

# BUILDING DEPARTMENT

Douglas County Building Department Rm  
106 Justice Building Douglas County  
Courthouse Roseburg, OR 97470

(503) 440-4284 (800) 224-1619 ext 4284

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## GAS PIPING INSTALLATION

2608.1 Underground piping. Underground gas piping shall be installed to protect it from settlement, shifting, contract or damage resulting from proximity to structures.

2608.1.1 Minimum depth. Underground piping systems shall be installed at a minimum of 18 inches (457 mm) below grade. If minimum depths cannot be maintained, the piping system shall be installed in conduit or shielded in an approved manner.

2608.1.2 Protection against corrosion. Ferrous metals in exposed exterior locations shall be protected from corrosion in a manner approved by the building official, after consulting with the gas supplier.

Ferrous pipes installed underground shall not be placed in contact with other metallic objects such as pipes or shires.

Zinc coatings (galvanizing) shall not be deemed adequate protection for piping below grade. Ferrous gas piping installed underground in exterior locations shall be protected from corrosion by either:

1. Coated and cathodically protected pipe. All gas pipe protective coatings shall be approved types, machine applied and conform to recognized standards. Field wrapping shall provide equivalent protection and is restricted to those shore sections and fittings necessarily stripped for threading or welding. Underground coated and wrapped gas piping shall be cathodically protected with galvanic anodes or rectifiers and electrically isolated from the rest of the system by insulating unions 6 inches (153 mm) above grade at each end.

2. Unwrapped (bare) pipe and special covering. Unwrapped ferrous gas piping being installed underground in exterior locations shall be protected from corrosion by being installed within a minimum 6-inch (153 mm) protective bed of sand around the gas piping. The pipe shall be centrally located within the sand back fill and all such horizontal piping shall have a minimum of 12 inches (305 mm) of earth cover or other equivalent protection. Underground piping shall be electrically isolated from the rest of the system by isolating unions placed a minimum of 6 inches (153 mm) above grade at each end.

2608.1.3 Connection of plastic and metallic piping. Connections between metallic and plastic piping shall be made only underground, outside of the building, and with approved transition fittings. Risers shall be metallic and shall be wrapped to a point a minimum of 6 inches (153 mm) above grade.

2608.1.4 Piping through foundation wall. Penetrations through foundation or basement walls of a dwelling shall be encased in a sleeve. The annular space between the gas piping and the sleeve shall be sealed at the foundation or basement wall to prevent entry of gas or water.

2608.1.5 Piping above grade and piping beneath buildings. Gas piping shall not be installed in or on the ground under any building structure or slab adjoining a building or structure and' exposed gas piping shall be installed at least 6 inches (153 mm) above grade or structure.

Fuel-gas piping may be located beneath buildings or beneath exterior slabs which adjoin a building when encased in conduit which is capable of withstanding superimposed loads. The terminal point where the conduit enters the building shall be sealed to prevent the possible entrance of any gas leakage. The conduit shall extend at least 4 inches (102 mm) outside the building or adjoining slab and be vented above grade to the outside. Gas piping installed a minimum of 6 inches (153 mm) above the earth in a ventilated crawl space shall not require conduit encasement.

2608.1.6 Tracer for nonmetallic buried piping. A minimum No. 18 AWG yellow insulated copper tracer wire conductor shall be installed adjacent to underground nonmetallic gas piping and shall be accessible or terminate above grade at each end.

2608.1.7 Unions. Where unions are needed, right and left nipples and couplings shall be used. Ground joint unions may be used at exposed fixtures, appliance or equipment connections, and in exposed exterior locations immediately on the discharge side of a building shutoff valve. Heavy-duty flanged-typed unions may be used in special cases, if approved by the building official. Running threads and bushings shall not be installed in concealed locations. Concealed tubing joints shall be brazed in accordance with Section 2607.3.

2608.2' Piping in buildings. Piping within buildings shall comply with Sections 2608.2.1 through 2608.2.6.

2608.2.1 Drilling and notching. When necessary, wood-framed structural members shall be drilled or notched as provided in Sections 502.6, 602.5, 602.5.1, 802.6 and 802.7.

2608.2.2 Sediment trap. If a sediment trap is not incorporated as part of the gas utilization equipment, a sediment trap shall be installed as close to the inlet of the equipment as practical, downstream of the shutoff valve. The sediment trap shall be either a tee fitting with a capped nipple in the bottom outlet or other device recognized as an effective sediment trap. Ranges, clothes dryers, outdoor grills, decorative appliances and log lighters need not be so equipped.

