



FIRE DEPARTMENT – CLASS 1 • FIRE AND ENVIRONMENTAL PROTECTION DIVISION
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**GUIDELINES FOR INSTALLATION OF TEMPORARY AND
PERMANENT ABOVEGROUND DIESEL FUEL TANKS FOR
EMERGENCY AND STANDBY POWER SYSTEMS LOCATED
OUTSIDE OF BUILDINGS
(Update – 1/17)**

The Fire and Environmental Protection Division of the Mountain View Fire Department (650-903-6378) will review your submitted plans using this plan check guideline.

Where appropriate, enter below the page number of your submitted plans where the item asked for is indicated and highlight the item in your plans. Include brochures, manufacturer’s cut sheets, and calculations with the plans when asked for.

Facility
Name: _____ Address: _____

Architect
Name: _____ Phone: _____ PC#: _____ Date: _____

I. General Information

These guidelines are applicable to the installation of aboveground tanks using combustible liquids as fuel for emergency and standby generators. They apply to both temporary and permanent tank installations. These guidelines are a supplement to other requirements and/or guidelines and are not all-inclusive.

II. Permits and Plans

- An installation permit is required from your local Planning and/or Building Department to install an emergency or standby generator tank, piping and associated equipment.
- A new or modified Hazardous Materials Business Plan (HMBP) is required before placing the tank(s) in service.
- Notification of the electric utility is required.
- Permits may also be required from the Bay Area Air Quality Management District.

III. Definitions

The following definitions apply with regard to requirements specified in this document:

Temporary Tank – A tank which is on-site no longer than one year.

Protected Tank – 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 of fire exposure.

A. Tanks

- Design and Construction:** Each tank shall be designed and constructed in accordance with nationally recognized standards (UL 142/2244 or equivalent; UL 2085 is the listing for protected tanks). If it is not UL listed, provide documentation showing that it has been designed and constructed to that standard (CFC §5704.2.7; NFPA 30 §21.4.2.1).

Attach manufacturer’s cut sheets of the aboveground tank, including the listing by UL or other nationally recognized association. Plan Page Number: _____.

- Separation Distances:** Aboveground tanks shall be separated from property lines, important buildings, public ways, and other tanks in accordance with the table below: NFPA 30 §22.4.1.1.

NFPA 30 Tables 22.4.1.1(a) & 22.4.1.1(b)

Type of Aboveground Tank	Tank Capacity (gallons)	Minimum distance from property line that is or can be built upon, including the opposite side of a public way (feet)	Minimum distance from nearest side of any public way or from nearest important building on the same property (feet)
Unprotected Tanks	275 or less	5	5
	276 to 750	10	5
	751 to 12,000	15	5
Protected Tanks	275 or less	5	5
	275 to 750	5	5
	751 to 12,000	7.5	5

Indicate on the plans the distances to the nearest property lines, public way, and building. Plan Page Number: _____.

- Supports, Foundations, and Anchorage:** Supports, foundations, and anchorage for aboveground tanks shall be designed and constructed in accordance with NFPA 30 and the California Building Code (CFC §5704.2.9.3, NFPA 30 §22.5).

(Exception: For temporary tanks, wheels may be chocked in lieu of providing seismic protection.)

Indicate the type of supports, foundations, and anchorage that will be installed for the aboveground tank on the plans. Plan Page Number: _____.

4. **Protection from Vehicles:** Guard posts or other approved means shall be provided to protect tanks subject to vehicular damage in accordance with CFC §312. When guard posts are installed, they shall be (CFC §5003.9.3):
- a. Constructed of steel not less than 4" in diameter and concrete filled.
 - b. Spaced not more than 4' between posts on center.
 - c. Set not less than 3' deep in a concrete footing of not less than 15" in diameter.
 - d. Set with the top of the posts not less than 3' above ground.
 - e. Located not less than 3' from the aboveground tank.

(Exception: This does not apply to protected aboveground tanks having the impact protection incorporated into the system design in compliance with the impact test protocol of UL 2085. (CFC §5404.2.9.7.4.5))

If the aboveground tank is exposed to vehicular traffic, indicate the items listed above. Plan Page Number: _____.

5. **Secondary Containment:** Aboveground tanks shall be provided with secondary containment (i.e., containment external to and separate from primary containment). Secondary containment shall be constructed of materials of sufficient thickness, density, and composition so as not to be structurally weakened as a result of contact with the fuel stored and capable of containing discharged fuel for a period of time equal to or longer than the maximum anticipated time sufficient to allow recovery of discharged fuel. It shall be capable of containing 110 percent of the volume of the primary tank if a single tank is used or, in the case of multiple tanks, 150 percent of the largest tank or 10 percent of the aggregate, whichever is larger. If secondary containment is open to rainfall or sprinkler flow, contact the local jurisdiction for appropriate calculations (MVCC §24.3.0(q)).

Indicate the type of secondary containment and include sizing calculations. Plan Page Number: _____.

6. **Spill Protection:** For unprotected tanks, spill containers shall be provided on top-filling and/or top-withdrawal connections. Spill containers shall be noncombustible and shall be fixed to the tank (MVCC §24.3.0(u)).

Indicate this on the plans. Plan Page Number: _____.

