



# Lake Havasu City Fire Department

## Fire Prevention Division

2330 McCulloch Blvd. N.  
Lake Havasu City, AZ 86403  
Phone: (928) 855-1141 [www.lhcaz.gov](http://www.lhcaz.gov)

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**FD Specification #24**  
**Standards for Installation of LP-Gas Containers & Piping**

**2018 IFC CH. 61**

**Rev. 9/01/2021**  
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### OVERVIEW

Installing LP-Gas containers and piping requires planning and expertise in order to best ensure a safe and legal operation. The Lake Havasu Fire Department (LHCFD or FD) approves the cylinder and associated piping locations, and directs the installer to meet applicable codes and standards.

### PURPOSE

This specification is intended to provide the necessary requirements for the safe installation of LP-Gas containers and piping, excluding connecting to appliances, which is the sole responsibility of the installer.

### SCOPE

This FD specification pertains to residential and commercial installations, or modifications of LP-Gas containers, and associated piping for any container 25 gallons or more including:

1. Aboveground tanks.
2. Underground tanks.
3. Mounded tanks.

### DEFINITIONS

1. **Flexible Connector:** a short (not exceeding 60 inches in overall length) piping system component that is fabricated from a flexible material and equipped with connections at both ends.
2. **LP-Gas:** Any of the liquefied petroleum gases, composed primarily of the following hydrocarbons either by themselves or as mixtures including propane, propylene, butane and butylenes.
3. **LP-Gas Container:** Any vessel, including cylinders and tanks, used for storing or transporting LP-Gases.
4. **LP-Gas System:** An assembly consisting of one or more containers with a means for conveying LP-Gas from a container to dispensing or consuming devices that incorporates components that control quantity, flow, pressure and physical state (liquid or vapor) of the LP-Gas.
5. **Public Way:** A street, alley, or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated, or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet.

6. **Swing Joint:** A pipe joint so constructed that the parts joined are movable either so that one of the parts may be rotated relative to the other or so that one of the parts in addition to being rotatable relative to the other may be moved about its own axis.

## **PERMITS**

1. A LHCFD Construction Permit is required when:
  - a. Installing or replacing a LP-Gas system outside of structures.
  - b. Modifying a LP-Gas system outside of structures.
2. FD approval and/or acceptance testing is required when:
  - a. Modifying or adding to existing LP-Gas piping outside of structures.
  - b. Relocating an existing LP-Gas container outside of structures.
3. LP-Gas permits expire 6 months after issuance.
4. LP-Gas permit fees vary according to tank size.
5. A LHCFD Construction Permit application and fee schedule, may be obtained at:  
**Lake Havasu City Fire Department, Fire Prevention Division**  
**2330 McCulloch Blvd. N., Lake Havasu City, AZ 86403**, or online at:  
Fire Prevention Permit Application: [https://www.lhcaz.gov/docs/default-source/department-documents/firepreventionpermitapplication.pdf?sfvrsn=3b802b7c\\_9](https://www.lhcaz.gov/docs/default-source/department-documents/firepreventionpermitapplication.pdf?sfvrsn=3b802b7c_9)  
Prevention Fee Schedule: [https://www.lhcaz.gov/docs/default-source/department-documents/prevention-fee-schedule.pdf?sfvrsn=4294127c\\_12](https://www.lhcaz.gov/docs/default-source/department-documents/prevention-fee-schedule.pdf?sfvrsn=4294127c_12)
6. LP-Gas piping, entering structures, requires a LHC Building Permit. Contact the LHC Building Division at (928) 453-4148.

## **REQUIREMENTS**

1. **Application:** Complete an LP-Gas Installation Application #FD 211 which includes an area to draw a site diagram or to attach a site plan.
2. **Site Plan:** On the LP-Gas Installation Application (permit), draw a site diagram or attach a site plan properly dimensioned and appropriately scaled.
3. **All LP-Gas Containers - Location:** Containers shall be located with respect to buildings, public ways, or lot lines of adjoining property of properties which can be built upon as follows:

