



RESIDENTIAL NATURAL GAS PIPING

1. PERMIT INFORMATION:

- The replacement or repair of existing or installation of new gas piping requires a Permit.
- A Permit may be issued only to a State of California Licensed Contractor with the proper license classification or the Homeowner.
- If the work is performed by the Homeowner personally or by his/her workers, and an inspection indicates the work cannot be completed satisfactorily, then a licensed contractor must perform the work.
- If the Homeowner hires workers, State Law requires the Homeowner to obtain Worker's Compensation Insurance. Proof of this insurance is required prior to inspection.

2. INSTALLATION REQUIREMENTS:

- Building Codes:** All work must comply with the 2016 California Residential Code (CRC) or 2016 California Building Code, 2016 California Electrical Code (CEC), 2016 California Mechanical Code (CMC), 2016 California Plumbing Code (CPC), 2016 California Energy Code, 2016 California Green Building Code and 2016 Milpitas Municipal Code (MMC).
- Pipe Size:
 - If new piping is to be installed, the piping must start from the gas meter. Otherwise drawings and calculations showing both the new and existing piping system must be submitted to the Building & Safety Department. Piping must be sized in accordance with CPC Sections 1208.4 and 1216.0 based upon the length of the piping and the BTU's of all appliances to be connected. 1,000 Btu per cubic foot shall be used for calculations.
- Materials:
 - Pipe, fittings, valves, or other materials shall not be used again unless they are free of foreign materials and have been ascertained to be adequate for the service intended (CPC 1208.5.1).
 - Pipe materials shall be: (CPC 1208.5.2)
 1. Steel or wrought-iron pipe shall not be less than standard weight (Schedule 40) and shall comply with ASME B36.10, or ASTM A53, or ASTM A106.
 2. Aluminum alloy pipe shall comply with ASTM B241 (except that the use of alloy 5456 is prohibited) and shall be marked at each end of each length indicating compliance. Aluminum alloy pipe shall be coated to protect against external corrosion where it is in contact with masonry, plaster, or insulation or is subject to repeated wettings by such liquids as water, detergents, or sewage. Aluminum alloy pipe shall not be used in exterior locations or underground.
 3. Steel tubing shall comply with ASTM A254.
 4. Aluminum alloy tubing shall comply with ASTM B210, or ASTM B241. Aluminum alloy tubing shall be coated to protect against external corrosion where it is in contact with masonry, plaster, or insulation or is subject to repeated wettings by liquids such as water, detergent, or sewage. Aluminum alloy tubing shall not be used in exterior locations or underground.

5. Corrugated stainless steel tubing shall be tested and listed in compliance with the construction, installation, and performance requirements of CSA LC-1.
 6. Plastic pipe, tubing, and fittings shall be used outside underground only and shall conform with ASTM D2513. Pipe to be used shall be marked “gas” and “ASTM D2513”.
 - Factory-assembled anodeless risers shall be recommended by the manufacturer for the gas used and shall be leak-tested by the manufacturer.
 - Service head adapters and field-assembled anodeless risers incorporating service head adapters shall be recommended by the manufacturer for the gas used and shall be design-certified to meet the requirements of Category I of ASTM D2513, and [NFPA 54:5.6.4.3(2)]. The manufacturer shall provide the user with qualified installation instructions.
 7. Cast-iron, copper or brass pipe or tubing shall not be used.
- Changes in direction of gas pipe shall be made by the use of fittings, factory bends, or field bends. (CPC 1210.7).
 - Metallic piping and fittings shall be coated with a corrosion-resistant material where in contact with material or atmosphere exerting a corrosive action (CPC 1208.5.6).
 - Metallic pipe and fitting threads shall be taper pipe threads and shall comply with ASME B1.20.1 [CPC 1208.5.7].
 - Field threading of metallic pipe shall be in accordance with CPC Table 1208.5.7.2, which requires for ½” and ¾” pipe a minimum ¾” of thread and approx. 10 threads cut, for 1” pipe a minimum 7/8” of thread and approx. 10 threads cut, and for 1 ¼” thru 2” pipe a minimum 1” of thread and approx. 11 threads cut. (CPC 1208.5.7.2).
 - Metallic pipe joints and fittings used shall be suitable for the pressure-temperature conditions and shall be selected giving consideration to joint tightness and mechanical strength under the service conditions (CPC 1208.5.8).
 1. Pipe joints shall be threaded, flanged, brazed, welded, or press-connect fittings made in accordance with CSA LC-4.
 2. Tubing joints shall be either made with approved gas tubing fittings, be brazed(CPC 1208.5.8.2), or made by press-connect fittings complying with CSA LC-4.
 3. Flared joints shall be used only in systems constructed from nonferrous pipe and tubing where experience or tests have demonstrated that the joint is suitable for the conditions and where provisions are made in the design to prevent separation of the joints.
 4. Metallic fittings (including valves, strainers and filters):
 - Threaded fittings in sizes larger than 4 inches shall not be used.
 - Fittings used with steel or wrought-iron pipe shall be steel, bronze or malleable iron.
 - Cast-iron fittings shall comply with the following:
 - Flanges shall be permitted
 - Bushings shall not be used
 - Fittings shall not be used in systems containing flammable gas-air mixtures.
 - Fittings in sizes 4 inches and larger shall not be used indoors unless approved by the Authority Having Jurisdiction.
 - Fittings in sizes 6 inches and larger shall not be used unless approved by the Authority Having Jurisdiction.

