



Lake Havasu City Fire Department Fire Prevention Bureau

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

FD Specification #21 Standards for Temporary AST & Motor Fueling Dispensing

2018 IFC

Rev. 9/01/2021
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OVERVIEW

Installations of permitted Protected Aboveground Storage Tanks (ASTs) for storing Flammable Liquids (FL) and Combustible Liquids (CL) are allowed at locations where motor fuels will be used by the property owner or business owner when approved by the Lake Havasu City Fire Department (LHCFD). Approved permits for this use will be issued for a specified time period.

SCOPE

This specification applies to temporary AST installations for storage and dispensing operations necessary for fueling onsite motor vehicles and construction equipment only, and not for resale to the general public. Typical installations include, construction sites, earthmoving projects, gravel or burrow pits.

PURPOSE

To provide guidance and references for persons planning to install and use a temporary AST or tank vehicle for the purpose of dispensing and fueling motor vehicles on private property.

DEFINITIONS

1. **Container.** A vessel of 60 gallons or less in capacity used for transporting or storing hazardous materials excluding piping systems, engines and engine fuel tanks.
2. **Class I Liquid (Flammable).** A liquid having a closed cup flash point below 100°F.
3. **Class II Liquid (Combustible).** A liquid having a closed cup flash point at or above 100°F and below 140°F.
4. **Tank.** A vessel containing more than 60 gallons.
5. **Tank, Portable.** A packaging of more than 60-gallon capacity and designed primarily to be loaded into or on or temporarily attached to a transport vehicle or ship and equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means. It does not include any cylinder having less than a 1,000-pound water capacity, cargo tank, tank car tank or trailers carrying cylinders of more than 1,000-pound water capacity.
6. **Tank, Protected Above Ground (AST).** A tank *listed* in accordance with **UL 2085** consisting of a primary tank provided with protection from physical damage and fire-resistive protection from a high-intensity liquid pool fire exposure. The tank may provide protection elements as a unit or may be an assembly of components, or a combination thereof. Requires **NFPA 704** placarding.
7. **Tank Vehicle.** A vehicle other than a railroad tank car or boat, with a cargo tank mounted thereon or built as an integral part thereof, used for the transportation of FL or CL. Tank vehicles include self-propelled vehicles and full trailers and semitrailers, with or without motive power, and carrying part or the entire load. Requires DOT placarding.

REFERENCES

International Fire Code (2018 Ed.):

- Ch. 01 §105.7.9 Construction Permit for FL & CL
- Ch. 03 §312 *Vehicle Impact Protection*
- Ch. 09 §906 *Potable Fire Extinguishers*
- Ch. 23 §2306.2.3 Motor Fuel-Dispensing Facilities, AST
- Ch. 57 §5704.2 FL & CL *Tank Storage*; §5704.2.9 FL & CL AST; §5706.2 *Storage and Dispensing of FL & CL on Farms & Construction Sites*

Underwriters Laboratories, Inc.

UL Standard 2085 - Protected Above-ground Tanks for FL & CL

Note: This FD Specification is intended to be a guide only. For full compliance and additional requirements, refer to the references above. Where conflicts exist between this document and the applicable codes and standards, the above references supersede.

PERMITS, PLANS & CONSTRUCTION DOCUMENTS

A Fire Department Construction Permit for Flammable and Combustible Liquids is required to install, alter, remove, abandon or otherwise dispose of a flammable or combustible liquid tank.

Contact the LHCFD Fire Prevention Division at (928) 855-1141 for permit information or may be obtained from the LHC Fire Prevention Division located at 2330 McCulloch Blvd. N. (IFC §105.7.9)

Permit Expiration

Construction permits shall automatically become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. Before such work recommences, a new permit must be first obtained and the fee to recommence work, if any, shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded one year.