2608.2.3 Prohibited locations. Gas piping shall not be run in or through supply and return air ducts, clothes chutes, chimneys, vents, dumbwaiter or elevator shafts. This provision shall not apply to ducts used to provide combustion air in accordance with Chapter 20. Valves and unions shall not be located in any air plenum.

2608.2.4 Piping in concealed locations. Portions of gas piping systems installed in concealed locations shall not have unions or running threads. Concealed tubing joints shall be brazed in accordance with Section 2607.3.

2608.2.5 Piping in concrete slabs. Gas piping embedded in concrete slabs shall be surrounded with a minimum of 1/2 inches (38 mm) of concrete and shall not be in physical contact with reinforcing or other metallic components. Piping shall not be embedded in concrete slabs containing quickset additives or cinder aggregate. All piping, fittings and risers shall be protected against corrosion in accordance with Section 2608.1.2.

2608.2.6 Hangers and supports. Hangers and supports shall be of sufficient strength to support the piping, and shall be fabricated of materials compatible with the piping material. Piping shall be supported at intervals not exceeding the spacings specified in Table 2608.2.6.

TABLE 2608.2.6 GAS PIPING SUPPORTS

MATERIAL	MAXIMUM SPACING (feet) .
Rigid pipe, 3/4-inch diameter and under	10
Rigid pipe, 1-inch diameter and over	12
Tubing, 1 1/2-inch diameter and under	6

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

2608.3 Aboveground outside piping. Piping installed aboveground outside of the building shall be securely supported and protected from physical damage. Piping which penetrates outside walls shall be protected against corrosion by coating or wrapping with an inert material. Where piping is encased in a protective sleeve, the annular space between the pipe and sleeve and shall be sealed. —

2608.4 Gas tubing. Gas tubing shall comply with Sections 2608.41 and 2608.4.2.

2608.4.1 Metallic tubing bends. Metallic tubing shall conform with the following:

1. Bends shall be made with bending equipment and procedures intended for that purpose. .
2. All bends shall be smooth and free from buckling, cracks, or other mechanical damage.
3. The inside radius of a bend shall not be less than six times the outside diameter of the tubing.
4. Corrugated stainless steel tubing bends shall be in compliance with the manufacturer's installation instructions.

2608.4.2 Plastic pipe bends. Plastic pipe bends shall conform with the following:

1. Plastic pipe shall not be damaged and the internal diameter of the pipe shall not be reduced.
2. The inside radius of a bend shall not be less than 25 times the inside diameter of the pipe.

3. When the piping manufacturer specifies the use of special bending equipment or procedures, such equipment or procedures shall be used.

2608.5 Shielding concealed tubing. Concealed tubing that penetrates a stud, joist or framing member shall be protected from puncture by shielding the area of penetration and within 5 inches (127 mm) of each side of the penetration, as appropriate. Concealed tubing at support points and points of penetration 2 to 3 inches (51 to 76 mm) from any edge of a stud, joist or framing member shall be shielded throughout the area of support. Shielding devices shall be constructed from 16 gage steel plate. Unsupported sections within a wall or ceiling cavity need not be shielded.

2608.6 Purging. The fuel-gas piping system shall be purged prior to placing in service. Piping shall not be purged into the combustion chamber of an appliance.

2608.7 Cap all outlets. Each outlet, including those with a valve or cock outlet, shall be closed gas-tight with a threaded plug or cap immediately after installation and shall be left closed until the gas utilization equipment is connected thereto. Outlets shall be closed gas-tight when equipment is disconnected. This requirement shall not apply to listed and labeled quick-disconnect devices or gas convenience outlets as provided in Section 2606.5.

2608.8 Marking and labeling. Where other than black steel pipe is used, gas piping shall be identified by yellow labels marked "GAS" in black letters placed at 5 foot (1524 mm) intervals where exposed. This marking shall not be required on pipe in the same room as the equipment. All tubing carrying medium pressure gas shall be marked with a label at the beginning and end of each tubing section.

