# PART 1 - GENERAL

* 1. **SUMMARY**
     1. This Section includes fuel gas piping, specialties, and accessories within the building and site distribution.

# PROJECT CONDITIONS

* + 1. Site Gas System Pressure: 5.0 psig
    2. Building Gas System Pressure: Primary pressure is 5 psig reduced to secondary pressure of 8 inch of Water Column.

# SUBMITTALS

* + 1. Product Data:
       1. Polyethylene piping systems. Include associated components.
       2. Specialty valves. Include pressure rating, capacity, settings of selected models.
       3. Service meters. Provided by Gas Company.
       4. Pressure regulators. Include pressure rating, capacity, and settings of selected models.
    2. Shop Drawings: For fuel gas piping. Include plans and attachments to other Work.
    3. Field quality-control test reports.
    4. Operation and maintenance data.

# QUALITY ASSURANCE

* + 1. ANSI Standard: Comply with ANSI Z223.1, “National Fuel Gas Code.”

# COORDINATION

* + 1. Existing Utilities: Do not interrupt utilities servicing facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
       1. Notify Architect not less than two days in advance of proposed utility interruptions.
       2. Do not proceed with utility interruptions without Architect’s written permission.

# PART 2 - PRODUCTS

* 1. **MANUFACTURERS**
     1. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
        1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

# PIPING MATERIALS

* + 1. Polyethylene pipe and fittings: Comply with AGA Plastic pipe manual for gas service and include the following:
       1. Pipe: ASTM D2513
       2. Fittings: ASTM D2683 socket type PE fittings, ASTM D3261 Butt heat fusion PE fittings.
    2. Steel Pipe: ASTM A 53; Schedule 40; black.
       1. Black Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern, with threaded ends according to ASME B1.20.1.
       2. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends according to ASME B1.20.1.
       3. Cast-iron Flanges and Flanged Fittings: ASME B16.1, Class 125.
       4. Steel Welding Fittings: ASME B16.9, wrought steel or ASME B16.11, forged steel.
       5. Steel Threaded Fittings: ASME B16.11, forged steel with threaded ends according to ASME B1.20.1.
       6. Joint Compound and Tape: Suitable for natural gas.
       7. Steel Flanges and Flanged Fittings: ASME B16.5.
       8. Gasket Material: Thickness, material, and type suitable for natural gas.
    3. Transition Fittings: Type, material, and end connections to match piping being joined.
    4. Common Joining Materials: Refer to Division 23 Section 23 05 13 “Basic Mechanical Materials and Methods” for joining materials not in this Section.

# SPECIALTIES

* + 1. Flexible Connectors: ANSI Z21.41, copper alloy.
    2. Quick-Disconnect Devices: ANSI Z21.41, convenience outlets and matching plug connector.

# VALVES

* + 1. Valves, NPS 2 and Smaller: Threaded ends according to ASME Bi.20.1 for pipe threads.
    2. Valves, NPS 2-1/2 and Larger: Flanged ends according to ASME B16.5 for steel flanges and according to ASME B16.24 for copper and copper-alloy flanges.
    3. Appliance Connector Valves: ANSI Z21.15 and IAS listed.
    4. Gas Stops: Bronze body with AFA 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; 2- psig minimum pressure rating.
    5. Gas Valves, NPS 2 and Smaller: ASME B16.33 and IAS-listed bronze body and 125- psig pressure rating.
    6. Plug Valves, NPS 2-1/2 and Larger: ASME B16.38 and MSS SP-78 cast-iron, lubricated plug valves, with 125-psig pressure rating.
    7. Earthquake Valves: Listed in IAS Directory as complying with ANSI Z21.70 and UL listed. Include mechanical operator.
       1. Manufacturers:

1. UL-Listed Earthquake Valves:
   * + - 1. Energy Pacific.
         2. Safe T Quake Corp.
         3. Seismic Safety Products, Inc.
         4. Seismic Valve Co., Inc.

# GAS REGULATORS

* + 1. Pressure regulators: Single stage and suitable for fuel gas service. Include steel jacket and corrosion-resistant components, elevation compensator, and atmospheric vent.
       1. Manufacturers:

1. Service Pressure Regulators:
   * + - 1. American Meter Co.
         2. Equimeter, Inc.
         3. Fisher Controls International, Inc.
       1. Service Pressure Regulators: ANSI Z21.80. Include 100-psig minimum inlet pressure rating.
     1. Pressure Regulator Vents: Factory- or field-installed, corrosion-resistant screen in opening if not connected to vent piping.