Construction Documents Submittal

1. Construction documents and supporting data shall be submitted in three (3) sets with each application for a permit and in such form and detail as required by the LHCFD Fire Marshal (*Fire Marshal*).
2. The construction documents need not be prepared by a registered design professional. Plans must include details of the following (catalog cut sheets should be included for standardized, prefabricated parts and equipment):
 - Tank specifications including listing, quantities and type of fuel to be contained
 - Tank appurtenances: piping, valves, delivery and dispensing equipment
 - Secondary containment system
 - Electrical systems
 - Overfill prevention
 - Vapor recovery systems (if applicable)
 - Emergency controls and monitoring systems
 - Venting systems
 - Fire control systems
 - Required signs and labels, including their general locations
 - Safety equipment
 - Fire apparatus access
 - Vehicle impact protection
 - **NFPA 704** Placarding on fixed tanks; DOT Placarding & ID numbers on mobile tanks
 - Fire extinguisher locations
 - Other information as required
3. Submit an approved site plan showing the location of the tank(s) relative to property lines, buildings, combustible storage and other tanks. (See **EXHIBIT 2**)

4. To schedule an inspection, call Lake Havasu City’s Fast Track (IVR) inspection system at 855-3816. It is available 24 hours a day, 7 days a week. Before calling you will need:
 - a. A touch-tone telephone or cell phone.
 - b. A permit-specific phone access code, which is found on the printed permit.
 - c. To enter the inspection code: #580.

REQUIREMENTS

Fuel dispensing operations must comply with **IFC § 2304 Dispensing Operations** and all applicable subsections.

Combustibles and Open Flames Near Tanks

Storage areas must be kept free from weeds and extraneous combustible material. Open flames and smoking are prohibited in FL & CL storage areas.

Smoking and Signs

Smoking or open flames shall be prohibited within 50 feet of fueling operations. **"NO SMOKING"** signs complying with IFC §310.3 must be posted conspicuously about the premises. Such signs shall have letters not less than **4 inches** in height on a background of contrasting color (i.e. **Red letters** on a white background).

Marking of Tanks and Containers

Tanks and containers for the storage of liquids above ground shall be conspicuously marked with the name of the product which they contain and the words: **FLAMMABLE-KEEP FIRE AND FLAME AWAY**. Tanks shall bear the additional marking: **KEEP 50 FEET FROM BUILDINGS**.

Temporary Tanks

The capacity of temporary above-ground tanks containing Class I or II liquids must not exceed 10,000 gallons. Tanks shall be of the single-compartment design and UL 2085 Listed.

Above-ground tanks used for outside, above-grade storage of Class I & II liquids shall be *listed* and *labeled* as protected above-ground tanks in accordance with UL 2085 and must be in accordance with IFC Chapter 57. Such tanks shall be located in accordance with IFC Table 2306.2.3 (below).

TABLE 2306.2.3
MINIMUM SEPARATION REQUIREMENTS FOR ABOVE-GROUND TANKS

TANK TYPE	INDIVIDUAL TANK CAPACITY (gallons)	MINIMUM DISTANCE FROM NEAREST IMPORTANT BUILDING ON SAME PROPERTY (feet)	MINIMUM DISTANCE FROM NEAREST FUEL DISPENSER (feet)	MINIMUM DISTANCE FROM LOT LINE THAT IS OR CAN BE BUILT ON, INCLUDING THE OPPOSITE SIDE OF A PUBLIC WAY (feet)	MINIMUM DISTANCE FROM NEAREST SIDE OF ANY PUBLIC WAY (feet)	MINIMUM DISTANCE BETWEEN TANKS (feet)
Protected above-ground tanks	Less than or equal to 6,000	5	25 ^{a,c}	15	5	3
	Greater than 6,000	15	25 ^{a,c}	25	15	3
Tanks in vaults	0–20,000	0 ^b	0	0 ^b	0	Separate compartment required for each tank
Other tanks	All	50	50	100	50	3

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

- a. At fleet vehicle motor fuel-dispensing facilities, a minimum separation distance is not required.
- b. Underground vaults shall be located such that they will not be subject to loading from nearby structures, or they shall be designed to accommodate applied loads from existing or future structures that can be built nearby.
- c. For Class IIIB liquids in protected above-ground tanks, a minimum separation distance is not required.

Fill-Opening Security

Fill openings shall be equipped with a locking closure device. Fill openings shall be separate from vent openings.

Tank Vents

Tanks shall be provided with a method of normal and emergency venting. Normal vents shall be in accordance with IFC §5704.2.7.3. Emergency vents shall be in accordance with IFC §5704.2.7.4 and shall be arranged to discharge in a manner which prevents localized overheating or flame impingement on any part of the tank in the event that vapors from such vents are ignited.