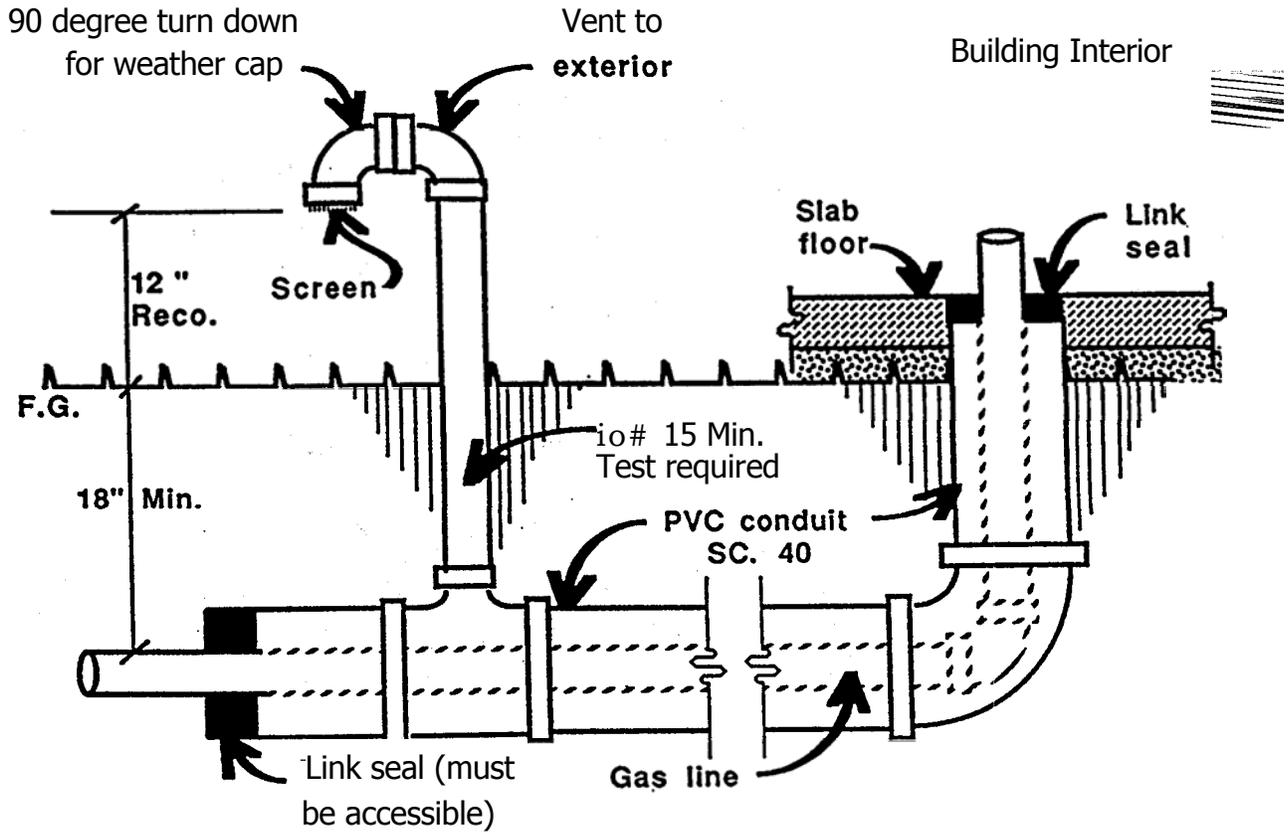
2608.9 Electrical bonding and grounding. Bonding and grounding shall be in accordance with the Chapters 39-46 of this code.

2608.9.1 Electrical circuits prohibited. Fuel-gas piping or components shall not be used as electrical circuits except that lowvoltage (50 volts or less) control circuits, ignition circuits, and electronic flame detection circuits may make use of piping or components for a part of an electrical circuit.

2603.3.1 Rough inspection. This inspection shall be made after gas piping authorized by the permit has been installed and before such piping has been covered or concealed or a fixture or appliance has been attached thereto. This inspection shall include a determination that the gas piping size, material and installation meet the requirements of this chapter. It shall also include an air, CO<sub>2</sub> or nitrogen pressure test, at which time the gas piping shall stand a pressure of not less than 10 pounds per square inch gage (68.9 kPa gage) or, at the discretion of the building official, the piping and valves may be tested at a pressure of at least 6 inches mercury (20.3 kPa), measured with a manometer or slope gage. Test pressures shall be held for a length of time satisfactory to the building official, but not less than 15 minutes, with no perceptible drop in pressure. For welding piping, and for piping carrying gas at pressures exceeding 14 inches of water column (3484 Pa) pressure, the test pressure shall be at least 60 pounds per square inch (0.0422 kg/mm<sup>2</sup>) but not less than 30 minutes. These tests shall be made in the presence of the building official. Necessary apparatus for conducting tests shall be furnished by the permit holder.