- Fittings used with aluminum alloy pipe shall be of aluminum alloy.
 - Aluminum alloy fittings. Threads shall not form the joint seal.
 - Zinc-aluminum alloy fittings shall not be used in systems containing flammable gas-air mixtures.
 - Fittings used with copper or copper alloy pipe shall be copper or copper alloy.
 - Special fittings such as couplings, proprietary-type joints, saddle tees, gland-type compression fittings, and flared, flareless, or compression-type tubing fittings shall be:
 - Used within the fitting manufacturer's pressure-temperature recommendations.
 - Used within the service conditions anticipated with respect to vibration, fatigue, thermal expansion, or contraction.
 - Installed or braced to prevent separation of the joint by gas pressure or external physical damage.
 - Acceptable to the Building and Safety Department.
- Plastic pipe, tubing, and fittings shall be joined in accordance with the manufacturers' instructions (CPC 1208.5.9).
 - Section 1208.5.9.1 through Section 1208.5.9.4 shall be observed where making such joints. [NFPA 54:5.6.9]
 1. The joint shall be designed and installed so that the longitudinal pullout resistance of the joint shall be equal to tensile strength of the plastic piping material.
 2. Heat fusion joints shall be made with the joining method recommended by the pipe manufacturer. Heat-fusion fittings shall be marked ASTM D2513.
 3. Where compression type mechanical joints are used:
 - The gasket material in the fitting shall be compatible with the plastic piping and with the gas.
 - An internal tubular rigid stiffener shall be used in conjunction with the fitting. The stiffener shall be flush with the end of the pipe or tubing and shall extend at least to the outside end of the pipe or tubing, and shall extend not less than the outside end of the compression fitting when installed. The stiffener shall be free of rough or sharp edges and shall not be forced fit in the plastic.
 - Split tubular stiffeners shall not be used.
 - Shut-off valves shall be approved and shall be selected giving consideration to pressure drop, service involved, emergency use, and reliability of operation. Shutoff valves of size 1 inch (NPT) and smaller shall be listed. (CPC 1208.10)
- Workmanship:
- Gas pipe or tubing and fittings shall be clear and free from cutting burrs and defects in structure or threading, and shall be thoroughly brushed and chip and scale blown. Defects in pipe, tubing, and fittings shall be replaced, not repaired. (CPC 1208.5.5)
 - Pipe with threads that are stripped, chipped, corroded, or otherwise damaged shall not be used. Where a weld opens during the operation of cutting or threading, that portion of the pipe shall not be used. (CPC 1208.5.7.1)
 - It shall be unlawful to remove or disconnect any gas piping or gas appliance without capping or plugging with a screw joint or listed quick-disconnect device fitting the outlet from which said pipe or appliance was removed. Outlets to which gas appliances are not connected shall be left capped gastight on any piping system that has been installed, altered, or repaired. (CPC 1206.3) Exception: Where an approved listed quick-disconnect device is used.

Exterior/underground installations:

- Underground gas piping shall be installed with sufficient clearance from structures to avoid contact therewith, to allow maintenance, and to protect against damage. Piping shall be installed with a minimum of 12 inches of cover. Where external damage to the pipe is likely (installed underneath concrete walks or drives), the minimum cover shall be 18 inches. Trenches shall be graded so that the pipe has a firm, substantially continuous bearing on the bottom of the trench. (CPC 1210.1.1)
- Gas piping in contact with earth or other material that could corrode the piping shall be protected against corrosion in an approved manner. When dissimilar metals are joined underground, an insulating coupling or fitting shall be used. Piping shall not be laid in contact with cinders. Uncoated threaded or socket-welded joints shall not be used in piping in contact with soil. (CPC 1210.1.3)
- Underground piping installed through the outer foundation wall of a building shall be encased in a protective sleeve. The space between the gas piping and the building or sleeve shall be sealed to prevent entry of gas or water. (CPC 1210.1.5)
- Where the installation of gas piping underground beneath buildings is unavoidable, the piping shall be encased in an approved conduit designed to withstand the superimposed loads, and install in accordance with Section 1210.1.6.1 or 1210.1.6.2. The conduit shall extend into a normally usable and accessible portion of the building and, at the point where the conduit terminates in the building, the space between the conduit and the gas piping shall be sealed to prevent the possible entrance of any gas leakage. The conduit shall extend at least 4 inches outside the building, be vented above grade to the outside, and be installed so as to prevent the entrance of water and insects. (CPC 1210.1.6)
- Plastic pipe shall be installed outside, underground only, except: (CPC 1210.1.7)
 1. Plastic pipe shall be permitted to terminate aboveground where an anodeless riser is used.
 2. Plastic pipe shall be permitted to terminate with a wall head adapter above ground in buildings, including basements where the plastic pipe is inserted in a piping material permitted for use in buildings.
- Connections made outside and underground between metallic and plastic piping shall be made in accordance with ASTM D2513, F1973 or F2509 (CPC 1210.1.7.1)
- An electrically continuous corrosion-resistant tracer wire (minimum AWG 14) or tape shall be buried with the plastic pipe to facilitate locating. One end shall be brought aboveground at a building wall or riser. (CPC 1210.1.7.2)
- Piping installed aboveground shall be securely supported and located where it will be protected from physical damage. Where passing through an outside wall, the piping shall also be protected against corrosion by coating or wrapping with an inert material approved for such applications. Where piping is encased in a protective pipe sleeve, the annular space between the gas piping and the sleeve shall be sealed at the wall to prevent the entry of water, insects, or rodents. (CPC 1210.2)

