

## Residential Fuel Gas Piping

This Tip Sheet reflects code requirements of the 2021 International Residential Code (IRC) and the 2021 International Fuel Gas Code (IFGC) with Washington State Amendments.

(References to the IRC are indicated by: R = Residential; M = Mechanical; G = Gas)

Please verify the following before calling for a fuel gas pipe inspection.

### Permits and Plans

- Job address shall be posted in a visible location. (R319.1)
- Permit and approved plans are on site and accessible to the inspector. (R105.7, R106.1.1, R106.3.1)
- Permit information is correct (e.g., address, permit number, description of work, etc.). (R106.1.1)
- Manufacturer's installation information is available if needed. (R106.1.2)
- Confirm that all new gas appliances are included on the permit. (R106.1)

### General

- Permit information is correct (address, permit number, scope of work, etc.). (R106.1)
- Main shutoff valve is accessible and on the supply side of the meter. (G2420.2)
- Pipe is supported per Table G2424.1. (G2418.1, G2418.2)
- Gas piping is sized per methods in Section G2413.3.
- Pipe must be new or previously used for gas piping only. (G2414.2)
- Bends in plastic pipe are per manufacturer's instructions. (G2416.3)
- Radius of bends in PE pipe are not less than 25 pipe diameters. (G2416.3)
- Gas piping shall not run through air ducts, chimneys, vents, plenums, laundry chutes, dumbwaiters, elevator shafts or through adjoining townhouse party walls. (G2415.3)
- Under floor or outdoor piping shall be a minimum 3-1/2 inches above ground or roof. (G2415.9)
- CSST (Corrugated Stainless-Steel Tubing) piping requires electrical bonding per IFGC 310.2 and shielding devices per manufacturer which extend 4 inches beyond the CSST. (G2415.7)
- Piping other than steel pipe requires nail plate protection if less than 1-1/2 inches from stud face. (G2415.7)
- Ferrous metal piping exposed in external locations shall be protected from corrosion per G2415.11.

## Materials and Installation

- Steel (galvanized) or black pipe is okay but shall not be less than Schedule 10. (G2414.3.2)
- Ends of pipe are deburred. (G2414.6),
- Cast-iron pipe not used for gas. (G2414.3.1)
- Corrugated stainless steel tubing (CSST) is okay when installed according to the manufacturer's instructions. (G2415.2)
- Except for black steel pipe and CSST, exposed piping shall be identified by a yellow label marked "GAS" in black letters. (G2412.5)
- LP gas shall have piping/tubing dielectric fittings separating above ground and underground connections. (G2415.10)

## Joints in Pipe or Tubing

- Ferrous pipe is threaded or welded. (G2414.9.1)
- Connections for copper tubing can be done by brazing (alloys with less than 0.05% phosphorous) or by approved gas tubing fittings complying with ANSI LC-4. (G2414.9.2)
- Flared joints are okay in nonferrous pipe & tubing only. (G2414.9.4)
- PE or PB plastic piping are heat fused or mechanically connected per the manufacturer's instructions. Heat fused fittings are marked "ASTM D2513". (G2414.10)
- No unions or bushings at or within concealed locations. (G2415.5)
- Right/left couplings are okay only in accessible locations. (G2415.5)

## Inspections and Tests

- Test pressure shall be a minimum of 1-1/2 times the maximum proposed working pressure, and not less than 3 psi. (G2417.4, G2417.4.1)
- LP Gas tested at least 1-1/2 times operating pressure but not less than 3 psi for 10 minutes minimum. (G2417.4.2)
- Test with air, nitrogen, carbon dioxide or an inert gas. (Oxygen is not allowed.) (G2417.2)
- Turn off or cap all outlets before first turning on new gas piping. (G2417.6.2)
- Detect leaks with an approved type detector or soap suds. (G2417.5.1)
- Defective piping shall be replaced and not repaired. (G2414.6)
- Testing is required only for new pipe added to an existing system. (G2417.1.3)
- Equipment that is not to be included in the test is to be disconnected or isolated by blanks, blind flanges or caps. (G2417.3.2)

## Underground

- Ferrous pipe must be protected from corrosion. (G2415.11)
- Pipe protective wrapping must be factory (machine) applied. (G2415.11.2)  
Exception: Field coating of joints ok per manufacturer's instructions. (G2415.11.2.2)
- Above grade metallic gas piping requires bonding. (G2411.1)
- Gas piping shall not be used as a grounding electrode. Ferrous underground pipe connected to ferrous above ground requires a dielectric fitting. (G2410.1, G2415.10)
- Minimum burial depth is 12 inches. (G2415.12)
- Individual gas lines to outdoor lights, BBQs, etc. may have 8 inches of cover if not susceptible to damage and approved by authority having jurisdiction (AHJ). (G2415.12.1)
- 18 AWG yellow insulated copper tracer wire shall be installed above underground nonmetallic piping. (G2415.17.3)
- Outdoor and underground plastic gas piping requires a ferrous/anodeless riser before going vertical and terminating above ground. (G2415.17.1, Exceptions 1,2)

## Gas Piping Under Building or Slab

- Gas piping is not to be buried under or in a slab within the building. Exception: It is allowed below grade under a building if sleeved in schedule 40 steel, wrought iron, or plastic pipe conduit. (G2415.14)
- The interior end of the conduit enclosing the gas pipe is sealed. (G2415.14.1)
- The exterior end of the conduit is a minimum 4 inches outside of the building, vented above grade and installed in order to prevent the entrance of water and insects. (G2415.14.1)
- Conduit is protected from corrosion if not plastic. (G2415.14)
- Gas piping shall not penetrate foundation walls at any point below grade. (G2415.6)

## Shutoff Valves

- All shutoff valves shall be accessible. (G2420.1.3)
- All meters shall have a shutoff on the supply side. (G2420.2)
- Accessible shutoff required within 6 feet of an appliance and in the same room. (G2420.5)
- Shutoff valves installed inside the firebox of a fireplace shall be installed per manufacturer's instructions. (G2420.5.1)

## Appliance Fuel Connectors

- Connector shall not be concealed within or pass through walls, floors, partitions, ceilings or appliance housings. (G2422.1.2.3)

- Maximum length per manufacturer's instructions and may not exceed 6 feet. (G2422.1.2.1)
- Connectors are sized for the total demand of the appliance. (G2422.1.2.2)
- Connectors for external use are listed, labeled and installed in accordance with the manufacturer's installation instructions. (2422.1)
- Pipe dope not allowed at flex connector flared connections. (Per ANSI/manufacturer's regulations).