Location

Tanks containing Class I or II liquids shall be kept outside and at least 50 feet from buildings and combustible storage. Additional distance shall be provided when necessary to ensure that vehicles, equipment and containers being filled directly from such tanks will not be less than 50 feet from structures, or other combustible storage.

Grounding & Bonding of Tanks

Adequate grounding and bonding shall be provided to prevent the accumulation of static electricity whenever Class I or Class II liquids are transferred or dispensed.

Locations Where Above-Ground Tanks are Prohibited

The storage of Class I and II liquids in above-ground tanks is prohibited within the limits established by law, as the limits of LHC Zoning Districts, in which such storage is prohibited including zones **C-1, C-0, R-1, R-2, R-3, R-4, R-1-C, and RE without express approval by the Lake Havasu City Planning and Zoning Division.**

Type of Tanks

UL 2085 Listed ASTs shall be provided with top openings only or shall be elevated for gravity discharge.

- **Tanks with Top Openings Only.** Tanks with top openings shall be mounted on well-constructed metal legs connected to shoes or runners designed so that the tank is stabilized and the entire tank and its supports can be moved as a unit; or for stationary tanks, on a stable base of timbers or blocks approximately 6 inches in height which prevents the tank from contacting the ground.
- **Pumps and Fittings.** Tanks with top openings only shall be equipped with a tightly and permanently attached, *approved* pumping device having an *approved* hose of sufficient length for filling vehicles, equipment or containers to be served from the tank. Either the pump or the hose shall be equipped with a padlock to its hanger to prevent tampering. An effective anti-siphoning device shall be included in the pump discharge unless a self-closing nozzle is provided. Siphons or internal pressure discharge devices shall *not be used*

Tanks for Gravity Discharge

Tanks with a connection in the bottom or the end for gravity-dispensing liquids shall be mounted and equipped as follows:

1. Supports to elevate the tank for gravity discharge shall be designed to carry all required loads and provide stability.
2. Bottom or end openings for gravity discharge shall be equipped with a valve located adjacent to the tank shell which will close automatically in the event of fire through the operation of an effective heat-activated releasing device. Where this valve cannot be operated manually, it shall be supplemented by a second, manually operated valve. The gravity discharge outlet shall be provided with an *approved* hose equipped with a self-closing valve at the discharge end of a type that can be padlocked to its hanger.

Spill Control, Drainage Control and Diking

Outdoor storage areas shall be provided with drainage control or diking. The area surrounding a tank or group of tanks shall be provided with drainage control or shall be diked to prevent accidental discharge of liquid from endangering adjacent tanks, adjoining property or reaching waterways. **Exceptions:**

1. The LHCDFD Fire Marshal is authorized to alter or waive these requirements based on a technical report which demonstrates that such tank or group of tanks does not constitute a hazard to other tanks, waterways or adjoining property, after consideration of special features such as topographical conditions, nature of occupancy and proximity to buildings on the same or adjacent property, capacity, and construction of proposed tanks and character of liquids to be stored, and nature and quantity of private and public fire protection provided.
2. Drainage control and diking is not required for *listed* secondary containment tanks.

Portable Fire Extinguishers

Portable fire extinguishers with a minimum rating of **2-A:20-B:C** (recommend a 3:A-40-B:C) and complying with IFC § 906 shall be provided where required by the LHCDFD Fire Marshal. At least one fire extinguisher must be located not less than 20-feet or more than 50-feet travel distance from the fueling operation.

Dispensing from Tank Vehicles

Where approved by the *Fire Marshal*, liquids used as fuels are allowed to be transferred from tank vehicles into the tanks of motor vehicles or special equipment, provided:

1. The tank vehicle's specific function is that of supplying fuel to motor vehicle fuel tanks.
2. The dispensing hose does not exceed 100 feet in length.
3. The dispensing nozzle is an approved type.
4. The dispensing hose is properly placed on an approved reel or in a compartment provided before the tank vehicle is moved.
5. Signs prohibiting smoking or open flames within 25 feet of the vehicle or the point of refueling are prominently posted on the tank vehicle.
6. Electrical devices and wiring in areas where fuel dispensing is conducted are in accordance with the *National Electric Code* (NFPA 70).
7. Tank vehicle-dispensing equipment is operated only by designated personnel who are trained to handle and dispense motor fuels.
8. Provisions are made for controlling and mitigating unauthorized discharges.

