

**SECTION 22 70 00  
FACILITY NATURAL-GAS PIPING**

**PART 1 - GENERAL**

**1. DESCRIPTION**

Fuel gas systems, including piping, equipment and all necessary accessories as designated in this section.

**2. SUBMITTALS**

- A. Submit in accordance with GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS.
- B. Manufacturer's Literature and Data:
  - 1) Pipe & Fittings.
  - 2) Valves.
  - 3) Accessories.
  - 4) All items listed in Part 2 - Products.

**3. DELIVERY, STORAGE AND MATERIAL HANDLING**

- A. Protect material at all times from weather and contamination on working surfaces. Clean or replace as required prior to installation. Keep piping ends plugged / capped until installation.

**PART 2 - PRODUCTS**

**1. BELOW GRADE FUEL GAS SERVICE CONNECTIONS TO BUILDING**

- A. From inside face of exterior wall to a distance of approximately 5 feet outside of building, use coated piping.
- B. Pipe: Black steel, ASTM A53, Schedule 40. Shop-applied pipe coating shall be one of the following types:
  - 1) Coal Tar Enamel Coating: Exterior of pipe and fittings shall be cleaned, primed with Type B primer and coated with hot-applied coal tar enamel with bonded layer of felt wrap in accordance with AWWA C203. Asbestos felt shall not be used; felt material shall be fibrous glass mat as specified in Appendix Section A2.1 of AWWA C203.

C. Fittings:

- 1) Butt weld fittings, wrought steel, ANSI B16.9.
- 2) 2" and larger shall be socket weld, smaller than 2" shall be threaded fittings forged steel, ANSI B16.11.

**2. ABOVE-GRADE FUEL GAS PIPING**

A. Pipe: Black steel, ASTM A53, Schedule 40.

B. Nipples: Steel, ASTM A733, Schedule 40.

C. Fittings:

- 1) Sizes 2 inch and under ANSI B 16.3 threaded malleable iron.
- 2) Over 2 inch and up to 4 inch ANSI B16.11 socket welded.
- 3) Over 4 inch ANSI 16.9 butt welded.

D. Joints: Provide welded or threaded joints.

E. Unions 2" and smaller shall be 150 PSIG WOG, malleable iron, screwed with composition seat.

F. Flanges 2-1/2" and larger shall be 150 PSIG WOG, flat face, welded neck,

G. Paint exposed piping in interior finished spaces and weather exposures per requirements in General Conditions and Basic Plumbing / Mechanical Requirements

**3. VALVES**

A. Ball Valve: Bronze body, rated for 150 psi at 365°F, reinforced TFE seat, stem seal and thrust washer; end entry, threaded ends, UL-listed for natural or LP gas shut off service when used on those services.

B. Automatic Shutoff Valve: Normally closed with manual reset solenoid. Valve shall have open indicator with auxiliary switches and terminal block, UL Listed for gas service. Coordinate the location and power wiring with the Electrical Contractor. Valve shall be compatible with related HVAC and Kitchen equipment.

**4. PRESSURE REGULATORS**

A. Furnish and install regulators as required and shown on the plans to maintain required gas flow and supply pressure. Regulators shall be sized to provide the maximum flow at the highest appliance supply pressure required. Select the regulator spring in the center of the working pressure curve. Provide spare springs for adjustment up and down one step. Verify orifice is proper size for capacity, flow and pressure requirements.

- B. Mount the regulator per the manufacturer's requirements; vent the diaphragm to the exterior or provide vent limiting device per IFGC and exception 5.14 no. 2 and Manufacturer's requirements.
- C. Regulator shall be Maxon or approved equal.

## **5. DIELECTRIC FITTINGS**

- A. Provide dielectric couplings or unions between ferrous and non-ferrous pipe.

## **6. GAS EQUIPMENT CONNECTORS**

- A. Flexible connectors with teflon core, interlocked galvanized steel protective casing, AGA certified design.

## **PART 3 - EXECUTION**

### **1. INSTALLATION**

- A. General: Comply with the International Fuel Gas Code, local codes and the following:
  - 1) Install branch piping for fuel gas and connect to all fixtures, valves, cocks, outlets, casework, cabinets and equipment, including those furnished by the Government or specified in other sections.
  - 2) Pipe shall be round and straight. Cutting shall be done with proper tools. Pipe, shall be reamed to full size after cutting.
  - 3) All pipe runs shall be laid out to avoid interference with other work.
  - 4) Install valves with stem in horizontal position whenever possible. All valves shall be easily accessible.
  - 5) Install union and shut-off valve on pressure piping at connections to equipment.
  - 6) Pipe Hangers, Supports and Accessories:
    - a) All piping shall be supported per the International Fuel Gas Code, Chapter No. 4. All pipe shall be run straight and parallel lines shall be grouped on the same trapeze hanger wherever possible.
    - b) Shop Painting and Plating: Hangers, supports, rods, inserts and accessories used for Pipe supports shall be shop coated with red lead or zinc Chromate primer paint. Electroplated copper hanger rods, hangers and accessories may be used with copper tubing.
    - c) Floor, Wall and Ceiling Plates, Supports, Hangers:

- i. Solid or split unplated cast iron, chrome plated in finished areas.
  - ii. 2) All plates shall be provided with set screws.
  - iii. 3) Pipe Hangers: Height adjustable clevis type.
  - iv. 4) Adjustable Floor Rests and Base Flanges: Steel.
  - v. 5) Concrete Inserts: "Universal" or continuous slotted type.
  - vi. 6) Hanger Rods: Mild, low carbon steel, fully threaded or Threaded at each end with two removable nuts at each end for positioning rod and hanger and locking each in place.
  - vii. 7) Riser Clamps: Malleable iron or steel.
  - viii. 8) Rollers: Cast iron.
  - ix. 9) Self-drilling type expansion shields shall be "Phillips" type, with case hardened steel expander plugs.
  - x. 10) Miscellaneous Materials: As specified, required, directed or as noted on the drawings for proper installation of hangers, supports and accessories.
- 7) Install cast chrome plated escutcheon with set screw at each wall, floor and ceiling penetration in exposed finished locations and within cabinets and millwork.
- 8) Penetrations:
  - a) Fire Stopping: Where pipes pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases as specified in FIRESTOPPING. Completely fill and seal clearances between piping and openings with the fire stopping materials.
  - b) Waterproofing: At floor penetrations, completely seal clearances around the pipe and make watertight with sealant as specified in JOINT SEALANTS.
- B. Piping shall conform to the following:
  - 1) Fuel Gas:
    - a) Entire fuel gas piping installation shall be in accordance with requirements of NFPA 54.
    - b) Provide fuel gas piping with accessible plugged 6" drip pockets at low points.
    - c) Install branch shut-off cocks at all appliances and equipment.

## **2. CLEANING OF SYSTEM AFTER INSTALLATION**

- A. Clean all piping systems to remove all dirt, coatings and debris.

**3. TESTS**

- A. General: Test system either in its entirety or in sections after system is installed or cleaned.
- B. Test shall be made in accordance with Section 406 of the International Fuel Gas Code. The system shall be tested at a minimum of 1.5 times maximum working pressure, but not less than 3 psig gage).

**- END OF SECTION -**