Interior installations:

- Piping shall be supported with metal pipe hooks, metal pipe straps, metal bands, metal brackets, metal hangers or building structural components suitable for the size of piping; be of adequate strength and quality; and located at intervals so as to prevent or damp out excessive vibration. Piping shall be anchored to prevent undue strains on connected equipment and shall not be supported by other piping. Pipe hangers and supports shall conform to the requirements of MSS SP-58. (CPC 1210.2.4)

- Spacing of supports in gas-piping installations shall not be greater than: (CPC Table 1210.2.4.1)
 1. Steel pipe:
 - ½", 6 feet max.
 - ¾" and 1", 8 feet max.
 - 1 ¼" or larger horizontal, 10 feet max.
 - 1 ¼" or larger vertical, every floor level
 2. Tubing:
 - ½", 4 feet max.
 - 5/8" or ¾", 6 feet max.
 - 7/8" or 1" horizontal, 8 feet max.
 - 1" or larger vertical, every floor level
 - Spacing of supports for corrugated stainless steel tubing shall be in accordance with the manufacturer's instruction.
- Supports, hangers, and anchors shall be installed so as not to interfere with the free expansion and contraction of the piping between anchors. All parts of the supporting equipment shall be designed and installed so they will not be disengaged by movement of the supported piping. (CPC 1210.2.4.2)
- Where gas piping is to be concealed, unions, tubing fittings, and compression couplings made by combinations of fittings shall not be used. Connections shall be of the following type: (CPC 1210.3.1)
 1. Pipe fittings such as elbows, tees, and right/left nipple/couplings.
 2. Joining tubing by brazing. (See 1208.5.8.2)
 3. Fittings listed for use in concealed spaces that have been demonstrated to sustain, without leakage, any forces due to temperature expansion or contraction, vibration, or fatigue based on their geographic location, application, or operation.
 4. Where necessary to insert fittings in gas pipe that has been installed in a concealed location, the pipe shall be reconnected by welding, flanges, or the use of a right/left nipple/coupling.
- Concealed gas piping shall not be located in solid partition (CPC 1210.3.2).
- Tubing that pierces walls, floors, or partitions or tubing installed vertically and horizontally inside hollow walls or partitions without protection along its entire concealed length can be installed when both of the following requirements are met: (CPC 1210.3.3)
 1. A steel striker barrier not less than 0.0508 inches thick is installed between the tubing and the finished wall and extends at least 4 inches beyond concealed penetrations of plates, fire stops, wall studs, and so on.
 2. The tubing is installed in single runs and shall not be rigidly secured. [NFPA 54:7.3.4]
- Piping for other than DRY gas conditions shall be sloped not less than ¼ inch in 15 feet to prevent traps (CPC 1210.2.2).
- Gas piping shall be permitted to be installed in accessible spaces between a fixed ceiling and a dropped ceiling, whether or not such spaces are used as a plenum. Valves shall not be located in such spaces. Except appliances or equipment shutoff valves required by this code shall be permitted to be installed in accessible spaces containing vented gas utilization equipment. (CPC 1210.2.2.1)

