint Fittings

a. Compression Connection

Ford Meter Box Company, Inc., C44, AY McDonald, or approved equal.

b. Service Saddles

Service Saddles shall be AWWA Thread ¾" to 2" Brass, Double Strap

14. Copper Tubing

Shall conform to Federal Specification WW-T-799a and ASTM Specification B88. It shall be type K, soft temper and furnished in minimum lengths as follows: ¾" and 1" - 60 ft. coil; 1-1/2" and 2" - 20 ft. straight lengths.

15. Detectable Identification Tape

All installations of pipeline shall include the furnishing and installation of detectable identification tape. This tape shall be constructed of nondegradable plastic at least 2" wide, shall be blue in color and imprinted in a contrasting color with the words "CAUTION - BURIED WATER LINE BELOW."

The tape shall include a metallic foil or wire designed to allow easy detection with an inductive-type pipe lengths in the pipeline trench at a depth of twelve to eighteen inches below the surface. For PVC pipe, a #10 size copper tracing wire shall be installed at pipe level and wrapped up and through the valve boxes.

16. Responsibility for Materials and Equipment Furnished by Contractor

The Contractor shall be responsible for all materials and/or equipment furnished by him and replace at his own expense all such material or equipment found defective in manufacture or damaged in handling after deliver by the manufacturer. This shall include the furnishing of all material and labor required for the replacement of installed material discovered defective prior to the final acceptance of the work.

17. Stone Backfill and Bedding

All stone shall be PennDOT Type 2A. Street crossings, driveway crossings and ditch openings in streets and paved berms shall have 100% stone backfill. All piping outside of streets shall be backfilled with acceptable material as defined in the Standard Specifications.

18. Bituminous Surface (Borough/Township Roadways)

All road surface replacement will consist of 8" of Superpave 25mm base course and 2" of Superpave 9.5mm wearing course, installed at the dimensions of the detailed drawings and standard specifications. Temporary paving required for ditchline maintenance will be incidental to the job and shall be in accordance with PennDOT Form 408 latest revision. Pavement, where required, shall consist of the following:

- ◆ Any paved berm shoulder shall be PennDOT Type 6 paved shoulder: Paid per square yard according to the width of shoulder.
- ◆ Driveway and walkway replacement will match existing pavement removed and will be incidental to the job.

For lines in the road, the 2" wearing course should be even with the existing paving. The paved ditchline will be at the price per square yard of the standard ditch width. Overlay where noted, will be paid for at the square yard price, however, the quantity included in the ditchline standard width will be deducted from the square yardage of overlay. The overlay will include the cost of milling the area to be overlaid. The 100% stone backfill is incidental to the job.

19. Responsibility for Safe Storage

The Contractor shall be responsible for the safe storage of material furnished by or to him and accepted by him and intended for the work until it has been incorporated in the completed project. The interior of all pipe, fittings and other accessories shall be kept free from dirt and foreign matter at all times. Valves and hydrants shall be drained and stored in a manner that will protect them from damage by freezing.

20. Replacement of Damaged Material

ANY MATERIAL FURNISHED BY THE OWNER THAT BECOMES DAMAGED AFTER ACCEPTANCE BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR'S EXPENSE.

21. Shop Drawings

The submittal of shop drawings for all materials specified herein is required. Drawings will be submitted to and approved by the Engineer prior to the start of construction.

B. INSTALLATION

1. General

The Contractor will be responsible for reconnection of all existing mainline connections as noted on the drawings and all existing service connections.

C. UTILITIES

The Contractor shall determine the exact location of all utilities affected by this work and shall protect the utilities during the course of the work. The Contractor shall, at the discretion of the utility involved, repair or have repaired all damage to the utilities resulting due to the work at no cost to the Owner. These utilities may interfere with the installation of the new lines or appurtenances and the Contractor must allow for such interference in his bid. The Contractor will be required to comply with all provisions of Act 287 of the Commonwealth of Pennsylvania, effective April 9, 1975.

The Contractor shall be responsible for contacting all utilities to schedule relocation of utilities that may interfere with the Contractor's work.

D. ANTI-POLLUTION MEASURES

In accordance with Act 247, enacted by the General Assembly of the Commonwealth of Pennsylvania and approved by the Governor on October 26, 1972, the statutes, rules, and regulations concerning anti-pollution measures have been enumerated in a special attachment to this proposal. The bidder shall include in his bid price all costs of complying with the terms of the listed statutes, rules, and regulations. No separate or additional payment will be made for such compliance. In the event that the listed statutes, rules and regulations are amended, or if new statutes, rules, regulations become effective, the Contractor shall perform all additional and/or extra work deemed necessary, as ordered in writing and directed by the Engineer in accordance with Section 109.04 of the Specifications. This includes an Erosion and Sedimentation Control Plan during construction.

E. SPECIAL CONDITIONS AND REGULATIONS

1. Safety of General Public

The Contractor shall be responsible for the safety of the general public in or about the project site at all times. Excavated areas shall be backfilled daily or roped off with lighted barricading.

2. Vehicle Removal and Barricades

Removal of vehicles, barricading and all other operations necessary for the completion of the required work is the responsibility of the Contractor.

3. Designated Representative

The Contractor shall provide at least one (1) responsible worker to answer emergency calls on a 24-hour basis and perform emergency service during non-working hours for any condition resulting from the Contractor's construction activities which represents a hazard to the project or to the public. This worker shall make himself available at any time of the day or night and any day of the week for this emergency work. This worker shall also be provided with a proper vehicle, supplies, and materials and be given sufficient authority to adequately perform this extended assignment. If the Contractor is notified of a deficiency and it is not corrected within two hours the Owner may initiate repairs and the Contractor will be back-charged for this work.

4. As-Built Drawings

The Contractor shall keep a separate "As-Built" set of prints of the Contract Drawings on the job. He shall neatly mark on the "As-Built" set any and all installation changes. The marking of this "As-Built" set shall show the plan location and elevation of all underground piping and utilities as follows:

- a. The distance of the new waterline from existing curb lines;
- b. Tap locations of curb boxes triangulated from homes;
- c. As-Built measurements for valve assemblies;
- d. Measured locations of any new hydrant assemblies;
- e. Measured locations of tie in (i.e. materials used and distances in between).

5. Water Purchase for Testing & Flushing

The Contractor shall purchase water from the Municipal Authority of Buffalo Township to pay for water used for testing and flushing. The purchase will be separate from this contract.

9. Contact Person

The Contractor shall designate a full time contact person who will be responsible on a 24-hour basis for any job problems. Any problems encountered on the project shall be corrected immediately upon notification.