

**SAN BERNARDINO COUNTY FIRE DEPARTMENT**  
**Office of the Fire Marshal**  
**Hazardous Materials Division**  
**620 South "E" Street, San Bernardino, CA 92415-0153**



**INSTALLATION, MODIFICATION &  
MONITORING REQUIREMENTS FOR NEW  
AND EXISTING UNDERGROUND  
STORAGE TANKS**

Revised on 9/22/2008

## **INSTALLATION AND MODIFICATION REQUIREMENTS FOR NEW AND EXISTING UNDERGROUND STORAGE TANKS (USTs)**

Hazardous materials/waste underground storage tank systems constructed in the County of San Bernardino shall conform to standards issued by the San Bernardino County Fire Department, Office of the Fire Marshal, Hazardous Materials Division, hereinafter referred to as the Department. Written approval shall be obtained from this Department prior to the installation, replacement, modification or repair of any underground storage tank system.

The Department requires four onsite construction inspections. Inspections shall be scheduled at least five working days prior to the anticipated inspection time. An approved application must be on file with this Department before an inspection will be scheduled.

**A completed installation application plus a fee of \$758.00 for the first tank and \$233.00 for each additional tank shall accompany the plans when submitted.**

- *The first inspection shall be to witness the manufacturer-required pre-installation testing and proper tank set. This inspection will also determine that the excavation is clean and has appropriate backfill.*
- *The second inspection is the pressure test of the complete primary product piping, vent and vapor recovery system while the top of the tank(s) and all associated piping are exposed.*
- *The third inspection is the pressure test of secondary containment and a hydrostatic (lake) test of sumps and dispenser pans.*
- *The fourth inspection is the final construction inspection required before placing the tank(s) into service.*
- *Additional inspections will be billed at the hourly rate.*

NEW Installations after July 1, 2004:

- A permit shall be obtained from the Department for any construction, installation or modification project that requires breaking concrete, disconnection or reconnection of any monitoring system, or disconnection or reconnection of any piping. This includes enhanced vapor recovery and in-station diagnostics installations and upgrades.

Failure to obtain all necessary permits will result in a 100% penalty fee. Failure to obtain local permits (i.e., building, local fire department, land use, or planning permits) will result in cancellation of the inspection and a reinspection fee will be charged.

- ***All new installations require Enhanced Leak Detection testing prior to placing UST(s) into service. This shall require that a workplan for probe installation, inoculation, and sampling of the system be submitted and approved prior to any testing being done.***
- At the final inspection along with demonstrating the monitoring system, you will be required to present copies of the test data from the Enhanced Leak Detection (ELD) test, certification of the monitoring system, UST Facility Form; Tank Page 1 & 2 Form for each UST, leak detection-monitoring and response plan, certificate of financial responsibility, designated operator statement and 2 copies of the Business Emergency/ Contingency Plan.

It is the obligation of the applicant to show that the proposed underground storage tank system is suitable for the soil and groundwater conditions.

## REQUIREMENTS

The following guidelines shall be followed with any routine underground storage tank (UST) installation:

1. The construction application; UST Facility form; UST Page 1 & 2 form for each UST; and Certification of Financial Responsibility forms shall be completed and submitted with the appropriate permit fees.

If an existing facility does not have a current operating permit from the Department, **all permit fees and any delinquent charges must be brought up to date prior to the issuance of a construction permit.**

2. A minimum of two (2) sets of plans shall be submitted for review and approval. The Department will retain one set of plans as a file copy. **WORK MAY NOT BEGIN UNTIL THE PLANS HAVE BEEN APPROVED BY THIS DEPARTMENT AND ALL OTHER APPLICABLE REGULATORY AGENCIES.**

## DESIGN REQUIREMENTS FOR NEW AND EXISTING UNDERGROUND STORAGE TANKS

Plans submitted shall:

1. Be submitted in sufficient quantity to allow the Department to retain one copy.
2. Be drawn to scale (20-100 feet to the inch) for the plot plan. This will depend on the area covered and must be a suitable scale to show details of the tank system to be installed.
3. Show the following:
  - A. *Plot plan and key map*
  - B. *Buildings*
  - C. *Water supply well or water service lines*
  - D. *Sewage disposal system*
  - E. *Location of proposed and existing tanks*
  - F. *Details of the proposed tank installation and piping system, plan cross-section, and elevation*
  - G. *Elevation of highest groundwater level on record and source of data. Finished grade and pertinent inverts*
  - H. *A cross-section of a test hole and its location may be required. Test holes must be carried down at least four feet beyond the bottom elevation of the tank or to groundwater, prior to full depth exploration*
  - I. *Material of construction of the storage tank and piping system*
  - J. *All storm water recharge basins and piping on the property, or within one hundred (100) feet of the property line, must be shown to scale on the plot plan.*
  - K. *Emergency Shut-Off switch location(s).*
  - L. *Any surface waters within two hundred (200) feet of the tank(s)*
  - M. *Leak detection/monitoring system*
  - N. *Overfill protection provisions*
  - O. *Enhanced Vapor Recovery – phase II Vapor Processing Unit and 2-hour firewall if unit is within 10 feet of the property lines or any building.*
    - a. *Bollards required if vehicle safety is an issue for the Vapor Processing Unit.*

If structural or physical features of the installation are determined to require special considerations, the Department may require plans prepared by a registered professional engineer.