Dispensing Locations

Dispensing from tank vehicles shall be conducted at least 50-feet from structures or combustibles.

Vehicle Impact Protection

1. Vehicle impact protection must be provided by approved guard posts (bollards) or by other *approved* physical barriers. (Refer to LHCDFD Specification #15 *Standard for Vehicle Impact Protection*)
2. **Guard posts** shall be constructed of steel not less than 4 inches in diameter and concrete filled. They shall be spaced not more than 4 feet between posts on center and set not less than 3 feet deep in a concrete footing of not less than a 15-inch diameter. They must be set with the top of the posts not less than 3 feet above ground and located not less than 3 feet from the protected tank.
3. Physical barriers may be approved in lieu of guard posts. Where approved, they shall be a minimum of 36 inches in height and shall resist a force of 12,000 pounds applied 36 inches above the adjacent ground surface (e.g. K-rail) A typical barrier of **K-rail** consists of 20-foot long sections with pin and loop connections, each weighing approximately 8,000 lbs. K-rail sections need to be secured by pins. (See **EXHIBIT 1: K-rail**)
4. Approved vehicle impact protection must protect the tank on all sides subject to impact by vehicle and other heavy equipment

Site Security and Safety

ASTs shall be safeguarded from public access or unauthorized entry in an approved manner. Fencing shall be the minimum required security and can be constructed of wire mesh, metal sheathing or masonry. ASTs located on property that is already enclosed by security fencing will not require any other fencing.

PROCEDURE

1. **Submit Three (3) Sets of Acceptable Plans** to the LHC Fire Prevention Division, which includes the location of the AST(s), its relation to existing structures and property lines, and all electrical, structural, and mechanical modifications to the property involving the installation.
2. **Provide Underwriters Laboratories (UL) 2085 Approval Listing**, for all protected ASTs on the plans submitted for approval. If none are available at the time of plan submittal, they must be provided to the Fire Department prior to site inspection.
3. **Once the plans are approved**, schedule an inspection using the IVR System or contact the LHCFD Fire Prevention Division at least 48 hours prior to the beginning of fueling operations.

APPROVED: _____



Scott Hartman, Fire Code Official

DATE: _____

09/01/2021

EXHIBIT 1: Example of K-rail

**FOR VEHICLE CONTROL AND
CONSTRUCTION SITE SAFETY**

- Reduce Crossover Accidents
- Reduce Liability Exposure
- Reduce Vehicle Damage
- Reduce Traffic Fatalities