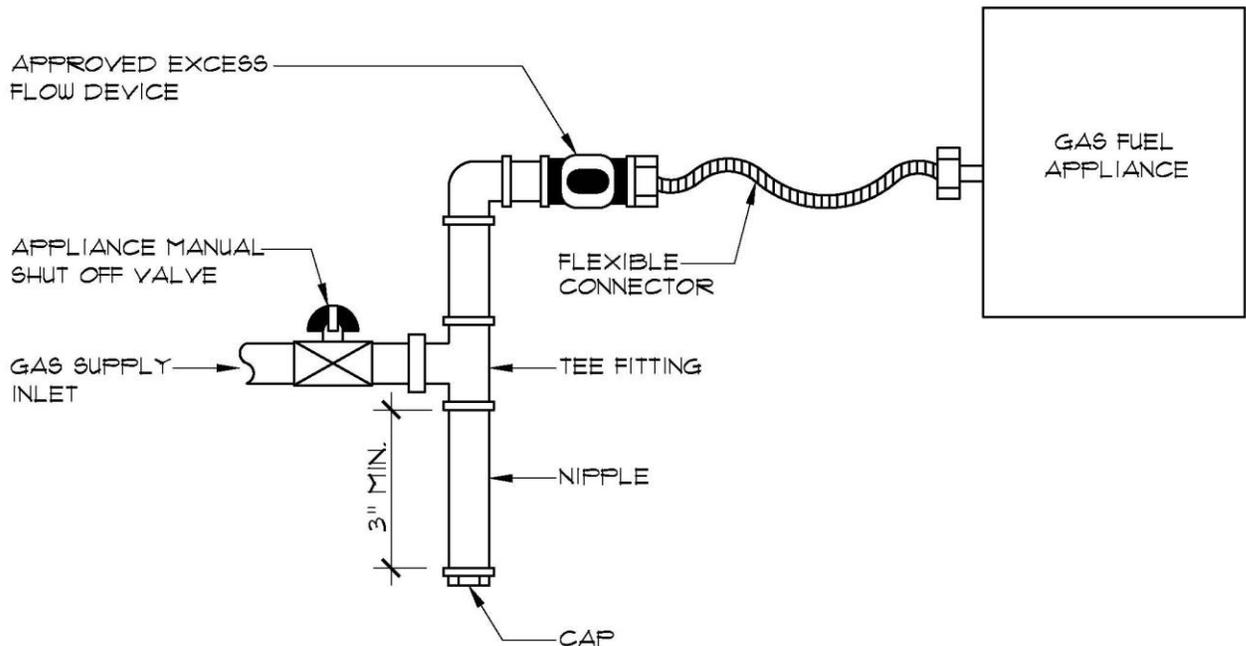
- Gas piping inside any building shall not be installed in or through a circulating air duct, clothes chute, chimney or gas vent, ventilating duct, dumbwaiter, or elevator shaft. This provision shall not apply to ducts used to provide combustion and ventilation air in accordance with Section 506.0 or to above-ceiling spaces as covered in Section 1211.2.2.1. (CPC 1210.2.3)
- Grounding and bonding: (CPC 1211.0)
 1. Each above ground portion of a gas piping system other than CSST that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping, other than CSST, shall be considered to be bonded when it is connected to appliances that are connected to the appliance grounding conductor of the circuit supplying that equipment.
 2. CSST gas piping systems shall be bonded to the electrical service grounding electrode system. The bonding jumper shall connect to a metallic pipe or fitting between the point of delivery and the first downstream CSST fitting. The bonding jumper shall not be smaller than 6 AWG copper wire.
 3. Gas piping systems that contain one or more segments of CSST shall be bonded in accordance with this section. [NFPA 54:7.13.2]
 4. Gas piping shall not be used as a grounding conductor or electrode.
- Approval shall be obtained from the Building and Safety Department before cutting or notching any beams or joists (CPC 1210.2.1).
- The minimum size of the supply pipe outlet for any appliance shall not be less than 1/2" (3/4" for mobile homes) (CPC 1215.4).
- A line gas pressure regulator or gas appliance pressure regulator, as applicable, shall be installed where the gas supply pressure exceeds that at which the branch supply line or gas utilization appliance is designed to operate or varies beyond design pressure limits. The line gas pressure regulator shall be listed in accordance with CA Z21.80. The gas pressure regulator shall be accessible for servicing and shall be protected against physical damage, and comply with CPC 1208.7.5 (1 through 5) (CPC 1208.7)
- Pressure relieving and pressure limiting devices shall be installed and vented in accordance with CPC 1208.7.5. through 1208.7.7

Equipment/Appliances:

- Outlets shall comply with the following: (CPC 1210.9)
 1. The outlet fittings or piping shall be securely fastened in place.
 2. Outlets shall not be located behind doors.
 3. Outlets shall be located far enough from floors, walls, patios, slabs, and ceilings to permit the use of wrenches without straining, bending, or damaging the piping.
 4. The unthreaded portion of gas piping outlets shall extend not less than 1 inch through finished ceilings or indoor or outdoor walls.
 5. The unthreaded portion of gas-piping outlets shall extend not less than 2 inches above the surface of floors or outdoor patios or slabs.
 6. The above provisions for extending piping outlets shall not apply to listed quick-disconnect devices of the flush-mounted type or listed gas convenience outlets. Such devices shall be installed in accordance with the manufacturers' installation instructions.