TABLE 6104.3  
LOCATION OF LP-GAS CONTAINERS

LP-GAS CONTAINER CAPACITY (water gallons)	MINIMUM SEPARATION BETWEEN LP-GAS CONTAINERS AND BUILDINGS, PUBLIC WAYS <sup>g</sup> OR LOT LINES OF ADJOINING PROPERTY THAT CAN BE BUILT UPON		MINIMUM SEPARATION BETWEEN LP-GAS CONTAINERS <sup>h,c</sup> (feet)
	Mounded or underground LP-gas containers <sup>a</sup> (feet)	Above-ground LP-gas containers <sup>b</sup> (feet)	
Less than 125 <sup>e,d</sup>	10	5 <sup>e</sup>	None
125 to 250	10	10	None
251 to 500	10	10	3
501 to 2,000	10	25 <sup>e,f</sup>	3
2,001 to 30,000	50	50	5
30,001 to 70,000	50	75	(0.25 of sum of diameters of adjacent LP-gas containers)
70,001 to 90,000	50	100	
90,001 to 120,000	50	125	

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

- a. Minimum distance for underground LP-gas containers shall be measured from the pressure relief device and the filling or liquid-level gauge vent connection at the container, except that all parts of an underground LP-gas container shall be not less than 10 feet from a building or lot line of adjoining property that can be built upon.
- b. For other than installations in which the overhanging structure is 50 feet or more above the relief-valve discharge outlet. In applying the distance between buildings and ASME LP-gas containers with a water capacity of 125 gallons or more, not less than 50 percent of this horizontal distance shall also apply to all portions of the building that project more than 5 feet from the building wall and that are higher than the relief valve discharge outlet. This horizontal distance shall be measured from a point determined by projecting the outside edge of such overhanging structure vertically downward to grade or other level on which the LP-gas container is installed. Distances to the building wall shall be not less than those prescribed in this table.
- c. Where underground multicontainer installations are composed of individual LP-gas containers having a water capacity of 125 gallons or more, such containers shall be installed so as to provide access at their ends or sides to facilitate working with cranes or hoists.
- d. At a consumer site, if the aggregate water capacity of a multiple-container installation, comprised of individual LP-gas containers having a water capacity of less than 125 gallons, is 500 gallons or more, the minimum distance shall comply with the appropriate portion of this table, applying the aggregate capacity rather than the capacity per LP-gas container. If more than one such installation is made, each installation shall be separated from other installations by not less than 25 feet. Minimum distances between LP-gas containers need not be applied.
- e. The following shall apply to above-ground containers installed alongside buildings:
  1. LP-gas containers of less than a 125-gallon water capacity are allowed without a separation distance where in compliance with Items 2, 3 and 4.
  2. Department of Transportation (DOTn) specification LP-gas containers shall be located and installed so that the discharge from the container pressure relief device is not less than 3 feet horizontally from building openings below the level of such discharge and shall not be beneath buildings unless the space is well ventilated to the outside and is not enclosed for more than 50 percent of its perimeter. The discharge from LP-gas container pressure relief devices shall be located not less than 5 feet from exterior sources of ignition, openings into direct-vent (sealed combustion system) appliances or mechanical ventilation air intakes.
  3. ASME LP-gas containers of less than a 125-gallon water capacity shall be located and installed such that the discharge from pressure relief devices shall not terminate in or beneath buildings and shall be located not less than 5 feet horizontally from building openings below the level of such discharge and not less than 5 feet from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances, or mechanical ventilation air intakes.
  4. The filling connection and the vent from liquid-level gauges on either DOTn or ASME LP-gas containers filled at the point of installation shall be not less than 10 feet from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances or mechanical ventilation air intakes.
- f. This distance is allowed to be reduced to not less than 10 feet for a single LP-gas container of 1,200-gallon water capacity or less, provided that such container is not less than 25 feet from other LP-gas containers of more than 125-gallon water capacity.
- g. Above-ground LP-gas containers with a water capacity of 2,000 gallons or less shall be separated from public ways by a distance of not less than 5 feet. Containers with a water capacity greater than 2,000 gallons shall be separated from public ways in accordance with this table.

**Exception:** It is LHCDFD policy that a minimum of a 6-inch grouted solid concrete masonry wall (for the length and height of the container), reinforced with rebar, be constructed if it is necessary for a tank to be placed closer to the property line than permitted by the above table.

- a. A distance of 10 feet must be maintained between the container’s pressure relief device, fill valve, and vent discharge from any source of ignition. (Example: A/C units, compressor, pool equipment, solar equipment, etc.)
- b. The container location shall be level. A continuous reinforced concrete slab shall be poured to a minimum of 4-inches thick and extend approximately 6-inches beyond all supports of any container. **Exception:** Two reinforced concrete slabs of minimum 4-inch thickness the length of each container base extending 6-inches on both sides is also acceptable unless ground erosion is an issue. Then a continuous slab, or other approved non-combustible base, will need to be installed.

