

CLEAN DRAFT—DISTANCE RULE AND  
OUT OF SERVICE CONTAINERS AMENDMENT

**GENERAL ORDER**

**STATE LIQUEFIED PETROLEUM GAS BOARD CODE RULES AND REGULATIONS**

The Board adopts by specific reference the distance provisions established by the National Fire Protection Association (NFPA) Pamphlet 58 as it existed on December 31, 2020. All references to “NFPA 58” in this rule shall mean NFPA 58 as it existed on December 31, 2020. Nothing in these sections or subchapters shall prevent the Board from adopting additional requirements, whether more or less stringent, to protect the health, safety and welfare of the general public. Any documents or language incorporated by reference into these rules shall be a part of these rules.

**STATE LIQUEFIED PETROLEUM GAS BOARD CODE RULES AND REGULATIONS**

**2. DEFINITIONS** In the application of the rules and regulations of this Code, the terms "Liquefied Petroleum Gases", "Liquefied Petroleum Gas System", "Container", "Appliance", "Manufacturer", "Jobber", "Dealer", "Vendor", and "Person" shall be construed to mean the same as defined by Act 31, Ark. Acts of 1965 (Ark. Stats. [ 1965]. Section 53-714).

“Important Building” - Definition adopted by reference NFPA58 Annex A; A.6.4.1.1 with the following additional language.

(6) Any building wired for electricity. A building “wired for electricity” consists of an electrical wiring system that distributes energy to be used for equipment, lighting, or appliances in the building. “Wired for electricity” also involves the proper installation, operation, and existence of electrical outlets, switches, breakers, meter base and different electrical circuits for the building.

**15. SERVICING OR FILLING CONTAINERS**

- A. The filling of any container which does not have an attached approval tag is prohibited.
- B. The discharge end of the filling hose shall be fitted with an approved valve and the operator shall control the liquid flow with this valve.
- C. The liquid volume of the connection between the discharge hose outlet valve and the consumer's system filling valve shall not exceed eight (8) ounces.
- D. At least one attendant shall remain close to the transfer connection from the time the connections are first made until they are finally disconnected.

E. No liquid transfer hose, pipe, or tubing containing more than eight (8) ounces of liquid shall be vented to the atmosphere.

F. The vapor pressure in any container shall not be lowered by blowing or venting to the atmosphere; however, where a container used solely for farm implement or industrial service cannot be adequately filled due to vapor pressure, the pressure may be reduced to facilitate filling by venting to the atmosphere, providing this can be safely performed in an open area without undue hazard to any building or surrounding property, and there is no open flame or other source of ignition in the area.

G. Mobile fuel tanks shall be charged only in the open air.

H. No underground container shall be filled or serviced unless the maximum allowable working pressure of the container can be readily determined.

I. Where a customer's premises does not offer safe and adequate facilities for turning a delivery or transport truck around, it is recommended that the driver back into the driveway to fill the customer's container.

J. When it becomes necessary to service a container after dark, a vaporproof type flashlight, or other approved explosion-proof type lighting shall be used. The use of a standard type flashlight is prohibited.

K. No container shall be filled that shows evidence of improper or faulty installation, leakage, defective fittings; or which is not equipped with a safety relief valve and liquid level gauge.

## **17. STORAGE CONTAINERS**

(The words "Storage Containers" shall be construed to mean all vessels used for bulk storage and commercial storage of liquefied petroleum gases.)

A. Containers used for bulk storage, and commercial storage vessels located at cotton gins, rice dryers, schools, hospitals, bottle filling plants, etc., having a capacity over two thousand (2000) water gallons, shall be located not less than fifty (50) feet from the nearest important building or group of buildings or line of adjoining property which may be built on. They shall not be less than fifty (50) feet from main line or passing track of a railroad, or public highway. Waiver of this requirement may be made by the Director providing no undue hazards exist, but in no case shall they be located closer than twenty-five (25) feet, regardless of size of the container. EXCEPTION: Bulk storage containers used for the transferring of liquefied petroleum gases into delivery trucks shall be not less than four hundred (400) feet from any school, hospital, or other place of public assembly.

