SECTION 22 36 00
GAS SERVICE AND PIPING

PART 1 - GENERAL

1.01 REFERENCE STANDARDS

A. ASME B1.20.1 - Pipe Threads, General Purpose, Inch; 2013 (Reaffirmed 2018).

B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2021.

C. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 Through NPS 24 Metric/Inch Standard; 2025.

D. ASME B16.20 - Metallic Gaskets for Pipe Flanges; 2023.

E. ASME B16.39 - Malleable Iron Threaded Pipe Unions: Classes 150, 250, and 300; 2025.

F. ASME B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series); 2012 (Reaffirmed 2021).

G. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

H. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2023a.

I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025.

1.02 RELATED DOCUMENTS

A. This Section is to coordinate with and be complementary to the General Requirements for Plumbing Work, Section 22 00 10.

B. Section 01 00 00 - General Requirements shall apply

C. Examine all Drawings and all Sections of the Specifications for requirements and provisions affecting the Work of this Section.

1.03 DESCRIPTION OF WORK

A. This Section Includes underground gas piping (between Buildings) and related components.

B. Work includes providing all labor, materials, equipment, accessories, services and tests necessary to complete and make ready for operation by the Owner, gas piping system as shown on the Drawings and hereinafter specified.

C. Equipment shall be provided and installed in part by Con Edison (referred to as utility company) and in part under this contract.

D.

1.04 QUALITY ASSURANCE

A. All work shall be performed in accordance with all rules, regulations, and standards of utility company, and all applicable codes.

B. Where deemed necessary, perform all work under the supervision of the utility company representative.

C. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

E.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing the work of this section with minimum three years documented experience.

1.06 REGULATORY REQUIREMENTS

A. Perform Work in accordance with the requirements of New York City Fuel Gas Code and Authorities and Utilities having jurisdiction over the project.

1.07 SUBMITTALS

A. Submittals Package: Submit the shop drawings and product data submittals specified below at the same time as a package.

B. Shop Drawings:
   1. For facility natural-gas piping layout. Include plans, piping layout and elevations, sections, and details for fabrication of pipe anchors, hangers, supports for multiple pipes, alignment guides, and attachments of the same to building structure. Detail location of anchors, and alignment guides. Also include:
      a. Bill of materials.
      b. Existing service layouts
      c. Utility company approval letter
      d. Pipes and fittings
      e. Piping specialties
      f. Piping and tubing joining materials
      g. Valves
   2. Shop Drawing Scale: 1/4 inch per foot.
   3. Detail mounting, supports, and valve arrangements for service meter assembly and pressure regulator assembly.

C. Contract Close-out Submittals:
   1. Test Report: System acceptance test report.
   2. Certificate: Affidavit, signed by the Contractor, certifying that the equipment and systems installation meets utility company requirements and contract requirements, and is operating properly.
   3. Operation and Maintenance Data: Deliver six (6) copies of operation and maintenance data for each product, covering the installed products, to the Owner’s Representative.

1.08 INFORMATIONAL SUBMITTALS

A. Shop Drawings: Plans and details, drawn to scale, on which natural-gas piping is shown and coordinated with other existing installations in buildings.

B. Welding certificates.

1.09 PERFORMANCE REQUIREMENTS

A. Minimum Operating-Pressure Ratings:
   1. Piping and Valves: 100 psig minimum unless otherwise indicated.
   2. Service Regulators: 100 psig.
   3. Minimum Operating Pressure of Service Meter: ½ psig

B. Natural-Gas System Pressure within Buildings: ½ psig or less.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves according to the following:
   1. Ensure that gas pipe is dry and internally protected against rust and corrosion.
   2. Protect gas pipe against damage to threaded ends.

B. During Storage: Use precautions for gas piping according to the following:
   1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
   2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

D. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

E. Protect fittings and specialties from moisture and dirt.

PART 2 - PRODUCTS

2.01 GAS SERVICE

A. If Con Edison determines that the existing gas service from street to buildings needs to be replaced, work shall include but not be limited to the following:
   1. Arrange with Con Edison for service facilities and pay all charges.
   2. Extend service from Con Edison termination.
   3. Provide all trenching and back fill for gas service.
   4. Provide gas meter and all related piping, valves, fittings, curb valve.
   5. Install meter assemblies supplied by Con Edison.
   6. Obtain Con Edison approval for all gas service work and gas service equipment shop drawings prior to installation and after installation.
   7. Provide all associated installation components and accessories.
   8. Provide all equipment and piping supports, accessories, meter assembly etc.
   9. Meetings with Con Edison.
   10. Provide all work in accordance with all Con Edison rules, standards and requirements.

B. Work by the utility company:
   1. Supply gas meter assemblies.

2.02 PIPES AND FITTINGS

A. Steel Pipe: ASTM A53/A53M, black steel, Schedule 40, Type E or S, Grade B.
   1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
   2. Wrought-Steel Welding Fittings: ASTM A234/A234M for butt welding and socket welding.
   3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.
   4. Forged-Steel Flanges and Flanged Fittings: ASME B16.5, minimum Class 150, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
      a. Material Group: 1.1.
      b. End Connections: Threaded or butt welding to match pipe.
      c. Lapped Face: Not permitted underground.
      d. Gasket Materials: ASME B16.20, metallic, flat, asbestos free, aluminum o- rings, and spiral-wound metal gaskets.
      e. Bolts and Nuts: ASME B18.2.1, carbon steel aboveground and stainless steel underground.
   5. Protective Coating for Underground Piping: Factory-applied, three-layer coating of epoxy, adhesive, and PE.

a. Joint Cover Kits: Epoxy paint, adhesive, and heat-shrink PE sleeves.