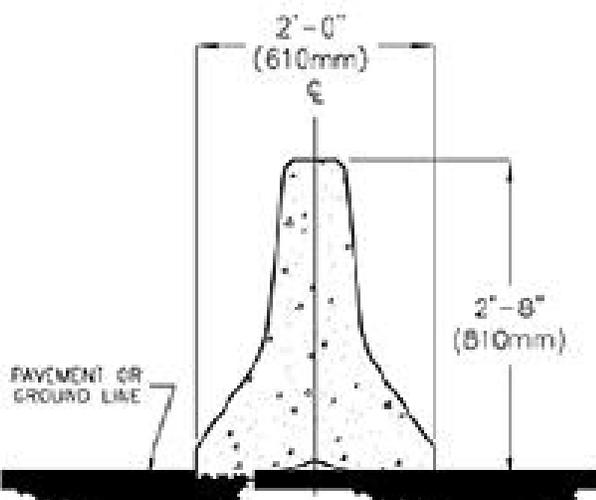
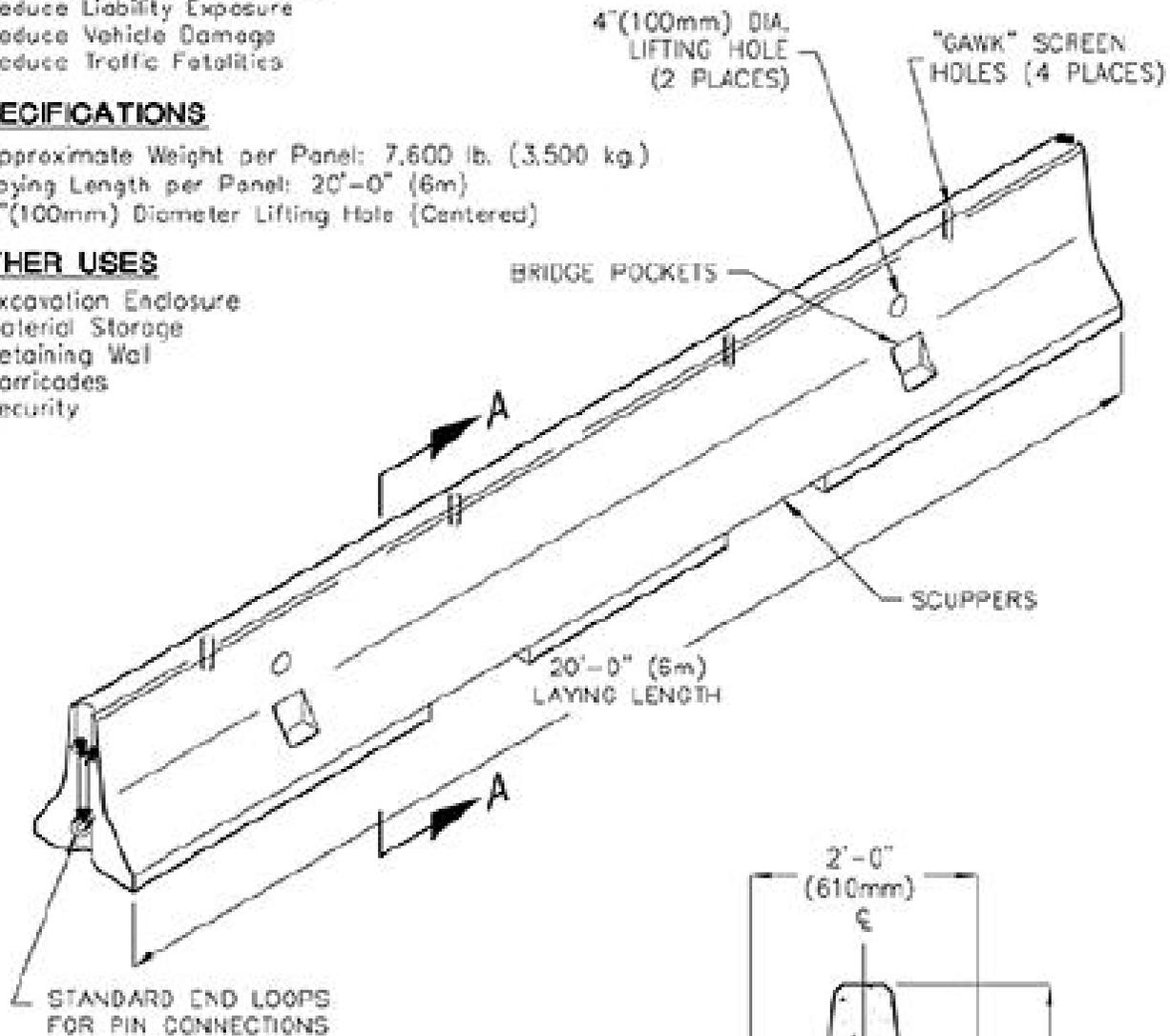
SPECIFICATIONS

- Approximate Weight per Panel: 7,600 lb. (3,500 kg)
- Laying Length per Panel: 20'-0" (6m)
- 4" (100mm) Diameter Lifting Hole (Centered)

OTHER USES

- Excavation Enclosure
- Material Storage
- Retaining Wall
- Barricades
- Security

**20' (6m) BARRIER RAIL
CALTRANS TYPE K**



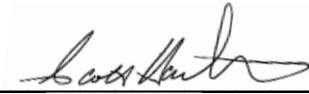
JENSEN PRECAST MANUFACTURES CONCRETE BARRIER RAILS, IDEALLY SUITED FOR STREET CLOSURES, DETOURS AND CONSTRUCTION SITES. BARRIERS ARE AVAILABLE FOR SALE OR RENTAL ON A SHORT OR LONG DURATION BASIS.

APPROVED BY THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION.

EXHIBIT 2: Site Plan

(Use grid format below.)

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APPROVED: 
 Scott Hartman, Fire Marshal

DATE: 09/01/2021