B. Storage containers shall be provided with substantial reinforced concrete footings and foundations and shall be mounted on saddles in such a manner as to permit expansion and contraction. Every container shall be so supported as to prevent the concentration of excessive loads on the supporting portion of the shell. Suitable means of preventing corrosion shall be provided on that portion of the container in contact with the foundation or saddles. There shall be a resilient cushion of road expansion, or other suitable material placed between the saddle and tank to allow for minor imperfections in pier surface, to protect the tank from corrosion and to act a lubricant in tank expansion and contraction. That portion of the tank surface that is to be in contact with the pier, or saddle, shall be painted with at least two (2) coats of red lead, or its equivalent, before installing on the supports. Blueprints of approved-type footings, and foundations may be obtained from the Board upon request. EXCEPTION: Containers used for storage of Propane gas, not exceeding 2500 water gallon capacity, and containers used for storage of Butane gas, not exceeding 3000 water gallon capacity may be mounted on prefabricated concrete blocks, providing the design has been reviewed and approved by the Director prior to installation.

C. Storage containers shall be equipped with the necessary safety relief valves as outlined in the latest edition of Pamphlet No. 58, National Fire Protection Association, and shall have direct communication with the vapor space of the container. The discharge from the safety relief valve shall be upward and unobstructed to the open air.

D. Safety relief valves shall be so arranged that possibility of tampering will be minimized: if pressure setting or adjustment is external, the relief valve shall be provided with approved means for sealing adjustment.

E. No shut-off valve shall be installed between the safety relief valves and the container.

F. Loose-fitting caps, or covers, shall be placed over the safety valves to prevent rain or other substance from entering the valves.

G. Storage containers of all types shall be equipped with suitable ground wire, excess flow check valves in the liquid and vapor outlets, liquid level gauging device, safety relief valves, and vapor pressure gauge graduated to not less than one and one-half (1 1/2) times the designed working pressure of the container, but need not exceed 300 PSI. The coupling for the excess flow check valve and vapor return valve on containers of 1200 gallons capacity, and over, shall be not less than one and one-fourth (1 1/4) inches standard pipe size. All piping shall be wrought iron or steel and shall be at least extra heavy to the first hand shut-off valve. All piping past the first hand shut-off valve shall be at least extra heavy (Schedule 80) if joints are threaded, or threaded and back welded. At least single strength (Schedule 40) shall be used if joints are welded, or welded and flanged. The use of cast iron plugs or fittings is prohibited. Stop valves shall be placed as near the outlet as possible on all liquid and vapor lines. The piping leading to and from

the excess flow check valves shall be sufficient in size to prevent pressure drops reaching the point where the excess flow check valve would not function, and in no case shall such piping be reduced in size between the check valve and the first hand shut-off valve, but must be equal to, or greater in size than that of the excess flow check valve outlet.

(1). Each LP-gas stationary storage installation of 6,000 gallons or more, aggregate capacity, installed on or after July 1, 1993, shall incorporate in its design bulkheads and emergency shutoff valves (ESVs) for liquid and vapor transfer systems. NOTE: This section shall not apply where the liquid transfer hose is connected directly to a 1 3/4 inch or less acme-threaded filler valve when such valve is installed directly into the container.

(2). Bulkheads shall be of concrete or steel and anchored sufficiently to prevent displacement of piping and fittings in the event of a truck pull-away while the transfer hose is connected.

(A). Piping through a bulkhead shall be secured to the bulkhead to prevent shifting. Piping shall terminate through the bulkhead with a Schedule 80 pipe collar and a 12 inch length of Schedule 80 pipe and forged steel elbow between the bulkhead and hose coupling.

(B). Bulkheads shall not be less than 10 feet from a container.

(3). Emergency shutoff valves (ESVs) shall be installed in fixed piping of the transfer system upstream of the bulkhead and within four feet of the bulkhead with a flexible wire braided hose not more than 24 inches installed between the ESVs and the bulkhead.

(A). ESVs shall be installed according to the manufacturer's instructions.

(B). ESVs shall incorporate all of the following means of closing.

(1). automatic shutoff through thermal (fire) actuation using fusible elements with a melting point not to exceed 250F;

(2). manual shutoff at the installed location; and

(3). manual shutoff from a remote location. Remote controls shall be connected to each ESV. Emergency remote controls shall be conspicuously marked and shall be located and maintained to be readily accessible in emergencies.

(4). Where the flow of LP-gas is in one direction only, a backflow check valve may be used in lieu of an ESV in the fixed piping, provided that the back-flow

check valve has a metal-to-metal seat or a primary resilient seat with a secondary metal seat not hinged with combustible material.

(5). ESVs or back-flow check valves shall be installed in the piping system in such a manner that any break resulting from a pull-away will occur on the transfer hose side of the bulkhead and the valves and piping on the container side of the bulkhead will remain intact.