2.03 GAS PIPING AND FITTINGS

A. Gas piping and fittings shall be standard weight black steel in accordance with NYC Fuel Gas Code: Pipe shall be seamless as per ASTM A53.

B. Fittings shall be threaded 150 lb., Class 150 black malleable iron as per ASTM A197, latest edition.

C. PRESSURE REGULATORS

D. General Requirements
   1. Single stage and suitable for natural gas.
   2. Steel jacket and corrosion-resistant components.
   3. Elevation compensator.
   4. End Connections: Threaded for regulators NPS 2 and smaller; flanged for regulators NPS 2-1/2 and larger.

E. Service Pressure Regulators: Comply with ANSI Z21.80.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Actaris.
      b. American Meter Company.
      c. Fisher Control Valves and Regulators; Division of Emerson Process Management.
      d. Invensys.
      e. Richards Industries; Jordan Valve Div.
      f. Or approved equal
   2. Body and Diaphragm Case: Cast iron or die-cast aluminum.
   3. Springs: Zinc-plated steel; interchangeable.
   4. Diaphragm Plate: Zinc-plated steel.
   5. Seat Disc: Nitrile rubber resistant to gas impurities, abrasion, and deformation at the valve port.
   6. Orifice: Aluminum; interchangeable.
   7. Seal Plug: Ultraviolet-stabilized, mineral-filled nylon.
   8. Single-port, self-contained regulator with orifice no larger than required at maximum pressure inlet, and no pressure sensing piping external to the regulator.
   9. Pressure regulator shall maintain discharge pressure setting downstream, and not exceed 150 percent of design discharge pressure at shutoff.
   10. Overpressure protection device is optional feature. See Evaluations.
   11. Overpressure Protection Device: Factory mounted on pressure regulator.
   12. Atmospheric Vent: Factory- or field-installed, stainless-steel screen in opening if not connected to vent piping.

PART 3 - EXECUTION

3.01 TESTING OF GAS PIPING

A. Test gas piping before placing system in service or concealing system, to ensure that gas piping is tight. Testing, inspection and purging of piping systems shall comply with Section 406 of the Fuel Gas Code of the City of New York.

3.02 INSTALLATION

A. Install equipment and components where shown or as directed, in accordance with Con Edison instructions, and with recognized industry practices, to ensure that installation complies with requirements and serves intended purposes.

B. Coordinate with other work as necessary to coordinate installation of equipment with other components of systems.

C. Arrange and schedule all testing work to be witnessed by a NYCHA representative.

D. Protection Against Corrosion: Metallic pipe exposed to corrosive action, such as soil condition or moisture, shall be protected in an approved manner. Zinc coatings (galvanizing) shall not be deemed adequate protection for gas piping underground. Ferrous metal exposed in exterior locations shall be protection from corrosion. Zinc coatings (galvanizing) shall be deemed adequate protection for gas piping exposed in exterior locations. Where dissimilar metals are joined underground, an insulating coupling or fitting shall be used. Piping shall not be laid in contact with cinders.

3.03 GAS PIPING SCHEDULE

A. Belowground (buried), distribution piping shall be one of the following:
   a. Steel pipe with malleable-iron fittings and threaded joints.
   b. Steel pipe with wrought-steel fittings and welded joints.

B. Aboveground (inside building), distribution piping shall be one of the following:
   a. Steel pipe with malleable-iron fittings and threaded joints.

C. Containment Conduit: Steel pipe with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping.

D. Containment Conduit Vent Piping: Steel pipe with malleable-iron fittings and threaded or wrought-steel fittings with welded joints. Coat underground pipe and fittings with protective coating for steel piping.

3.04 PIPING JOINT CONSTRUCTION

A. Ream ends of pipes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Threaded Joints:
   1. Thread pipe with tapered pipe threads complying with ASME B1.20.1.
   2. Cut threads full and clean using sharp dies.
   3. Ream threaded pipe ends to remove burrs and restore full inside diameter of pipe.
   4. Apply appropriate tape or thread compound to external pipe threads unless dryseal threading is specified.
   5. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

D. Welded Joints:
   1. Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators.
   2. Bevel plain ends of steel pipe.
   3. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.

E. Flanged Joints: Install gasket material, size, type, and thickness appropriate for natural-gas service. Install gasket concentrically positioned.

3.05 GAS SHUTOFF VALVE SCHEDULE

A. Valves for pipe sizes NPS 2-1/2 (DN 65) and larger shall be one of the following:
   a. Two-piece, full-port, bronze ball valves with bronze trim.
   b. Bronze plug valve.

c. Cast-iron, nonlubricated plug valve.

3.06 VALVE INSTALLATION

A. Install manual gas shutoff valve for each gas appliance ahead of corrugated stainless-steel tubing, aluminum, or copper connector.

B. Install underground valves with valve boxes.

C. CONNECTIONS

D. Connect to utility's gas main according to utility's procedures and requirements.

E. Install piping adjacent to appliances to allow service and maintenance of appliances.

F. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches of each gas-fired appliance and equipment. Install union between valve and appliances or equipment.

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