**Note:** Plan check approval may take from **two to six weeks**. Allow for the maximum time when submitting your plans.

Upon review of the completed application (plans, specifications, fees, etc.), approval of acceptable plans will be issued by the placement of an approval stamp on the site plan. **Approval will be valid for a period of nine (9) months from the time of issuance.**

## **REQUIREMENTS FOR INSTALLATION, MODIFICATION & MONITORING FOR NEW AND EXISTING UNDERGROUND STORAGE TANKS**

- 1. ALL USTs** shall have complete secondary containment with approved corrosion protection. Tanks shall comply with all applicable testing and engineering standards as described in the California Code of Regulations Title 23, Section 2635 – 2636.
- The manufacturer, construction types and U.L. number for the tank(s) shall be provided to this Department for approval prior to installation. Acceptable designs for tank construction include double-walled, fiberglass reinforced plastics, steel clad with fiberglass reinforced plastics and double-walled steel or plastic.
- USTs installed after July 1, 2004 must be AB 2481 compliant. All new underground storage tank installations shall require that all portions of the containment system must have continuous monitoring by Vacuum, Pressure or Hydrostatic (VPH). With the exception of double walled UDCs and double walled sumps which may be programmed to alarm only, all new monitoring shall include positive shut down of turbines during any alarm condition (including loss of vacuum or introduction of any liquid into the system). The monitor must have a fail-safe shutdown. If the power is discontinued to the monitor or any of its sensors, then the turbine(s) must shutdown.
- Installation of a Vacuum, Pressure or Hydrostatic (VPH) system does not preempt the required installation of liquid sensors in all sumps and line leak detectors.
- All pressurized piping systems shall be required to have line leak detectors. Electronic line leak detectors are recommended, however the minimum requirement shall be a mechanical device that will restrict flow by at least 50% and shall detect a leak of three (3) gallons per hour at 10 psi.. All leak detectors are required to be tested annually. Existing single wall piping systems must have an electronic line leak detector.
- Manifolding of product piping is not permitted at the UDC/dispenser area by this Department.
- All USTs must be tested prior to installation per manufacturer requirements in the presence of an inspector.
- All tanks larger than 2,000 gallons shall be set or removed using an appropriate sized “crane”. Other equipment will only be allowed with pre-approval from this Department.
- ALL** manways and access points shall be designed to prevent entry of surface waters and shall be tamper-resistant.
- The original excavation for the UST shall have a watertight cover that extends at least one foot beyond each boundary of the excavation in all directions. The cover shall be properly sloped to divert water and liquids from the manways and sumps. This cover shall be concrete or other material pre-approved by this Department.
- An approved fluid-tight fill box is required to prevent infiltration of spilled hazardous substances or surface water into the tank hole.

12. If the potential for high ground water exists at the subject site, a method to restrain the USTs which is approved by a Licensed Engineer shall be used to ensure the USTs will not be dislodged by water intrusion (e.g., concrete deadmen or concrete slab with tank tie downs).
13. All piping systems shall have secondary containment. The secondary containment system shall be capable of intercepting, containing and directing any leakage from product lines, turbines, suction lines, siphon systems, risers or return lines to a monitoring point. Monitoring equipment shall be placed at the lowest point of the system and shall be both audible and visual. Product delivery systems and vapor recovery lines shall also be provided with shear valves. Shear valves shall be installed and meet all design standards per 2001 Uniform Fire Code Section 5202.5.3.2 requirements.
14. Secondary containment shall be required on all vent and vapor recovery piping installed after July 1, 2003. Facilities with single wall systems will be required to upgrade existing piping when significant construction, repair or modification is proposed.
15. Ball float check valves or another approved device shall be installed to prevent any liquids or product from entering the vapor recovery or vent lines.
16. All vent lines shall be provided with a flexible connector and vent box at the point where underground piping has a change of direction to above ground piping. All vent and vapor recovery piping shall be of rigid construction and be made of materials that are corrosion resistant and approved by this Department. (Current approved materials are fiber-reinforced plastics also known as fiberglass.)
17. The construction type and manufacturer of piping shall be provided to this Department for approval prior to installation.
18. All monitoring points shall be provided with tamper proof, fluid-tight access.
19. Piping sumps and fill sumps must be rigidly designed and affixed (bonded) to the tank. All sumps must be watertight and shall pass a hydrostatic test. The test shall include filling each sump with water at a level equal to or greater than 2-inches above the highest penetration and shall be tested for a minimum of 24 hours.
20. Fill, vent and vapor recovery risers shall be contained in approved sumps with monitors.
21. All dispensers shall be designed to contain any unauthorized release, leak or spilled fluids from any portion of the dispensing unit and shall discontinue fluid flow should any leak occur or should any fluid be detected by the monitoring system.
22. All under dispenser containment systems shall be designed to have flex lines, and any metal fittings shall be inside the containment system (i.e., deep boxes) and shall be constructed of non-corrosive materials.
23. This Department does **NOT** allow discriminating sensors to be used in turbine sumps, fill sumps, dispenser containment or in the tank annular space. Sensors used for leak detection in these locations **must provide positive shut down of the turbine** and an alarm with the detection of any liquids.
24. Sumps shall be rigid and structurally attached to the tank surface. Sumps shall be watertight and all penetrations shall have approved fittings.
25. Flex connectors shall be installed on all underground liquid, vapor and vent piping where the piping leaves the dispensing island or location and just before the piping connects to underground tank fittings. Flex connectors shall also be installed on piping that is rigidly supported or connected between fixed points and which is subject to thermal expansion or differential movements. Flex connectors shall be provided with containment/isolation boot for cathodic protection.