(6). The bulkhead(s) and ESV's must be kept in proper working order at all times in accordance with the manufacturer's instructions.

See Diagrams on page 96.

H. A safety relief valve shall be installed between each pair of shut-off valves on all liquid lines to relieve into a safe atmosphere, any excess pressure that may exist. The start-to-discharge pressure shall not be less than 400 PSIG or in excess of 500 PSIG.

I. All bulk storage containers, regardless of size and containers used for fuel purposes such as mounted on automobiles, trucks, buses, tractors, or other mobile or portable equipment, regardless of size, and all commercial and industrial storage containers exceeding 1200 water gallon capacity shall be equipped with individual fittings: the use of domestic compact head and fittings is prohibited.

J. Where two or more containers are connected rigidly together in a battery, provisions shall be made in all liquid and vapor manifolds for the expansion or contraction of the vessels or piping.

K. The operator shall be in attendance at all times while the container, regardless of type, is being loaded or unloaded: the operator shall be stationed close to point of cutoff at all times during filling or unloading operation.

L. Each opening in container exceeding a No.54 drill size, except safety relief valves and gauging devices of the float, or equivalent type which do not require flow for their operation, shall be equipped with an excess flow valve or its equivalent.

M. The welding or brazing of any malleable fitting is prohibited.

N. All pipe and fittings subjected to tank pressure where buried underground shall be at least extra heavy (Schedule 80).

O. The installation of any storage container underground, or the covering of any storage container with a mound of earth, or other material, except containers designed to operate under refrigerated or cryogenic conditions, is prohibited.

P. Gauge glasses of the columnar type shall be restricted to filling plants where the fuel is withdrawn in the liquid phase only. They shall be equipped with valves having metallic handwheels, with excess flow valves and with extra-heavy glass adequately protected with a metal housing applied by the gauge manufacturer. They shall be shielded against the direct rays of the sun. Gauge glasses of the columnar type are prohibited on truck tanks, motor fuel tanks, and on containers used in domestic, commercial, and industrial installations.

Q. Any container where transfer of liquids is made from such container into portable container such as tractors, skid tanks, and motor fuel tanks, shall be located not less than thirty (30) feet from any residence or publicly occupied building. This does not include DOT cylinders, as they must be filled by weight at approved filling stations in compliance with Section 10, Par. C., and located in compliance with Par. A. of this Section.

R. Storage containers shall be painted at the time of installation with white or aluminum paint, or any other light colored paint with equivalent, heat-reflective characteristics, and shall have painted on both sides and both heads where readily visible the word "FLAMMABLE" in red letters at least six (6) inches in height. Warning signs with the following words, "No Smoking Or Open Flame Permitted Within Ten (10) Feet", shall be painted on the container or a sign adjacent to the container in letters of at least one and one-half (1 1/2) inches in height, in black or red, on a white or aluminum background. Where considered necessary by a representative of the Board, containers shall be adequately protected by a suitable guard rail to protect vessel from moving vehicles or objects, a fence, or provisions made for locking the service line valves to prevent pranksters or prowlers or unauthorized persons from opening the valves, allowing gas to escape. The premises around the container shall be maintained in good order. Combustible matter of any type shall not be allowed to accumulate near the container.

S. Electric motors and switches or internal combustion engines used in connection with compressors or pumps for loading and unloading at bulk plants shall be explosion-proof type.

T. All containers used for domestic and commercial purposes and first stage regulating equipment shall be located outside of buildings, other than those especially provided for this purpose, except DOT cylinders which may be used indoors under the following conditions:

(1) If temporarily used for demonstration purposes and the container has a maximum water capacity of 12 pounds.

(2) If used with a completely self-contained gas hand torch or similar equipment, and the container has a maximum water capacity of 2 1/2 pounds.

Where portability of containers is necessary, making their location outside the building or structure impracticable, DOT Cylinders having a capacity not in excess of 30 water gallons may be located for use but not for storage inside the building or structure under the following conditions

- (1) Where gas is used for industrial processing or repair work in an industrial building or structure being employed for industrial purposes.
- (2) Where temporarily used in the construction, repair, or improvement of buildings or structures and their fixtures and equipment.
- (3) Provided regulator is attached directly to the cylinder valve or to a manifold connected to the cylinder valves and that no more than three (3) cylinders are connected to any one manifold, in any one room unless separated by at least fifty (50) feet.
- (4) Cylinders shall not be located or used where exposed to possible excessive temperature, physical damage or tampering by unauthorized persons, and shall be removed to the outside when not in use.
- (5) Language adopted by reference NFPA58 6.4.4.1.

