



Kerrville Fire Marshal

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Installation Checklist for Underground Combustible / Flammable Liquids Storage Tanks

Business Name: _____
Address: _____

INSTALLING CONTRACTOR

Business Name: _____
Address: _____
Phone Number: _____
Job Forman: _____
Installing Contractor License Number: _____

TANKS

1.	Capacity _____	Product _____	UL# _____
2.	Capacity _____	Product _____	UL# _____
3.	Capacity _____	Product _____	UL# _____
4.	Capacity _____	Product _____	UL# _____
5.	Capacity _____	Product _____	UL# _____
6.	Capacity _____	Product _____	UL# _____

- TCEQ provided with 30-day notice.
- Installation plans and specifications are approved by KFMO.

THE FOLLOWING SHALL BE INSPECTED PRIOR TO PLACEMENT IN PIT:

- Tanks are marked with UL identification.
- Tank serial number(s) and U.L. listing number(s) are recorded for each tank.
- Tank diameter(s) checked and recorded.
- Tank tightness Air test, 3-5 psi for minimum of 1-hr, witnessed prior to tank(s) being placed in pit.
- The interstitial space (annulus) of double-wall or secondary containment tanks shall be tested either:
 - hydrostatically or with air pressure at a gauge pressure of 3 to 5 psi (20 to 35 kPa) **or**
 - by vacuum at 2.6 psi (18 kPa) **or**
 - in accordance with the tank's listing or the manufacturer's instructions.
 - The pressure or vacuum shall be held for not less than 1 hour or for the duration specified in the listing procedures for the tank.
- Clean backfill available. pit is free of rocks, clumps, trash and debris. Pea-gravel must be used with fiberglass tanks.

THE FOLLOWING SHALL BE INSPECTED AFTER PLACEMENT IN PIT:

- Tanks located a minimum of 3-feet from lot lines and buildings.
- A minimum distance of 1 foot, shell to shell, shall be maintained between tanks.
- Tanks shall be properly anchored. **Exception: acceptable hydrology study**
- Sampling tubes of a minimum 6 inches in diameter are installed in the backfill material of each underground flammable or combustible liquid storage tank.
- The tubes extend from a point 12 inches below the average grade of the excavation to ground level

- Tubes are in sumps provided with suitable surface access caps.
- Each tank site is provided with a sampling tube sump at the corners of the excavation with a minimum of four sumps.
- Sampling tubes are placed in the product line excavation within 10 feet of the tank excavation and one every 50 feet routed along the product lines towards the dispensers, a minimum of two are provided.
- Tank(s) not subjected to vehicular traffic shall have a minimum cover of:
 - 12-inches of backfill and 12-inches of clean earth **or**
 - 12-inches of backfill plus 4-inches reinforced concrete
- Tanks subject to vehicular traffic shall have a minimum cover of:
 - 36-inches of backfill **or**
 - 18-inches of compacted backfill plus 6 inches reinforced concrete that extends at least 1-foot beyond outline of the tanks, **or**
 - 18-inches of compacted backfill plus 8-inches asphaltic concrete that extends at least 1-foot beyond outline of the tanks.
- Backfill placed (all openings and fittings remain exposed). Fill material should be properly tamped against belly of the tank to fill all voids.

THE FOLLOWING SHALL BE INSPECTED BEFORE COVERING ANY PIPING:

- All piping and valves are U.L. listed or of approved type.
- Underground piping shall be installed on at least 6 in. (150 mm) of well-compacted bedding material.
- In areas subject to vehicle traffic, the pipe trench shall be deep enough to permit a cover of at least 18 in. (450 mm) of well-compacted backfill material and pavement.
- In paved areas where a minimum 2 in. (50 mm) of asphalt is used, backfill between the pipe and the asphalt shall be permitted to be reduced to 8 in. (200 mm) minimum.
- In paved areas where a minimum 4 in. (100 mm) of reinforced concrete is used, backfill between the pipe and the asphalt shall be permitted to be reduced to 4 in. (100 mm) minimum.
- In areas not subject to vehicle traffic, the pipe trench shall be deep enough to permit a cover of at least 6 in. (150 mm) of well-compacted backfill material.
- Piping within the same trench shall be separated horizontally by at least two pipe diameters. Separation need not exceed 9 in. (230 mm).
- Two or more levels of piping within the same trench shall be separated vertically by a minimum 6 in. (150 mm) of well-compacted bedding material.
- Piping is supported and separated to prevent damage and vibration.
- Unless tested in accordance with the applicable section of ASME B31.9, all piping shall be tested before being covered, enclosed or placed in use.
 - Testing shall be done hydrostatically to 150 percent of the maximum anticipated pressure of the system **or**
 - pneumatically to 110 percent of the maximum anticipated pressure of the system, **and**
 - the test pressure shall be maintained while a complete visual inspection of all joints and connections is conducted.
 - In no case shall the test pressure be less than a gauge pressure of 5 psi (35 kPa) measured at the highest point of the system
 - the test pressure is maintained for not less than 10 minutes.
 - Care shall be exercised to ensure that these pressures are not applied to vented storage tanks. Such storage tanks shall be tested independently from the piping.
- The interstitial (annular) space of secondary containment-type piping shall be tested:
 - hydrostatically at a gauge pressure of 5 psi (35 kPa) **or**
 - air pressure at a gauge pressure of 5 psi (35 kPa) **or**
 - shall be tested in accordance with its listing or with the manufacturer's instructions.

- The pressure source shall be disconnected from the interstitial space to ensure that the test is being conducted on a closed system.
- The pressure shall be maintained for a minimum of 1 hour.
- All metal pipes is properly wrapped (with 50% overlap), properly coated, or cathodically protected to prevent galvanic action or corrosion.

SPILL/OVERFILL PREVENTION

- A spill container with a capacity of not less than 5 gallons is provided for each fill connection. Top fill containers are noncombustible, fixed to the tank and equipped with a manual drain valve that drains into the main tank.
- An overfill prevention system is provided for each tank that operates as follows:
 - Automatically shut off the flow of fuel to the tank when the quantity reaches 95 percent of tank capacity **and**
 - Alert the transfer operator when the tank is no more than 90 percent full by restricting the flow of liquid into the tank or triggering the high-level alarm

VENTS

- Vent pipes from underground tanks storing Class I liquids are located so that the discharge point is outside of buildings, higher than the fill pipe opening, and not less than 12 ft (3.6 m) above the adjacent ground level.
- Vent pipe outlets are located and directed so that vapors will not accumulate or travel to an unsafe location, enter building openings, or be trapped under eaves and shall be at least 5 ft (1.5 m) from building openings and at least 15 ft (4.5 m) from powered ventilation air intake devices.
- Vent pipes from tanks storing Class II or Class IIIA liquids terminate outside of the building and higher than the fill pipe opening.
- Vent pipes are not be obstructed by devices provided for vapor recovery or other purposes unless the tank and associated piping and equipment are otherwise protected to limit back-pressure development to less than the maximum working pressure of the tank and equipment by the provision of pressure-vacuum vents, rupture discs, or other tank-venting devices installed in the tank vent lines.
- Vent outlets and devices are protected to minimize the possibility of blockage from weather, dirt, or insect nests.
- Vent pipes are fitted with return bends, coarse screens, or other devices to minimize ingress of foreign material.
- Vent pipes and vapor return piping are installed without sags or traps in which liquid can collect.
- Where tank vent piping is manifolded, pipe sizes are such as to discharge, within the pressure limitations of the system, the vapors they could be required to handle when manifolded tanks are filled simultaneously.
- Piping systems are bonded and grounded.
- Each loading and unloading riser is marked to identify the product for which it is to be used.