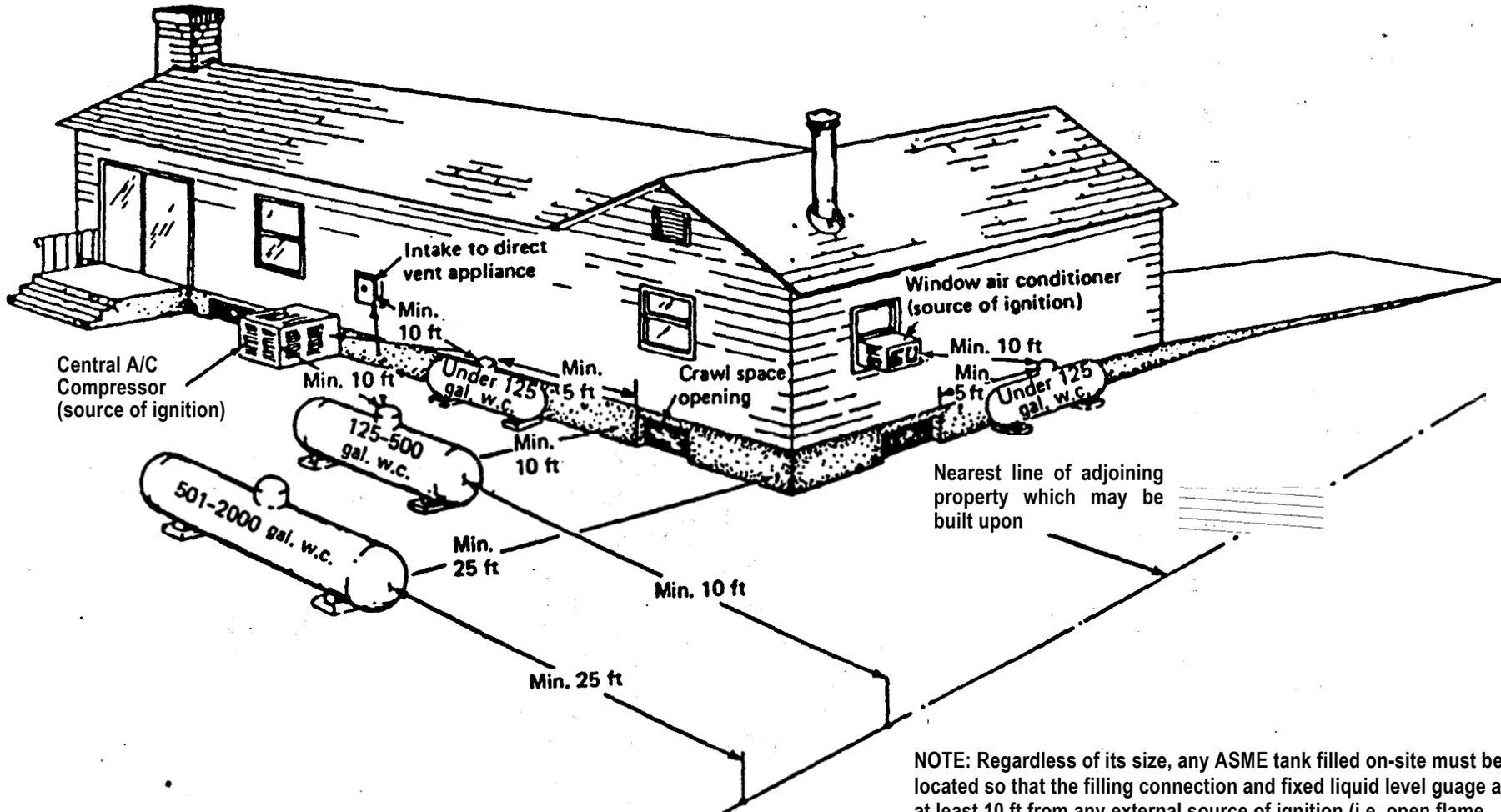
## SECTION 2608 GAS PIPING INSTALLATION

### GAS LINES UNDER SLABS



2608.1.5 Piping beneath buildings.

Fuel gas piping may be located beneath buildings or beneath exterior slabs which adjoin a building when encased in conduit which is capable of withstanding superimposed loads. The terminal point where the conduit enters the building shall be sealed to prevent the entrance of any gas leakage. The conduit shall extend at least 4 inches outside the building or adjoining slab and be vented above grade to the outside. Gas piping installed a minimum of 6 inches above the earth in a ventilated crawl space shall not require conduit encasement.



(For SI Units: 1 ft = 0.3048 m)

NOTE: Regardless of its size, any ASME tank filled on-site must be located so that the filling connection and fixed liquid level guage are at least 10 ft from any external source of ignition (i.e. open flame, window A/C, compressor, etc). Intake to direct vented gas appliance or intake to a mechanical ventilation system.