Each individual container shall be located with respect to the nearest important building or group of buildings, or line of adjoining property which may be built on in accordance with, by reference, NFPA58 Table 6.4.1.1.

Table adopted by reference NFPA58 6.4.1.1

Figure adopted by reference NFPA58 A.6.4.1.1

Figure adopted by reference NFPA58 I.1 (a)

Figure adopted by reference NFPA58 I.1 (b)

Figure adopted by reference NFPA58 I.1 (c)

The distance between liquefied petroleum gas containers and any anhydrous ammonia container shall be not less than 25 feet.

No liquefied petroleum gas container in excess of 30,000 water gallon capacity shall be installed prior to approval by the Board.

Containers that have been in use for the storage of anhydrous ammonia shall not be used for the storage of liquefied petroleum gases unless that container has been completely emptied and made free of all anhydrous ammonia. The container shall be completely refitted in accordance with the rules and regulations of this Code.

U. Language adopted by reference NFPA58 6.4.1.3.

V. Language adopted by reference NFPA58 6.4.4.3.

W. Language adopted by reference NFPA58 6.4.4.4.

X. Language adopted by reference NFPA58 6.4.3 (1), (2), (3), and (4).

Figure adopted by reference NFPA58 A.6.4.3 (4) (a)

Figure adopted by reference NFPA58 A.6.4.3 (4) (b)

Y. Flexible hose for use with liquefied petroleum gases shall consists of a hose with a minimum bursting pressure of not less than twelve hundred fifty (1250) PSI. There shall be etched, cast, or impressed on the hose at 5 foot intervals, or on a name plate permanently attached thereto, the following information: (See also “Fit for Service” section regarding replacement name plates).

L.P.G.

Bursting Pressure

Manufacturer's name or trade mark

Year of manufacture

Z. Each storage container used in connection with a service station operation not exceeding 2000 water gallon capacity shall be located not less than twenty-five (25) feet from any building group of buildings and adjoining property lines which may be built upon. Storage containers in excess of 2000 water gallon capacity shall not be located closer than fifty (50) feet in relation to the above.

A.A. Readily ignitable material including weeds, dry grass, etc., shall be removed within ten (10) feet of the container. Where quantity of combustible material is large, it may be necessary that the distance between the container and material exceed ten (10) feet.

B.B. The minimum distance between LP-Gas containers and flammable or combustible liquid tanks or containers shall be not less than twenty (20) feet.

C.C. No bulk or commercial storage container shall be installed or moved and reinstalled at any location prior to approval by the Director.

D.D. Railcar to cargo tank transfer (commonly called Transloading) is allowable under the following conditions:

(1) Installation must be done in accordance with NFPA58 guidelines;



- (2) Installation is limited to twenty-four (24) months and must be approved by the Board;
- (3) A Class 8 Permit must be obtained; and
- (4) Annual inspections must be conducted.

E.E. Language adopted by reference NFPA58 6.4.4.2.

## **19. INSTALLATION AND PAINTING OF CONTAINERS**

A. Underground containers shall be coated or protected to minimize corrosion. Any damage to the coating shall be repaired before backfilling. Containers shall be set level and shall be surrounded by earth or sand firmly tamped in place. Back-fill shall be free of rocks and abrasives. The container shall be so lowered into place as to prevent abrasion or other damage to the container or coating. Cathodic protection shall be provided for the container. Underground containers that have been removed from the ground shall not be reinstalled until they have been thoroughly cleaned, inspected, and approved by a representative of the Board. All underground containers that have been installed for a period of one (1) year or longer and are removed from the ground to be reinstalled shall be equipped with a new regulator.

The reinstallation of any underground Butane container that has been removed from the ground for resale, change of user or ownership is prohibited.

(1) Underground containers constructed for a safe working pressure of 200 or 250 PSI may be removed from the ground and reinstalled above-ground provided:

- (a) The container has been thoroughly cleaned, inspected, and approved for reinstallation by a representative of the Board.
- (b) The standpipe is reduced to a length not in excess of eight (8) inches and properly threaded.
- (c) The container is equipped with the necessary safety relief valves to meet the current requirements of the National Fire Protection Association for aboveground containers.
- (d) Each container shall be installed on adequate supports or saddles. The attachment of any fitting or other connection to the container by the use of a welding process shall be performed by a welder approved by a representative of the Board. Approval for the attachment of any fitting or connection under this process shall be obtained prior to welding. After

welding, each fitting or connection shall be adequately tested for any leakage.