7. Each outlet, including a valve, shall be closed gastight with a threaded plug or cap immediately after installation and shall be left closed until the gas utilization equipment is connected thereto. When equipment is disconnected from an outlet and the outlet is not to be used again immediately, it shall be closed gastight.
 - The use of listed quick-disconnect device with integral shutoff or listed gas convenience outlet shall be permitted.
 8. Shutoff valves installed in fireplaces shall be removed and the piping capped gastight where the fireplace is used for solid-fuel burning.
- Gas utilization appliances shall be connected to the building piping by one of the following: (CPC 1212.5 through 1212.7)
 1. Rigid metallic pipe and fittings.
 2. Semi-rigid metallic tubing and metallic fittings. Aluminum alloy tubing shall not be used in exterior locations.
 3. Listed flexible gas connectors in compliance with CSA Z21.24. The connector shall be used in accordance with the terms of their listing and must be located completely in the same room as the appliance. One connector shall be used for each appliance.
 4. Corrugated stainless steel tubing (CSST) where installed in accordance with the manufacturers' instructions.
 5. Listed nonmetallic gas hose connectors in accordance with the following:
 - Indoor gas hose connectors shall be used only to connect laboratory, shop, and ironing equipment, or equipment requiring mobility during operation. An equipment shutoff valve shall be installed where the connector is attached to the building piping. The connector shall be of minimum length and shall not exceed 6 feet. The connector shall not be concealed and shall not extend from one room to another or pass through wall partitions, ceilings, or floors.
 - Outdoor gas hose connectors are permitted to connect portable outdoor gas-fired equipment. An appliance shutoff valve, a listed quick-disconnect device, or a listed, (CSAZ 21.54.) gas convenience outlet shall be installed where the connector is attached to the supply piping and in such a manner to prevent the accumulation of water or foreign matter. This connection shall be made only in the outdoor area where the equipment is to be used. The connector length shall not exceed 15 feet.
 6. Gas-fired food service (commercial cooking) appliances listed for use with casters or otherwise subject to movement for cleaning, and large and heavy gas utilization appliances that can be moved, shall be connected in accordance with the connector manufacturers' installation instructions using a listed appliance connector complying with CSA Z21.69. The commercial cooking appliance connector installation shall be configured in accordance with the manufacturer's installation instructions.
 7. Movement of appliances with casters shall be limited by a restraining device installed in accordance with the connector and appliance manufacturer's installation instructions.
 8. In #2, #3 & #5 above, the connector or tubing shall be installed so as to be protected against physical and thermal damage. Aluminum alloy tubing and connectors shall be coated to protect against external corrosion where they are in contact with masonry, plaster, insulation, or are subject to repeated wettings by such liquids as water, detergents, or sewage.

- Suspended low-intensity infrared tube heaters shall be connected to the building piping system with a connector listed for the application in accordance with CSA Z21.24/CGA6.10. The connector shall be installed in accordance with the tube heater installation instructions, and shall be in the same room as the appliance. Only one connector shall be used per appliance. (CPC 1211.2.(2))
- Gas utilization appliance connected to a piping system shall have an accessible, approved manual shutoff valve with a non[displaceable valve member, or a listed gas convenience outlet, installed within 6 feet of the equipment it serves. Where a connector is used, the valve shall be installed upstream of the connector. A union or flanged connection shall be provided downstream from this valve to permit removal of controls. Shutoff valves serving decorative gas appliances shall be permitted to be installed in fireplaces if listed for such use. (CPC 1212.5) See exception 1 & 2.
- Quick-disconnect devices used to connect appliances to the building piping shall be listed. Where they are installed indoors, an approved manual shutoff valve with a non[displaceable valve member shall be installed upstream of the quick- disconnect device. (CPC 1212.6) & listed to CSAZ21.41
- Where a sediment trap is not incorporated as part of the gas utilization appliance, a sediment trap shall be installed downstream of the appliance shutoff valve as close to the inlet of the appliance as practical at the time of appliance installation. 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. Illuminating appliances, ranges, clothes dryers , decorative vented appliances for installation in vented fireplaces, gas fireplaces, and outdoor grills shall not be required to be so equipped. (CPC 1212.8)



- Piping shall be installed in a manner not to interfere with inspection, maintenance, or servicing of the gas utilization equipment (CPC 1212.9).

☐ Testing:

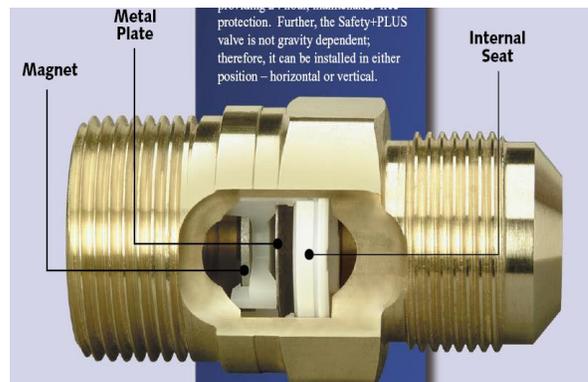
- Pressure testing and inspection: (CPC 1213.0)
 1. Prior to acceptance and initial operation, piping installations shall be inspected and pressure-tested to determine that the materials, design, fabrication, and installation practices comply with the requirements of the CPC.
 2. Inspection shall consist of visual examination during or after manufacture, fabrication, assembly, or pressure tests, as appropriate.
 3. Where repairs or additions are made following the pressure test, the affected piping shall be tested. Minor repairs and additions are not required to be pressure-tested provided that the work is inspected and connections are tested with a non-corrosive leak-detecting fluid or other leak-detecting methods approved by the Building Inspector.
 4. Where new branches are installed from the point of delivery to new appliances, only the newly installed branches shall be required to be pressure-tested. Connections between the new piping and the existing piping shall be tested with a non-corrosive leak-detecting fluid or approved leak-detecting methods.
 5. A piping system shall be tested as a complete unit or in sections. Under no circumstances shall a valve in a line be used as a bulkhead between gas in one section of the piping system and test medium in an adjacent section, unless two valves are installed in series with a valved “telltale” located between these valves. A valve shall not be subjected to the test pressure unless it can be determined that the valve, including the valve-closing mechanism, is designed to safely withstand the pressure.
 6. The test medium shall be air, nitrogen, carbon dioxide, or an inert gas. Oxygen shall never be used.
 7. Pipe joints, including welds, shall be left exposed for examination during the test.
 8. Appliances and equipment that are not to be included in the test shall be either disconnected or isolated from the piping.
 9. Where the piping is connected to appliances, equipment, or equipment components designed for operating pressures of less than the test pressure, such appliances, equipment or equipment components shall be disconnected or isolated.
 10. Test pressure shall be measured with a manometer or with a pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss due to leakage during the pressure test period. The source of pressure shall be isolated before the pressure tests are made. Mechanical gauges used to measure test pressures shall have a range such that the highest end of the scale does not exceed five times the test pressure (5x3 psi = 15lbs).
 11. The test pressure to be used shall not be less than 1 ½ times the proposed maximum working pressure, but not less than 3 psi.
 12. Test duration shall not be less than ½ hour for each 500 cubic feet of pipe volume or fraction thereof. When testing a system having a volume less than 10 cubic feet or a system in a single-family dwelling, the test duration shall be a minimum of 10 minutes.
 13. Where leakage or other defects are located, the affected portion of the piping system shall be repaired or replaced and retested.
- Immediately after the gas is turned on into a new system, or into a system that has been initially restored after an interruption of service, the piping system shall be checked for leakage. Where leakage is indicated, the gas supply shall be shut off until the necessary repairs have been made. Gas utilization equipment shall not be placed in operation until after the piping system has been checked.

