

## **SECTION 33 14 16 - SITE WATER UTILITY DISTRIBUTION PIPING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Pipe and fittings for site water lines including domestic water lines and fire water lines.
- B. Valves and Fire hydrants.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 09 91 13 - Exterior Painting.
- B. Section 31 23 16 - Excavation: Excavating of trenches.
- C. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.
- D. Section 33 01 10.58 - Disinfection of Water Utility Piping Systems: Disinfection of site service utility water piping.
- E. Section 33 05 13 - Manholes and Structures.

#### **1.03 REFERENCE STANDARDS**

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.
- C. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2016.
- D. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40; 2015.
- E. ASTM D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80; 2015.
- F. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals; 1998 (Reapproved 2011).
- G. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2011-AMD 1.
- H. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2017.
- I. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2009.
- J. AWWA C502 - Dry-Barrel Fire Hydrants; 2014.
- K. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; 2010.
- L. AWWA C606 - Grooved and Shouldered Joints; 2015.
- M. UL 246 - Hydrants for Fire-Protection Service; Current Edition, Including All Revisions.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Conduct a preinstallation meeting prior to the start of the work of this section; require attendance by all affected installers.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

#### **1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed County of Gloucester specified requirements.
- D. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

### **1.06 QUALITY ASSURANCE**

- A. Perform Work in accordance with County of Gloucester, Virginia Department of Public Utilities requirements.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store valves in shipping containers with labeling in place.

## **PART 2 PRODUCTS**

### **2.01 WATER PIPE**

- A. Manufacturers:
  - 1. As approved by County of Gloucester, Virginia Department of Public Utilities..
- B. Ductile Iron Pipe: AWWA C151:
  - 1. Fittings: Ductile iron, standard thickness.
  - 2. Joints: AWWA C111/A21.11, Styrene butadiene rubber (SBR) or vulcanized SBR gasket with rods.
- C. Copper Tubing: ASTM B88, Type K, annealed:
  - 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
  - 2. Joints: Compression connection or AWS A5.8M/A5.8, BCuP silver braze.
- D. PVC Pipe: AWWA C900 Class 150:
  - 1. Fittings: AWWA C111/A21.11, Schedule 40 per ASTM D2466 or schedule 80 per ASTM D2467.
  - 2. Joints: ASTM D3139 compression gasket ring.
- E. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Water Service" in large letters.

### **2.02 VALVES**

- A. Valves: Manufacturer's name and pressure rating marked on valve body.
- B. Gate Valves 3 Inches and Over:
  - 1. Manufacturers:
    - a. As approved by County of Gloucester, Virginia Department of Public Utilities..

### **2.03 HYDRANTS**

- A. Hydrants: AWWA C502, UL 246, dry barrel type.
  - 1. Manufacturers:
    - a. As approved by County of Gloucester, Virginia Department of Public Utilities..
  - 2. 6 inch bell or mechanical joint inlet connection with accessories, gland bolts, and gaskets.
- B. Hydrant Extensions: Fabricate in multiples of 6 inches with rod and coupling to increase barrel length.
- C. Hose and Streamer Connection: Match sizes with utility company, two hose nozzles, one pumper nozzle.
- D. Finish: Primer and two coats of enamel in color required by utility company.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

### **3.02 PREPARATION**

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

### **3.03 TRENCHING**

- A. See the section on trenching for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories.
- D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

### **3.04 INSTALLATION - PIPE**

- A. Maintain separation of water main from sewer piping in accordance with County of Gloucester, Virginia Department of Public Utilities.
- B. Group piping with other site piping work whenever practical.
- C. Establish elevations of buried piping to ensure not less than 3 ft of cover.
- D. Install pipe to indicated elevation to within tolerance of 5/8 inches.
- E. Install ductile iron piping and fittings to AWWA C600.
- F. Install grooved and shouldered pipe joints to AWWA C606.
- G. Route pipe in straight line.
- H. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- I. Install access fittings to permit disinfection of water system.
- J. Slope water pipe and position drains at low points.
- K. Install trace wire 6 inches above top of pipe; coordinate with Section 31 23 16.13.

### **3.05 INSTALLATION - VALVES AND HYDRANTS**

- A. Set valves on solid bearing.
- B. Center and plumb valve box over valve. Set box cover flush with finished grade.
- C. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway.
- D. Set hydrants to grade, with nozzles at least 20 inches above ground.
- E. Provide a drainage pit 36 inches square by 24 inches deep filled with 2 inches washed gravel. Encase elbow of hydrant in gravel to 6 inches above drain opening. Do not connect drain opening to sewer.
- F. Paint hydrants in accordance with Section 09 91 13.

### **3.06 SERVICE CONNECTIONS**

- A. Provide water services to utility company requirements with water meters.

### **3.07 FIELD QUALITY CONTROL**

- A. Perform field inspection and testing in accordance with County of Gloucester, Virginia Department of Public Utilities standards.
- B. Pressure test water piping to 20 psi.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

### **END OF SECTION**