B. Aboveground containers shall be painted at the time of installation with a light reflecting color equivalent to white or aluminum paint and shall be maintained in good condition. Combustible material shall not be allowed to accumulate near the container. Aboveground containers shall not be installed underground; nor shall they be covered with any type material.

C. ASME container assemblies listed for underground installation, including interchangeable aboveground underground container assemblies may be installed underground as follows:

(1) The container shell shall be placed at least 6 inches below grade unless the container might be subject to abrasive action or physical damage from vehicular traffic within a parking lot area, driveway, or similar area. In this case, a non-interchangeable underground container shall be used and the container shell placed at least 18 in. below grade or equivalent protection shall be otherwise provided, such as the use of a concrete slab to prevent imposing the weight of a vehicle directly on the container shell. Protection of the fitting housing, housing cover, tank connections, and piping shall be provided to protect against vehicular damage.

(2) Where containers are installed underground within 10 ft. (3 m) where vehicular traffic may be reasonably expected, such as driveways and streets or within a utility easement subject to vehicular traffic, protection of the fitting housing, housing cover, tank connections, and piping shall be provided to protect against vehicular damage.

(3) Approved interchangeable aboveground-underground container assemblies installed underground shall not be placed with the container shell more than 12 in. below grade.

(4) The portion of the container to which the fitting cover or other connections are attached need not be covered. The discharge of the regulator vent shall be above the highest probable water level.

(5) Containers shall be protected against corrosion for the soil conditions at the container site by a method in accordance with good engineering practice. Precaution shall be taken to prevent damage to the coating during handling. Any damage to the coating shall be repaired before backfilling.

(6) Containers shall be set substantially level on a firm foundation (firm earth may be used) and surrounded by earth or sand firmly tamped in place. Backfill shall be free of rocks or similar abrasives.

(7). Language adopted by reference NFPA58 6.4.4.5.

(8). Language adopted by reference NFPA58 6.4.2.3.

(9). Language adopted by reference NFPA58 6.4.2.1.

(10). Language adopted by reference NFPA58 6.4.30.

Underground piping systems shall be installed with at least 18 inches of cover. The cover may be reduced to 12 inches if external damage to the pipe is not likely to result. If a minimum of 12 inches of cover cannot be maintained, the pipe shall be installed in conduit or bridged (shielded). The pipe shall be graded at least one (1) inch in ten (10) feet and a drip shall be provided at any point in the line of pipe where condensation may collect. All drips shall be installed only in such location that they will be readily accessible to permit cleaning or emptying. All piping under houses shall be graded at least two (2) inches in ten (10) feet with proper drips at low points where condensate may collect and shall be supported with hangers as outlined in paragraph DD of this Section.

D. The use of an aboveground Butane container to supply vapor directly to a gas consuming appliance without use of a vaporizer or some other means of artificially vaporizing the liquid to vapor form is prohibited. A pressure reducing regulator of either high or low pressure type shall be installed at the service line outlet on all aboveground and underground type installations. No gas in the vapor phase at tank pressure shall be permitted in the system piping.

E. The piping between the container and the several service openings shall not be less in size than that recommended in Tables No. 1 and 2, Pages 80 and 81 of these regulations. Underground piping shall in no case be less than one-half (1/2) inch in diameter.

F. The installation of a system for use with liquefied petroleum gas at a public building or structure such as a school, church, hospital, theater, motel, rest home, but not limited to, shall be examined and tested under an air pressure of not less than twenty-five (25) PSIG for a period of time commensurate or proportionate to the size and length of the piping, but in no case shall the test be for a period of less than thirty (30) minutes. The test shall be witnessed by the owner, user, or representative thereof.

A Report of Installation on an approved type form, obtainable from the Department, shall be completed at the time of installation, and forwarded to the Board, by the dealer on the same date; separate and apart from any and all other reports that may be required.

Upon receipt of the Report of Installation, a representative of the Board shall, within a period of time not to exceed one hundred twenty (120) days, make an inspection of the installation to determine that the container, visible piping, and appliances are properly installed.

Any extension, change, or alteration in the system shall be performed in accordance with the above procedure.

G. No piping may be buried under public buildings, such as schools, churches, hospitals, theaters, motels, and rest homes, but not limited to. All piping shall be installed aboveground and shall be supported with hangers as outlined in paragraph DD of this Section. EXCEPTION -Piping from the container to the building shall be installed underground. When it is not practical to install piping below ground, adequate protection suitable to the Board shall be provided where installed aboveground.

