SECTION 23 11 23

NATURAL GAS PIPING

1.0 GENERAL

1. DESCRIPTION
   1. All work specified in this Section is governed by the Common Work Results for Plumbing Section 22 05 00.
   2. This Section 23 11 23 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the systems as specified herein and as shown. These systems include, but are not limited to, the following:
      1. Natural gas systems
2. INTENT
   1. It is the intent of this Section of the specifications to provide complete and operable system as shown and specified which is free of leaks, properly vented, free of unreasonable noise, vibration, and fabricated so as to fit the space allotted.
   2. The word "piping" is defined to mean all piping, fittings, joints, hangers, coatings, valves, cocks, and accessories necessary for the system described, shown, and specified.
3. GENERAL REQUIREMENTS
   1. Provide all reducing fittings, flanges, couplings and unions of the size and type of material to match the piping connections at each fixture, piece of equipment, valve, and accessory.
   2. All pipe and fittings shall be products of a domestic Manufacturer.
   3. Union joints, couplings or flanges shall be provided in each pipe line connected to each piece of equipment, fixture and elsewhere as indicated and specified. Unions shall match the piping system in which they are installed.
      1. Unions or flanges shall be provided between all copper to steel connections. These unions shall be dielectric, insulating type.
   4. All changes in direction and branches shall be made with manufactured fittings.
   5. All pipe joints shall be cut square and all burrs shall be removed.
   6. Open ends of pipe lines not currently being handled shall be plugged during installation to keep dirt, water, and foreign material out of the system.
   7. This scope shall be part of Division 22 scope unless otherwise arranged within the Contract. Coordinate with Division 22.
4. IDENTIFICATION OF PIPING
   1. See specification Section 22 05 00 for all requirements.
   2. In addition, the natural gas piping shall be painted yellow, in accordance with ANSI standards, with paint suitable for the piping location. Paint shall be corrosion-resistant and continuous through all supports, penetrations, sleeves, etc.

2.0 PRODUCTS

1. NATURAL GAS PIPING
   1. Piping shall be Schedule 40 black steel complying with ANSI B36.10 or ASTM A 53. Fittings shall be steel or malleable iron. Joints shall be threaded or welded.
   2. Gas cocks shall meet ANSI B16.33.
   3. Piping installed underground outside may be medium density polyethylene, conforming to ASTM D2513. Coordinate selection with all installation location and connection requirements. Connections to equipment shall be made with piping per the materials listed in this specification. Provide and install transitions as required.
   4. For Seismic Design Category C or D, all natural gas piping shall be seismically restrained in accordance with code requirements. Restraints shall be by Mason or approved equal. Submit shop drawings on seismic restraint systems.
2. PIPE HANGERS AND SUPPORTS
   1. See specification Section 22 05 00 for all requirements.
3. REGULATORS
   1. Regulators shall be appropriate for the installation in which they are installed, including weather-rated as appropriate. Provide and install all accessories as necessary.
   2. Regulators installed inside or within 15’ of any outside air intake, including doors and operable windows, shall be ventless. Where ventless regulators are not available, regulator shall have vent piped to outside in accordance with manufacturer’s recommendations. Route and size shall be in accordance with manufacturer’s recommendations.

3.0 EXECUTION

1. ARRANGEMENT
   1. Follow the general piping layout, arrangement, schematics and details. Provide all offsets, vents, drains and connections necessary to accomplish the installation. Fabricate piping accurately to measurements established at the project site to avoid interference with ductwork, other piping, equipment, openings, electrical conduits and light fixtures. Make suitable provision for expansion and contraction with expansion loops and offsets.
2. MINIMUM HANGER SPACING
   1. See specification 22 05 00 for all requirements.
3. INSTALLATION
   1. Piping installed outside the building and underground shall be installed in a PVC sleeve to prevent corrosive ground contact with piping. Piping shall enter the building above grade.
   2. Piping not subject to corrosion (i.e. polypropylene) does not require a PVC sleeve.
   3. Piping installed outside the building and underground shall be buried a minimum of 36” below grade or below the frost line, whichever is deeper.
   4. Piping installed outside shall be elevated above grade a minimum of 3.5” and shall be securely supported.
   5. Piping penetrating floor slabs, walls, etc. shall be protected from damage and corrosion as required by Code.
   6. For non-metallic underground gas lines, a yellow insulated copper traces wire or other approved conductor shall be installed with underground nonmetallic piping. Access shall be provided to the tracer wire or the tracer wire shall terminate aboveground at the end of the nonmetallic piping or not less than 3” above ground, whichever is greater. The tracer wire size shall not be less than 18 AWG and the insulation type shall be suitable for direct burial.
   7. Regulators shall be provided under this scope for each gas-fired equipment without appropriate regulators provided by the Equipment Manufacturer. Coordinate with all equipment. Regulators shall be appropriate for the pressures and capacity of the equipment and installation location.
4. TESTING AND PURGING
   1. All new gas piping shall be pressure tested at 3 psi or 1.5 times the design pressure, whichever is greater, for a time period of 0.5 hours per 500 cubic feet of pipe volume, not to exceed 24 hours.
   2. All gas piping 2.5” and larger shall be purged with an inert gas prior to operation, with the piping purge lengths as required by Code.

END OF SECTION