

SECTION 33 51 00

GAS DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pipe and fittings for natural gas distribution.
- B. Connection of natural gas system to utility company system.

1.2 RELATED SECTIONS

- A. Section 02 32 00 – Earthwork
- B. Section 31 23 33 - Excavation, Backfill, and Compaction for Utilities
- C. Construction Drawings

1.3 REFERENCE STANDARDS

- A. American Society of Mechanical Engineers (ASME) latest edition
 - B 16.18 Cast Copper Alloy Solder Joint Pressure Fittings
 - B 16.22 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
 - B 16.26 Cast Copper Alloy Fittings for Flared Copper Tubes
 - Sec. 8D Pressure Vessels
 - Sec. 9 Welding and Brazing Qualifications
Boiler and Pressure Code
- B. American Society for Testing and Materials (ASTM) latest edition
 - A 120 Pipe, Steel, Black and Hot-Dipped, Zinc Coated (Galvanized) Welded and Seamless, for Ordinary Uses
 - A 234 Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperature
 - B 32 Solder Metal
 - B 75 Seamless Copper Tube
 - B 88 Seamless Copper Water Tube
 - D 2513 Thermoplastic Gas Pressure Pipe, Tubing, and Fittings
 - D 2517 Reinforced Epoxy Resin Gas Pressure Pipe and Fittings
 - D 2683 Socket-Type Polyethylene Fittings For Outside Diameter-Controlled Polyethylene Pipe and Tubing
 - F 678 Polyethylene Gas Pressure Pipe, Tubing and Fittings
- D. American Welding Society (AWS) latest edition
 - A 5.8 Brazing Filler Metal

- E. American Water Works Association (AWWA) latest edition
C105 Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids
- F. American National Standards Institute (ANSI) latest edition
 - B16.3 Malleable Iron Threaded Fittings
 - B16.11 Forged Steel Fittings, Socket Welding and Threaded
 - B31.2 Fuel Gas Piping
 - B31.8 Gas Transmission and Distribution Piping Systems
- G. National Fire Protection Agency (NFPA) latest edition
54 National Fuel Gas Code

1.4 QUALITY ASSURANCE

- A. Perform installation in accordance with applicable utility company requirements. Verify and coordinate responsibility of gas utility company and location of gas meter prior to bid or pricing.
- B. Gas Cock: Manufacturer's name and pressure rating marked on valve body.
- C. Welding Materials and Procedures: Conform to ASME Boiler and Pressure Vessel Code and applicable state regulations.
- D. Welders Certification: In accordance with ASME Sec 9.
- E. Conform to NFPA 54, ANSI B31.2, or ANSI B31.8.

1.5 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified local requirements.

1.6 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of pipe mains, valves, connections, and top of pipe elevations.
- B. Identify and describe unexpected variations to subsoil conditions and location of uncharted utilities.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to be included.
- B. Deliver and store valves in shipping containers with labelling in place.

PART 2 PRODUCTS

2.1 PIPE

- A. Steel Pipe Below Ground: ASTM A 120, Schedule 40 black:
 - 1. Fittings: ANSI B16.11, forged steel, or ASTM A 234 forged steel welding type.
 - 2. Joints: Welded and seamless.
 - 3. Jackets: AWWA C105 polyethylene jacket, Double layer, half lapped, 10 mil polyethylene tape.
- B. Steel Pipe Above Ground: ASTM A 120, Schedule 40 black:
 - 1. Fittings: ANSI B16.3, malleable iron, ANSI B16.11, forged steel, or ASTM A 234, forged steel welding type.
 - 2. Joints: Threaded.
- C. Polyethylene Pipe: ASTM D 2513, SDR 11.5 or ASTM F 678 Series 125:
 - 1. Fittings: ASTM D 2513
 - 2. Joints: Mechanical or Compression fit.
 - 3. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Natural Gas Service" in large letters.
- D. Reinforced Epoxy Resin Piping: ASTM D 2517:
 - 1. Fittings: ASTM D 2517.
 - 2. Joints: Bell and spigot with epoxy resin.
 - 3. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Natural Gas Service" in large letters.

2.2 GAS COCKS

- A. 2-In. and Smaller: 150 psig (1,040 kPa) WOG, bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends with cast iron curb box, cover, and key.
- B. 2-In. and Larger: 125 psig (860 Kpa) WOG, Steel or Cast iron body and tapered plug, non-lubricated, Teflon packing, threaded ends, with cast iron curb box, cover, and key.
- C. For Applications with Line Pressure Greater than 60 psig (415 KPA): Over 2-In. (50 mm): Cast iron body and plug, pressure lubricated, Teflon packing, flanged ends, with cast iron curb box, cover, and key.

2.3 PRESSURE REGULATING VALVES

- A. Valves: Single stage, malleable iron body, corrosion-resistant, pressure regulator with atmospheric vent, elevation compensator; with threaded ends for 2-in. and smaller or flanged ends for larger than 2-in.
- B. Capacity: For inlet and outlet gas pressures, specific gravity, and flow rate indicated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions.
- B. Verify that building service connection and utility gas main size, location, and depth are as indicated on Construction Drawings.

3.2 PREPARATION

- A. Ream pipe ends and remove burrs. Bevel plain end ferrous pipe over 2-in. diameter or thread ferrous pipe 2-in. diameter and under.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections with flanges or threading for threaded unions connections.

3.3 BEDDING

- A. Excavate pipe trench and place bedding material in accordance with Section 31 23 33.

3.4 INSTALLATION - PIPING

- A. Maintain separation of gas line from sanitary sewer, water, or storm sewer piping in accordance with state or local code.
- B. Install piping to conserve space and not interfere with efficient use of site space.
- C. Install piping to allow for expansion and contraction without stressing pipe or joints.
- D. Install cocks and other fittings as required.
- E. Establish elevations of buried piping in accordance with Section 31 23 33.
- F. Wrap couplings and fittings of steel pipe with polyethylene tape and heat shrink over pipe.
- G. For Nonmetallic Pipe: Install trace wire continuous over top of pipe.
- H. Backfill trench in accordance with Section 31 23 33.
- I. Center and plumb valve box over valve. Set box cover flush with finished ground surface. Prevent shock or stress from being transmitted through valve box to valve.
- J. Wrap valve and valve box with polyethylene tape and heat shrink or paint valves and valve boxes with red anti-rust primer and 1 coat of epoxy paint.

3.5 SERVICE CONNECTIONS

- A. Provide sleeve in foundation wall for gas service main. Caulk enlarged sleeve watertight.
- B. Anchor service main to interior surface of foundation wall.
- C. Install service regulator adjacent to building wall at service entrance location indicated on Construction Drawings.
- D. Install service regulator and riser pipe in a manner that prevents undue stress on service pipe. For plastic service pipe, use steel pipe riser from below ground to regulator.
- E. Provide regulator vent with rain and insect proof opening, terminating not less than 5-ft away from building openings.

END OF SECTION

33 51 00-5