H. DOT cylinders (commonly called bottles) shall not be buried underground. Containers shall be set upon firm foundations or otherwise firmly secured; the possible effect on outlet piping from settling of the container shall be guarded against by a flexible connection or special fitting.

(1) Valves in the assembly of multiple container systems shall be arranged so that replacement of containers can be made without shutting off the flow of gas in the system.

Note: This provision is not to be construed as requiring an automatic change-over device.

(2) Container valves and pressure regulating equipment shall be protected against tampering when installed for use.

(3) Valves and connections to the containers shall be protected while in transit, in storage, and while being moved into final utilization, as follows:

(a) By setting into recess of container to prevent possibility of their being struck if container is dropped upon a flat surface, or

(b) By ventilated cap or collar, fastened to container, capable of withstanding blow from any direction equivalent to that of a thirty (30) pound weight dropped four (4) feet. Construction must be such that a blow will not be transmitted to valve or other connection.

(4) Language adopted by reference NFPA58 6.4.4.3.

I. When containers, regardless of type or size, are not connected to the system, the outlet valves shall be kept closed tight or plugged, even though containers are considered empty.

J. All piping where subject to tank pressure shall be at least extra heavy (Schedule 80) to the first hand shut-off valve. All other piping subject to tank pressure shall be at least extra heavy (Schedule 80) if joints are threaded, or threaded and back welded. At least single strength (Schedule 40) shall be used if joints are welded and flanged.

K. Piping covered in these regulations shall be wrought iron, steel, (either black or galvanized), brass or copper pipe, polyethylene (PE) plastic pipe and tubing (see par. 1), or seamless copper or other approved nonferrous metal tubing. All iron or steel pipe shall be schedule 40 or schedule 80 pipe. Copper tubing may be either grade (K) or (L). The use of conduit pipe is prohibited.

(1) Plastic (PE) pipe or tubing fabricated in compliance with and meeting the requirements for ASTM D2513, specifications for thermoplastic gas pressure pipe, tubing and fittings may be used for outside piping; underground only within the following limitations:

(a) Plastic pipe, tubing and fittings shall be used to distribute liquefied petroleum gas in the vapor state only, at a pressure not to exceed twenty (20) PSIG.

(b) No portion of the pipe, tubing or fittings shall extend or be exposed above-ground, but shall be installed not less than (12) inches below-ground.

(c) The installation or use of any plastic pipe, tubing or fitting beneath any type building or structure is prohibited.

(d) Heat-fusion or mechanical joints shall be used when joining plastic (PE) pipe, tubing or fittings. All fittings and attachments shall be of the permanent (onetime use only) type.

(e) Heat-fusion joints shall be made in accordance with qualified procedures which have been established and proven by test to produce gas-tight joints at least as strong as the pipe or tubing joined.

(f) When compression type mechanical joints are used, the gasket material in the fitting shall be compatible with the plastic piping and the gas distributed. An internal tubular rigid stiffener shall be used in conjunction with the fitting, and the stiffener shall be flush with the end of the pipe or tubing and extend at least to the outside end of the compression fitting when installed. The stiffener shall be free of rough or sharp edges and shall not be a force fit in the plastic. A split tubular stiffener shall not be used.

(g) The installation shall be performed in such a manner as to eliminate any undue stresses resulting from thermal contraction. All joints, attachments and fittings shall be designed and installed to effectively resist or sustain the longitudinal pull-out forces resulting from thermal change in the piping or by external loading.

(h) Plastic pipe shall be provided with an electrically continuous corrosion resistant tracer wire (min AWG 14) or tape buried with the plastic pipe to facilitate locating. One end shall be brought above ground at a building or riser.

L. Iron or steel pipe shall not be bent or rolled. Where a change in directions is necessary, proper fittings shall be used.

M. Screw fittings for use with wrought iron or steel pipe shall be either malleable iron or steel fittings and shall have a working pressure of not less than 300 psi gauge. (WOG)

N. Pipe joints may be screwed, flanged, or welded. Joints in copper or other non-ferrous tubing shall be of either of the following types: flare, compression, soldered, sweated, or welded. An air pressure test of not less than twenty-five (25) psi gauge shall be applied to these connections for a period of not less than 30 minutes.

O. Valves used with liquefied petroleum gas piping shall be of an approved type suitable for use with liquefied petroleum gas. Valve seat material, packing, gaskets, etc., shall be of a type resistant to the action of liquefied petroleum gases in the liquid phase. Every valve or gas cock shall be readily accessible for operation or repair.