❑ Seismic Shut-off Devices:

- An approved Excess Flow Gas Shut-off Device (non-motion sensitive) shall be installed at the gas fuel appliance outlet when replacing any existing or installing any new gas fuel appliance. The Excess Flow Device shall be installed between the shutoff valve and the connector (see diagram below for correct location of sediment trap). (MMC II-170-2.00)



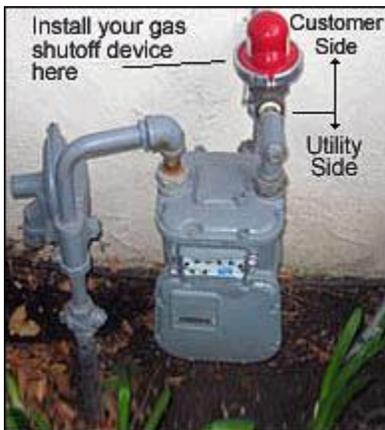
- Close up view of an excess flow device:



- An approved Seismic Gas Shut-off Device (motion sensitive) *or* an approved Excess Flow Gas Shut-off Device (non-motion sensitive) shall be installed downstream of the gas utility meter (after PG&E service tee), but upstream of any appliances, when providing alteration or addition to the existing gas fuel line. (MMC II-170-2.00)



"California Valve"



- Automatic Gas Shut-off Devices shall be installed by a contractor licensed in the appropriate classification by the State of California and in accordance with the manufacturer's instructions.
- Seismic Gas Shut-off Devices (motion sensitive) must be mounted rigidly to the exterior of the building or structure containing the fuel gas piping. This requirement need not apply if the Building and Safety Department determines that the Seismic Gas Shut-off Device (motion sensitive) has been tested and listed for an alternate method of installation.
- Both Seismic Gas Shut-off Devices (motion sensitive) and Excess Flow Gas Shut-off Devices (non-motion sensitive) must be certified by the Office of State Architect and be listed by an approved listing and testing agency such as IAS, IAPMO, UL or the Office of State Architect.
- Both Seismic Gas Shut-off Devices (motion sensitive) and Excess Flow Gas Shut-off Devices (non-motion sensitive) must have a thirty (30) year warranty which warrants that the valve or device is free from defects and will continue to operate properly for thirty (30) years from the date of installation.
- Where Automatic Gas Shut-off Devices are installed voluntarily or as required by code, they shall be maintained for the life of the building or structure or be replaced with a valve or device complying with the requirements of this section.

3. SMOKE ALARMS, CARBON MONOXIDE ALARMS & SPARK ARRESTERS:

- In single family and multi-family residences (including townhomes, condominiums and apartments), installation of smoke alarms, carbon monoxide alarms and spark arresters on all chimneys is required prior to the final inspection. Refer to the “*Smoke Alarm, Carbon Monoxide Alarm and Spark Arrester Certificate*” attached for detailed information.

4. WATER CONSERVING FIXTURES:

- When required, all non-compliant plumbing fixtures must be replaced. Refer to the attached “*Water Conserving Certificate of Compliance*” handout for details on when this is required.

5. INSPECTION PROCEDURES

- Two inspections are required. The first inspection is a pressure test when the gas line is installed and before any pipe is covered or concealed or any fixture or appliance is attached. The final inspection should be scheduled after all the work is completed. Both inspections require all new piping to be under pressure test. For each inspection, the Permit Card and the Approved Job Copy of the Drawings (if any) must be presented to the inspector. Permits expire 180 days after issuance or last inspection passed.
- The City does not provide any pressure gauges, ladders, air pumps or any other apparatus required for inspection or pressure testing. All necessary apparatus for conducting air pressure tests are required to be furnished by the permit holder.
- The Building and Safety Department will automatically send authorization for installation of the meter to PG&E when the system has passed inspection. The building owner or tenant is required to set up an account and schedule the meter installation with PG&E.