# PART 3 - EXECUTION

* 1. **PIPING APPLICATIONS**
     1. Use flanges, unions, transition, and special fittings in applications below, unless otherwise indicated.
        1. NPS ¾ and NPS 1: Steel pipe, malleable-iron threaded fittings, and threaded joints.
        2. NPS 1-1/4 to NPS 4: Steel pipe, malleable-iron threaded fittings, and threaded joints.
        3. NPS 1-1/4 to NPS 4: Steel pipe, steel welding fittings, and welded joints.
        4. Larger Than NPS 4: Steel pipe, steel welding fittings, and welded joints.

# VALVE APPLICATIONS

* + 1. Appliance Shutoff Valves for Pressure 6”-14” w.c.: Appliance connector valve or gas stop.
    2. Piping Line Valves, NPS 2 and Smaller: Gas valve.
    3. Piping Line Valves, NPS 2-1/2 and Larger: Plug valve or general-duty valve.

# INSTALLATION

* + 1. Refer to Division 23 Section 23 05 13 “Basic Mechanical Materials and Methods” for basic piping installation requirements and piping joint construction.
    2. Install regulator assemblies aboveground. Include gas valve or plug valve for each assembly.
       1. Install gas valve or plug valve and strainer upstream from each service pressure regulator.
       2. Install service pressure regulators with vent outlet turned down and with corrosion-resistant-metal insect screen.
    3. Service Entrance Piping: Extend fuel gas piping and connect to fuel gas distribution for service entrance to building.
       1. Exterior service meter will be provided by gas utility.
       2. Install strainer upstream from each earthquake valve.
    4. Concealed Locations:
       1. Above Ceiling Locations: Gas piping may be installed in accessible spaces, subject to approval of authorities having jurisdiction, whether or not such spaces are used as plenums. Do not locate valves above ceilings.
       2. In Partitions: Protect tubing from physical damage when installed inside partitions or hollow walls.
       3. In Walls: Gas piping with welded joints and protective wrapping specified in “Protective Coating” Article in Part 2 may be installed in masonry walls, subject to approval of authorities having jurisdiction.
       4. Prohibited Locations: Do not install gas piping in or through circulating air ducts, chimneys or gas vents (flues), ventilating ducts, or elevator shafts.
    5. Drips and Sediment Traps: Install drips at points where condensate may collect. Include outlets of service meters. Locate where readily accessible for cleaning and emptying. Do not install where condensate would be subject to freezing.
       1. Construct drips and sediment traps using tee fitting with bottom outlet plugged or capped. Use minimum-length nipple of 3 pipe diameters, but not less than 3 inches long, and same size as connected pipe. Install with space between bottom of drip and floor for removal of plug or cap.
    6. Conceal pipe installations in walls, pip spaces, utility spaces, above ceilings and in floor channels, unless indicated to be exposed to view.
    7. Install fuel gas piping at uniform grade of 0.1 percent slope upward toward risers.
    8. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.
    9. Connect branch piping from top or side of horizontal piping.
    10. Install unions in pipes NPS 2 and smaller, adjacent to each valve, at final connection to each piece of equipment, and elsewhere as indicated. Unions are not required on flanged devices.
    11. Install strainer on inlet of each automatic and electrically operated valve.
    12. Install vent piping for gas pressure regulators and gas trains, extend outside building, and vent to atmosphere. Terminate vents with turned-down, reducing- elbow fittings with corrosion-resistant insect screens in large end.

# HANGERS AND SUPPORTS

* + 1. Refer to Division 22 Section 22 10 00 “Plumbing” for pipe hanger and support devices.

# CONNECTIONS

* + 1. Install piping adjacent to appliances to allow service and maintenance. Connect piping to appliances using gas with shutoff valves and unions. Install valve upstream from and within 72 inches of each appliance. Install union downstream from valve.

# FIELD QUALITY CONTROL

* + 1. Inspect, test, and purge piping according to ANSI A223.1, Part 4 “Inspection, Testing, and Purging,” and requirements of authorities having jurisdiction. Repair leaks and defects with new materials and retest system until satisfactory results are obtained.

# END OF SECTION