P. Gas appliances burning not more than ninety (90) cubic feet per hour may be connected with seamless metal tubing connectors meeting the following requirements:

(1) End fittings shall be screw type or union type, permanently attached 'at the factory.

(2) The method of attaching such tubing connectors to the house piping and the gas appliances shall not depend upon separate ferrules, washers, gaskets, or other detachable parts for gas tightness, nor shall such separate parts be used to establish and maintain the methods of seal provided within the connector and fittings.

(3) The over-all length of such connectors shall not exceed six (6) feet.

Q. After new piping is installed, all outlets shall be capped and tested at a pressure of not less than twenty-five (25) pounds per square inch air pressure for a period of not less than thirty (30) minutes. There shall be no loss of pressure during this test.

(1) When an interruption of service occurs because of an addition to the piping system, or an existing system has been repaired or replaced, all additions, repaired, or replaced piping shall be tested at a pressure of not less than twenty-five (25) pounds per square inch air pressure for a period of not less than thirty (30) minutes. There shall be no loss of pressure during this test.

(2) A manometer, pressure gauge, or equivalent test shall be performed on an existing installation whenever there is an interruption of service caused by an out of gas situation, or if the dealer is servicing the system for the first time. Also, if servicing the system for the first time, the dealer shall do a visible systems check to insure the gas system is installed correctly. This shall be done before placing the system in service.

**\*\*Interruption of service means systems which require repair, replacement, or addition to the piping system as well as out of gas systems\***

(a)i Existing installations in a single family dwelling or small commercial building shall be tested between a minimum of 85% and a maximum of 95% of the operating pressure of the system at the location of the test. No gain or loss in pressure shall occur during this test for a period of three (3) minutes.

ii Existing installations in a larger piping application shall be tested between a minimum of 85% and a maximum of 95% of the operating pressure of the system at the location of the test. The duration of the test shall be not less than thirty (30) minutes for each 500 cubic feet of pipe volume or fraction thereof. No gain or loss in pressure shall occur during this test.

(b) An alternative test method may be used for systems serving appliances that receive gas at pressures of  $\frac{1}{2}$  % psig or less, by inserting a water manometer or pressure gauge into the system downstream of the final system regulator, pressurizing the system with either fuel gas or air to a test pressure of 9 inches + or -  $\sqrt{2}$  in. w.c., and observing the device for a pressure change. If fuel gas is used as a pressure source, it is necessary to pressurize the system to full operating pressure, close the container service valve, and then release enough gas from the system through a range burner valve or other suitable means to drop the system pressure to 9 in. + or -  $\sqrt{2}$  in. w.c. This insures that all regulators in the system are unlocked and that a leak anywhere in the system is communicated to the gauging device. No gain or loss of pressure shall occur during this test for a period of three minutes. For larger piping systems, the duration of the test shall not be less

than thirty (30) minutes for each 500 cubic feet of pipe volume or fraction thereof. No gain or loss in pressure shall occur during this test.

**There shall be no gain or loss of pressure during these tests.**

(3) If a pressure gain or loss is noted in any of the above test procedures, the source of the leak must be determined and repaired immediately before the system can be placed in operation.

R. A second test shall then be applied after gas cocks and appliances have been connected. This test shall be made by filling the lines with gas at operating pressure and shall be held long enough to prove all connections free from leaks by the use of a soapy water test at all connections. This test shall include the connections at the regulator and service line valve.

(1) The piping system shall withstand the test pressure specified without showing any evidence of leakage or other defects. Any reduction of test pressures as indicated by pressure gauge shall be deemed to indicate the presence of a leak unless such reduction can be readily attributed to some other cause.

(2) The leakage shall be located by means of an approved combustible gas detector, soap and water, or equivalent nonflammable solution, as applicable.

CAUTION: Since some leak test solutions, including soap and water, may cause corrosion or stress cracking, the piping shall be rinsed with water after testing, unless it has been determined the leak test solution is noncorrosive.

(3) When leakage or other defects are located, the affected portion of the piping system shall be repaired or replaced and retested.

(4) Before gas is introduced into a system of new gas piping, or back into an existing system after being shut off for repair, the entire system shall be checked to determine that there are no open fittings or ends and that all manual valves at outlets on equipment are closed and all unused valves at outlets are closed and plugged or capped. Immediately after turning on the gas, the piping system shall be checked to ascertain that no gas is escaping. If leakage is indicated, the gas supply shall be shut off until the necessary repairs have been made.