26. All USTs shall be fitted with a device that will prevent overfill under any circumstances, including the delivery operator's inattention. Ball float check valves alone are **NOT** sufficient. The device shall either:
  - A. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank **and** triggering audible and visual alarm; **or**
  - B. Restrict delivery of flow to the tank at least 30 minutes prior to tank overfill, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity, and provide audible alarm sounds at least five minutes prior to overfill; **or**
  - C. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent full.
27. **ALL** fill points shall be provided with a "spill proof" fill box designed to contain any spill or drips during filling operations and shall direct any free product into the UST and shall be C.A.R.B. (California Air Resources Board) approved.
28. Any tank that is using ball float check valves and an overfill alarm to meet overfill requirements, must also install an external audible and visual alarm. The alarm must be loud enough to be clearly heard from anywhere on the property or within 200 feet. The alarm must remain continuous until an acknowledgement button has been activated.
29. A remote "EMERGENCY SHUT OFF" device shall be installed within 100 feet of the furthest dispensing unit but no closer than 20 feet from the closest dispensing unit. This device shall be capable of disconnecting power to pumping and dispensing units. Additionally, an "EMERGENCY SHUT OFF" device shall be installed inside the cashier's booth and must be easily accessible at all times.
30. Existing tanks, piping and/or dispensers that are to be abandoned, removed or displaced shall be safeguarded and/or disposed of by procedures approved by this Department. Additionally, appropriate sampling shall be performed **in the presence of an inspector from this Department. REFER TO 'UNDERGROUND STORAGE TANK REMOVAL/CLOSURE PROCEDURES'**.
31. If residual contaminant exists in soil and/or groundwater, arrangements shall be made to accommodate ongoing site investigation and/or remediation. Please notify Department during plan check approval.

### **ADDITIONAL REQUIREMENTS FOR MODIFICATIONS OR REPAIRS**

1. Significant repair or modification shall be defined for this purpose as: breakout and or removal of concrete cover over tank pad, islands, island drive slab, or over existing vent lines, replacement of sumps, or installation of under dispenser containment.
2. All under dispenser containment shall be provided with continuous electronic liquid sensors that will provide positive shut down of product upon detection of any leaked substance or accumulation of water or other liquids not part of the monitoring system.
3. If during your construction project or tank modification you are required to break concrete over the tank top, a sump shall be installed at both the fill end of the tank and at the piping or delivery end of the tank if a sump is not already present. All sumps shall undergo a 24-hour "lake test." The liquid level for this test shall be 2 inches above the highest piping penetration.
4. UST monitoring system software upgrade that will require the monitoring system to restart in conjunction with the addition of any new component to the monitoring system, will require that a monitoring system certification be conducted at the final construction permit inspection. (i.e. In Station Diagnostic installation with Veeder Root Software upgrade).

## **DESIGN AND INSTALLATION REQUIREMENTS FOR NEW UNDERGROUND STORAGE TANK PIPING**

Underground storage tank piping that must be replaced due to testing failure and/or leaking shall be permitted and inspected by the Department.

Plans for the new piping installation shall show the secondary containment and electronic monitoring, and shall include the specifications outlined previously in "Design Requirements for New Underground Storage Tanks." Plans shall be submitted and be in sufficient quantity for the Department to retain one copy.

Once the plans have been approved and construction has commenced, contact this Department at (909) 386-8464 to schedule required inspections. **All permits are valid for nine months from the date on the plan check approval stamp.**