
231200 NATURAL GAS PIPING

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design and installation methods of natural gas piping on Johns Hopkins University Homewood Campus. Project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification and approval from the JHFRE Engineering and Energy Department, it is expected that these guidelines will govern the design and specifications.

1.2 Submittals

A. Shop drawing submittals and O&M Material cutsheets must include date of manufacture.

1.3 Quality Assurance

A. Materials and methods for natural gas piping must follow the recommendations from the local natural gas distribution company, current International Plumbing Code, International Building Code and per applicable NFPA and local/municipality codes.

1.4 Delivery and storage

A. Material deliveries and storage areas to be approved by Owner.

B. Material storage to comply with manufacturer's recommendations.

Part 2 – PRODUCTS

2.1 Below ground piping to be thermoplastic polyethylene (PE) piping (ASTM D2513), with an 18AWG copper tracer wire.

A. Polyethylene pipe (PE) cannot be used if it has been longer than 2 years since the pipe was manufactured. The manufactured date will be on the pipe.

2.2 Above ground piping to be Schedule 40 Black Steel (ASTM A53), with threaded connections on piping NPS 2" and smaller, and welded connections on piping 2-1/2" and larger.

2.3 Provide valves and accessories for gas applications that adhere to the following:

A. Malleable-Iron Threaded Fittings shall be class 150, standard pattern, in accordance with ASME B16.3, with threaded ends in accordance with ASME B1.20.1.

B. Steel Threaded Fittings shall be forged steel, in accordance with ASME B16.11, with threaded ends in accordance with ASME B1.20.1.

C. Steel Flanges and Flanged Fittings shall be in accordance with ASME B16.5.

D. Quick-Disconnect Devices shall be in accordance with ANSI Z21.41, convenience outlets and matching plug connector.

E. Valves NPS 2" and smaller shall have threaded ends according to ASME B1.20.1 for pipe threads.

F. Valves NPS 2-1/2" and larger shall have flanged ends according to ASME B16.5 for steel flanges.

G. Appliance Connector Valves shall be in accordance with ANSI Z21.15 and be IAS listed.

H. Gas stops described below are NPS 2" and smaller and are limited to 2psig, bronze body with AGA stamp, plug type with bronze plug and flat or square head, ball type with chrome-plated brass ball and lever handle, or butterfly valve with stainless-steel disc and fluorocarbon elastomer seal and lever handle, 2psig minimum pressure rating.

I. Gas Valves, NPS 2" and smaller shall be in accordance with ASME B16.33 and IAS-listed bronze body and 125psig pressure rating.

J. Plug Valves, NPS 2-1/2" and larger shall be in accordance with ASME B16.38 and MSS SP-78 cast-iron, lubricated plug valves, with 125psig pressure rating.

K. General-Duty Valves, NPS 2-1/2" and larger shall be in accordance with ASME B16.38, cast-iron body, suitable for fuel gas service, with WOG indicated on valve body, and 125psig pressure rating.

L. Gate Valves shall be MSS SP-70, OS&Y type with solid wedge.

M. Butterfly Valves shall be MSS SP-67, lug type with lever handle.

N. Line Pressure Regulators shall be in accordance with ANSI Z21.80.

Part 3 – EXECUTION

3.1 A continuous length of PE pipe shall be used. Install insulated locator wire above PE pipe but not closer than 6".

3.2 Contractor shall use only approved steel risers where applicable, and shall be installed per manufacturer's instructions. Install fuel gas piping at uniform grade of 0.1% slope upward toward risers.

3.3 Transitions, fittings and couplings are not re-usable and shall only be installed new. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down. Connect branch piping from top or side of horizontal piping.

3.4 Pipe transitions and connections for meter pits, valve pits, etc. shall be suitable for application, approved by pipe manufacturer for intended use, and installed per manufacturer's instructions.

3.5 For concealed gas piping within buildings, install piping in airtight conduit constructed of Schedule 40, seamless, black steel pipe with welded joints. Vent conduit to outside and terminate with

screened vent cap. Do not locate valves above ceilings. Do not install concealed piping in solid partitions, except when passing through partitions or walls.

3.6 Provide pressure gauge downstream from each line pressure regulator. Install vent piping for gas pressure regulators and gas trains, extend outside building and vent to atmosphere.

3.7 When connecting to appliances, provide shut-off valves within 72" of connection. Provide sediment trap as close to connection as possible.

3.8 Plastic warning tape shall be installed no more than 6" below finished grade directly over PE pipe.

3.9 Minimum depth of burial shall be 24" unless noted otherwise.

3.10 Natural gas piping shall not share trench with any other utility.

3.11 Piping installed in trench shall have minimum 6" of limestone sand bedding above and below piping. Trenching cover shall be compacted to minimum 85% of maximum dry unit weight of soil material per ASTM D698.

3.12 Use engraved plastic-laminate equipment nameplate or sign on or near each service meter, pressure regulator and specialty valve. Paint exterior service meters, pressure regulators and specialty valves gray and above grade piping yellow.