(5) Dealers shall then forward to the board, on an approved type form not later than the 15th of each month, a Report of Installation covering each container and system installed and/or tested during the preceding month. Additionally, the dealer shall provide the customer with a copy of the Report for Installation.



S. In searching for leaks, soap suds, peppermint, or other approved methods shall be used. The use of a flame for searching leaks is prohibited.

T. The pressure gauge used for testing the piping shall be graduated at intervals not exceeding two (2) pounds, with a maximum overall graduation of not more than 0 to 60 pounds.

U. Layout of piping shall be in such manner as to insure its being run as directly as possible, and shall be installed in a safe manner and in conformity with generally accepted liquefied petroleum gas piping practice.

V. All piping installation shall have provisions for expansion, contraction, vibration, and for settling to insure that the system remains gas tight.

W. No piping should be run or concealed in walls, partitions, etc. However, where the construction details of a building or structure render this impractical, approval may be granted, providing the piping has been tested under an air pressure of not less than 25 PSIG for a period of not less than thirty (30) minutes. The test must be witnessed by the owner, or user or a representative thereof, and a Report of Installation forwarded in accordance with Section 9, Par. A. All piping must be wrought iron or steel (either black or galvanized). The use of brass or copper pipe or seamless copper or other non-ferrous metal tubing is prohibited unless installed in approved type wrought iron or steel pipe chases or metal conduit. In the event an addition to the unit is made after the initial test or any alteration added it shall be tested in compliance with this requirement.

(1) When installing gas piping that is to be concealed unions, tubing fittings, running threads, right and left couplings, bushings, swing joints, and compression couplings made by combinations of fittings shall not be used. Exception No. 1: Tubing joints shall either be made with approved gas tubing fittings or be brazed with a material having a melting point in excess of 1000 °F (538 C). Brazing alloys shall not contain more than 0.05 percent phosphorus. Exception No. 2: 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 shall be permitted to be used.

X. No piping or tubing for use with liquefied petroleum gases shall be installed in concrete, and where installed below concrete floors (prohibited for public buildings. see Par. G.) there shall be a minimum covering of six (6) inches of sand or earth between the top of the piping and the bottom of the concrete. It is recommended where piping is installed below concrete floors, that it be adequately painted or wrapped as a preventative against corrosion.

Y. Where a riser or piping enters a room through a concrete floor it shall enter through a metal or other type conduit slightly larger in diameter than the piping itself; or the piping shall be painted and wrapped with a soft, resilient material of not less than one-eighth (1/8) inch in thickness where in contact with the concrete.

Z. No piping shall be installed across any floor where subject to being molested or stepped on, but shall be run along, and adequately supported to, wall baseboard near floor level.

AA. All pipe and fittings to be welded must be of the weldable type. The welding or brazing of any malleable fitting is prohibited.

BB. The welding of any liquefied petroleum gas pipe or fitting shall be performed by a certified welder, or one approved by a representative of the Board.

CC. The use of aluminum tubing in exterior locations, or where it is in contact with masonry or plaster walls or insulation, is prohibited.

DD. Horizontal runs of piping shall be supported by hangers in accordance with the following tables: SIZE OF PIPE SPACING OF SUPPORTS 1/2 inch and smaller 6 feet 3/4 inch to 1 inch 8 feet 1 1/4 inch and larger 10 feet

EE. Branch lines shall be installed so as to come out of side or top of running lines, and not from the bottom.

FF. Where risers are placed outside of building walls, they shall not be more than four (4) inches from such wall, unless protected by a substantial post to prevent mechanical injury, and shall be insulated where Butane or Butane-Propane mixture is used. No insulation is required where straight Propane is used. The piping shall be coated with two (2) coats of asphalt base paint, or other type inhibitor or preservative prior to applying the insulation.

GG. No person, firm, or corporation shall connect a liquefied petroleum gas container to any piping installation without having first determined that all visible piping of such installation complies with the rules and regulations of the Liquefied Petroleum Gas Board as contained in the latest edition of the State Code relative to liquefied petroleum gas piping.

H.H. LP Gas Containers Out of Service. When the board receives a complaint concerning an out of service container, the board or its director will notify the permit holder that it must retrieve the container and corresponding equipment within thirty (30) days from initial receipt of notification. Notification will be made by phone and both regular and certified U.S. Mail. Permit holders who fail to retrieve the container and equipment within thirty (30) days of receipt of notification will be fined fifty dollars (\$50.00) per

day fine for each day beyond the thirty-day (30) period, until the container and equipment are retrieved and may be subject to injunctive action to have the container and equipment removed.