6. QUESTIONS:

- If you have any questions regarding your project contact the Building & Safety Department at (408) 586-3240.



SMOKE ALARM, CARBON MONOXIDE ALARM and SPARK ARRESTER CERTIFICATE

This "Certificate" can be signed by the property owner and provided to the Building Inspector prior to final inspection if access to the interior of the dwelling for inspection of the smoke and carbon monoxide alarms is not possible and the permitted is exterior only (such as re-roofing, re-siding, patio covers, swimming pools and the like).

In single family and multi-family residences (including townhomes, condominiums and apartments), installation of smoke alarms, carbon monoxide alarms and spark arresters is required prior to the final inspection as follows: (CRC R314 & R315 and CBC 907.2.11)

Smoke Alarms listed in accordance with UL 217, listed and approved by the California State Fire Marshal and tested & maintained in accordance with the manufacturer's instructions shall be installed in existing or new dwellings as follows: **in each sleeping room, outside each separate sleeping area in the immediate vicinity of the bedrooms and on each story of the dwelling.** In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level. Alarms that no longer function shall be replaced. New smoke alarms that are solely battery powered must have a non-replaceable and non-removable battery capable of powering the smoke alarm for at least 10 years. Fire alarm systems shall be permitted in lieu of smoke alarms if they comply with the provisions of NFPA 72. The installation of smoke alarms and smoke detectors shall also comply with the following requirements:

1. Smoke alarms shall not be located where ambient conditions, including humidity and temperature, are outside the limits specified by the manufacturer's published instructions.
2. Smoke alarms shall not be located within unfinished attics or garages or in other spaces where temperatures can fall below 40°F or exceed 100°F.
3. Where the mounting surface could become considerably warmer or cooler than the room, such as a poorly insulated ceiling below an unfinished attic or an exterior wall, alarms shall be mounted on an inside wall.
4. Smoke alarms shall be installed a minimum of 20 feet horizontal distance from a permanently installed cooking appliance, except Ionization smoke alarms with an alarm-silencing switch or Photoelectric smoke alarms shall be permitted to be installed 10 feet or greater from a permanently installed cooking appliance and Photoelectric smoke alarms shall be permitted to be installed greater than 6 feet from a permanently installed cooking appliance where the kitchen or cooking area and adjacent spaces have no clear interior partitions and the 10 foot distances would prohibit the placement of a required smoke alarm or smoke detector. Smoke alarms listed for use in close proximity to a permanently installed cooking appliance can be installed in accordance with their listing.
5. Smoke alarms shall be installed not less than a 3 foot horizontal distance from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by the code.
6. Smoke alarms shall not be installed within a 36 inch horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the direct airflow from those registers.
7. Smoke alarms shall not be installed within a 36 inch horizontal path from the tip of the blade of a ceiling-suspended (paddle) fan.
8. Where stairs lead to other occupied levels, alarm shall be located so that smoke rising in the stairway cannot be prevented from reaching the alarm by an intervening door or obstruction.
9. For stairways leading up from a basement, alarms shall be located on the basement ceiling near the entry to the stairs.
10. For tray-shaped ceilings (coffered ceilings), alarms shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 inch vertically down from the highest point.
11. Smoke alarms installed in rooms with joists or beams shall comply with the requirements of NFPA 72.
12. Heat alarms and detectors installed in rooms with joists or beams shall comply with NFPA 72.

Carbon Monoxide Alarms listed in accordance with UL 2034, or combination carbon and smoke alarm listed in accordance with UL2034 and UL217, listed and approved by the California State Fire Marshal and installed and maintained in accordance with the manufacturer’s instructions shall be installed in existing or new dwellings having a fuel-fired appliance, fireplace or an attached garage with an opening communicating with the dwelling as follows: **outside each separate sleeping area in the immediate vicinity of bedroom(s) and on every occupiable level of a dwelling unit.** If there is a fuel-burning appliance located with a bedroom or its attached bathroom, an alarm shall be located within the bedroom.

Power supply: Smoke and carbon monoxide alarms shall receive their primary power from the building wiring and shall be equipped with a battery back-up. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection. Smoke and carbon monoxide alarms are permitted to be solely battery operated (carbon monoxide alarms can also be plug-in with battery back-up) in existing buildings where no construction is taking place; in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure unless there is an attic or crawl space available which could provide access for building wiring without the removal of interior finishes; where repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck; or when work is limited to the installation, alteration or repairs of plumbing or mechanical systems or the installation, alteration or repair of electrical systems which do not result in the removal of interior wall or ceiling finishes exposing the structure.

Interconnection: Where more than one smoke or carbon monoxide alarm is required to be installed within an individual dwelling or sleeping unit, the alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit, except interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind; where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure unless there is an attic or crawl space available which could provide access for interconnection without the removal of interior finishes; where repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck; or when work is limited to the installation, alteration or repairs of plumbing, mechanical or electrical systems which do not result in the removal of interior wall or ceiling finishes exposing the structure.