- c. Containers must be located out of flood danger.
  - d. Containers shall be kept properly painted.
  - e. All valves must be protected with approved covers.
  - f. No part of an aboveground container shall be located in the area 6 feet from either side of an overhead power line in excess of 600 volts. **Note: The power line drop going to a residence is less than this amount.** [If you encounter a line on which you are unsure of the voltage, call *Unisource Energy Services* at (520) 571-4000.]
  - g. Containers in a location where subject to vehicular traffic shall be adequately protected against such damage. See **LHCFD Specification #15 Vehicle Crash Protection**.
  - h. Weeds and other combustibles shall be kept a minimum of 10-feet away from all LPG containers.
4. **Piping Requirements:** LP-Gas piping must meet the following standards:
- a. Above ground, piping shall be black iron.
  - b. Underground piping shall be black iron gas pipe (factory coated), or approved polyethylene, and marked as such.
  - c. **Corrosion Protection:** All underground metallic equipment and components, including black iron pipe, must be protected from corrosion resulting from contact with the earth. All pipe lengths must be factory coated, or protected, and maintained to minimize corrosion. Fittings must be field wrapped with minimum 10-mil tape. Corrosion protection must continue for 6-inches above grade and 6 inches beyond fittings.
  - d. **Depth of cover:** Piping shall be buried at least 12 inches below grade. If 12 inches is not obtainable, then contact the LHCFD Fire Prevention Division for approval.
  - e. When using (underground) polyethylene pipe, risers and sweeps must be approved corrosion resistant metallic pipe.
  - f. Polyethylene piping shall not be used above grade.
  - g. A corrosion resistant conductor, not less than 14 gauge, or metallic yellow tracer tape, shall be located in the trench, the full length of approved polyethylene LPG piping, and shall NOT be in direct contact with the piping.
  - h. Above ground, piping is required to be well supported and protected from physical damage. Install at least 6-inches above grade, and it must be supported as follows:
    - 1. ½" pipe                      Supported every 6 feet
    - 2. ¾" – 1" pipe                Supported every 8 feet
    - 3. 1¼" or larger pipe        Supported every 10 feet

- i. Flexible connections, not to exceed 3 feet in length, shall be used to compensate for any setting or expansion at the tank. Type L or K copper tubing or listed flexible connection should be used.
  - j. Swing joints shall be required in installations where gas piping passes through masonry walls, unless piping is sleeved so that a 1-inch space is provided around the piping. **Note:** Not required when entering a building.
  - k. Approved manual shut off valves shall be installed so as to isolate each appliance. Valves must be located between the rigid pipe - upstream of the flex line within 6-feet of the appliance. See **Notes** below:
    - Note 1:** A valve is not required where the piping enters the residence, as long as the container valve is accessible.
    - Note 2:** Approved valves shall be fully accessible and protected from damage.
    - Note 3:** Valves are prohibited in concealed locations and furnace plenums.
  - l. Regulators must be securely attached to container valves or be well supported.
5. **Installation of Underground and Mounded Containers:** Underground and mounded container installations must comply with all provisions of the **LP-Gas CODE §666**, all subsections and other applicable regulations.

**INSPECTIONS:**

**24 HOUR NOTICE IS REQUIRED FOR ALL INSPECTIONS!**

- 1. Tank placement and piping, both above and underground, are required to be inspected for compliance with the **2018 International Fire Code, 2017 National Fire Protection Association Standard #58, and 2018 International Fuel Gas Code.**
- 2. The Fire Department inspections are for the purpose of fire code compliance only. Our inspections do not relieve one from compliance with any other agency's requirements.
- 3. An inspection may be requested by calling the Lake Havasu City Fast Tracking Inspection System, which is available 24 hours a day, 7 days a week. The request must be made at least one (1) day prior to the date the inspection is requested by calling **(928) 855-3816**. Before calling you will need:
  - a. A touch-tone phone.
  - b. A permit-specific Phone Access Code, which is found on the printed permit.
  - c. Inspection code: #540.
- 4. Inspection Requirements:
  - a. LPG piping must be subject to a 10-psi pressure test for 10 minutes. A fire inspector must observe the test.
  - b. All underground piping must remain exposed to allow a visual inspection.
  - c. Intended tank placement must be marked on the ground.