Spark arresters: When a permit has been issued and the value of the work exceeds \$1,000, a spark arrester must be installed on all fireplace chimneys if one does not already exist, per MMC Section II-3-2.06. Spark arresters shall be constructed in conformance with CRC Section 1003.9.2.

*** CERTIFICATION ***

I understand the above requirements and certify that I now have smoke alarms, carbon monoxide alarms and spark arrestors installed as required above.

HOMEOWNERS NAME (please print): _____

ADDRESS: _____

SIGNATURE: _____

DATE: _____ PERMIT NO. _____



WATER CONSERVING CERTIFICATE OF COMPLIANCE

Project Address: _____ Permit Number: _____

If the Building Inspector cannot physically inspect all plumbing fixtures in the building or cannot verify compliance due to lack of product markings or data, this Certificate of Compliance may be signed by the property owner(s) and given to the Building Inspector. The Building Inspector must inspect and verify all plumbing fixtures or receive this Certificate prior to final inspection.

California Civil Code Section 1101 requires the following. **Note this law applies only to properties built and available for use or occupancy on or before January 1, 1994.**

On or before January 1, 2017, for any **one and two family** residential building, all non-compliant plumbing fixtures shall be replaced with water-conserving plumbing fixtures (regardless of whether property undergoes alterations or improvement).

As of January 1, 2014, for any **multi-family** (more than two units) residential building and any **commercial** building, all non-compliant plumbing fixtures shall be replaced with water-conserving plumbing fixtures in the following circumstances:

1. Additions, if the sum of concurrent building permits by the same permit applicant would increase the floor area of the building by more than 10%, all non-compliant fixtures must be upgraded throughout the building. This includes all common area plumbing fixtures as well as fixtures in private individual units or tenant unit owned by the same owner.
2. Alterations or improvements, if total construction cost in the building permit exceeds \$150,000, all non-compliant fixtures that service the specific area of the alteration or improvement will be required to be upgraded.
3. Any alteration to a room that contains non-compliant plumbing fixtures will require all fixtures in that room to be upgraded.

On or before January 1, 2019, for any **multi-family** (more than two units) residential building and any **commercial** building, all non-compliant plumbing fixtures shall be replaced with water-conserving plumbing fixtures (regardless of whether property undergoes alterations or improvement).

The requirements of this law shall not apply to any of the following:

1. The requirements of this law shall be postponed one year from the date of issuance of a demolition permit for the building. If the building is not demolished after one year, the provision of this law shall apply even though the demolition permit is still in effect or a new demolition permit has been issued.
2. Registered historical sites.
3. Real property for which a licensed plumber certifies in writing that, due to the age or configuration of the property or its plumbing, installation of water-conserving plumbing fixtures is not technically feasible.
4. A building for which water service is permanently disconnected.
5. The property was built and available for use or occupancy after January 1, 1994.

I/We, the owner(s) of this property, certify under penalty of perjury:

- All existing plumbing fixtures meet the minimum requirements of water-conserving as noted below.
- All non-compliant plumbing fixtures have been replaced with water-conserving plumbing fixtures in accordance with Civil Code Sections 1101.1 through 1101.8, the current California Plumbing Code and California Green Building Standards Code, and manufacturer's installation requirements, and that the water-conserving plumbing fixtures comply with the requirements as noted below.
- I/We are exempt for reason #____ listed above. If for reason #3, attached is a letter from a licensed plumber.

Signature of Property Owner(s)

Print Name(s)

Date: _____

The following non-compliant fixtures shall be replaced with water-conserving fixtures as noted: (CGBC 4.303 & 5.303)

- Existing water closets that exceed 1.6 gallons per flush shall be replaced with one that has an effective flush volume not to exceed **1.28 gallons per flush**. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type toilets. The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.
- Existing urinals that exceed 1.0 gallons per flush shall be replaced with one that uses not more than an average of **0.125 gallons per flush** (0.47 L) for wall mounted and **0.5 gallons** (1.89 L) for other types of urinals.
- Existing single shower heads that exceed 2.5 gallons per minute shall be replaced with one that has a maximum flow rate of not more than **2.0 gallons per minute** at 80 psi. Shower heads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.
- When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed **2.0 gallons per minute** at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time. A hand-held shower shall be considered a showerhead.
- Existing residential lavatory faucets that exceed 2.2 gallons per minute shall be replaced with one that has a maximum flow rate not to exceed **1.2 gallons** (4.54 L) per minute at 60 psi. The minimum flow rate shall not be less than 0.8 gallons (3.03 L) per minute at 20 psi.
- Existing lavatory faucets in residential common and public use areas (outside of dwellings or sleeping units) and in commercial areas that exceed 2.2 gallons per minute shall be replaced with one that has a maximum flow rate not to exceed **0.5 gallons per minute** at 60 psi.
 - Metering faucets shall have a maximum flow rate of **0.20 gallons per cycle commercial** or **0.25 residential**.
- Existing kitchen faucets that exceed 2.2 gallons per minute shall be replaced with one that has a maximum flow rate not to exceed **1.8 gallons per minute** at 60 psi. Residential kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.
 - Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.