For protected tanks, spill containers of not less than 5 gallons shall be provided for each fill connection. Spill containers shall be noncombustible and shall be fixed to the tank and equipped with a manual drain to the primary tank. For tanks with a remote fill connection, a portable spill container shall be allowed (CFC §5704.2.9.7.7).

Indicate this on the plans. Plan Page Number: _____.

7. **Overfill Protection:** Tanks shall be provided with equipment to prevent overfilling as per the following table (MVCC §24.3.0(n), CFC §5704.2.9.7.5):

Physical Situation	Approved Overfill Methods	Reference
At 90% of Tank Capacity	Audible or visual signal to notify tank filler OR Tank level gauge marked at 90% OR Other approved means	MVCC §24.3.0(n), CFC §5704.2.9.7.5
And		
For unprotected tanks with capacities greater than 1,320 gallons and protected tanks		
At 95% of Tank Capacity	Mechanical shutoff device	CFC §5704.2.9.7.5

* Information Signs for protected aboveground tanks: A permanent sign shall be provided at the fill point documenting the filling procedure and tank calibration chart. The filling procedure shall require the person filling the tank to determine the gallonage required to fill it to 90 percent of capacity before commencing the fill operation (CFC §5704.2.9.7.5.1).

Indicate on the plans the type of limit-level control to be used. If an electronic high-level sensor is used, attach manufacturer's cut sheets on the sensor and indicate the location of the alarm panel on the plans. Supply a copy of the tank filling procedures and calibration chart if required. Plan Page Number: _____.

B. Piping Systems

1. **Piping Support:** Piping systems shall be substantially supported and protected against physical damage and excessive stresses arising from settlement, vibration, expansion or contraction, or exposure to fire (CFC §5703.6.8).

Show the support and protection for the piping system on the plans. Plan Page Number: _____.

2. **Seismic Protection:** Seismic protection for piping and connections shall be provided in accordance with the California Building Code (CFC §5003.2.8, 5003.2.2.1).
(Exception: Not normally required for temporary tanks.)

Indicate the type of seismic securement for the piping, tank supports, and connections on the plans. Plan Page Number: _____.

3. **Special Materials:** For primary piping, low-melting-point materials (such as aluminum, copper, and brass), materials which soften on fire exposure (such as nonmetallic materials), or nonductile materials (such as cast iron) shall be in accordance with American Society of Mechanical Engineers (ASME) B31.9 "Building Service Piping Code for Pressure Piping" and shall be either (CFC §5703.6.2.1):

- a. Suitably protected against fire exposure; or
- b. Located where leakage from failure would not unduly expose persons, buildings or structures; or
- c. Located where leakage can readily be controlled by operation of accessible, remotely located valves.

Indicate whether any low melt-point materials will be used, and, if so, which ones and how they will meet the above criteria. Plan Page Number: _____.

4. **Protection from Vehicles:** Guard posts or other approved means shall be provided to protect piping, valves, or fittings subject to vehicular damage in accordance with CFC §312. When installed, posts shall be (CFC §5703.6.4):
- Constructed of steel not less than 4" in diameter and concrete filled.
 - Spaced not more than 4' between posts on center.
 - Set not less than 3' deep in a concrete footing of not less than 15" in diameter.
 - Set with the top of the posts not less than 3' above ground.
 - Located not less than 3' from the piping.

(NOTE: For temporary piping systems, other approved physical barriers that comply with CFC §312.3 may be used in lieu of guard posts.)

If piping, valves, or fittings are subject to vehicular traffic, indicate the items listed above. Plan Page Number: _____.

5. **Secondary Containment:** Supply and return piping shall be provided with secondary containment (i.e., containment external to and separate from primary containment). Secondary containment shall be constructed of materials of sufficient thickness, density, and composition so as not to be structurally weakened as a result of contact with the fuel stored and capable of containing discharged fuel for a period of time equal to or longer than the maximum anticipated time sufficient to allow recovery of discharged fuel (MVCC §24.3.0(q)).

Potentially acceptable methods of containment include:

- Double-contained piping.
- Metal pan.
- Concrete berm.
- "Portable" berm (made of diesel-compatible materials).
- Containment enclosure.

Indicate the type of secondary containment on the plans. Plan Page Number: _____.

6. **Connections Below Liquid Level:** Connections to a tank located below normal liquid level shall be provided with internal or external isolation valves located as close as practical to the shell of the tank. When external, such valves and their connections to the tank shall be of steel (CFC §5703.6.7).

Indicate any connections to the tank below normal liquid level and control valves. Plan Page Number: _____.

7. **Fill Pipe Length:** For tanks with a top-fill connection, metallic fill pipes shall terminate within 6" of the tank bottom to minimize static electricity (CFC §5704.2.7.5.5).

Show the fill pipe location on the plans. Plan Page Number: _____.

8. **Location of Filling/Withdrawal Connections:** Filling and withdrawal connections which are made and broken shall be located outside of buildings and not less than 5' from building openings (CFC §5704.2.7.5.6).

Show the location of the filling/withdrawal connection and distance from the nearest building. Plan Page Number: _____.

9. **Fill Pipe Connections for Protected Tanks:** The tank fill pipe shall be provided with a means for making a direct connection to the tank vehicle's fuel delivery hose so that the delivery of fuel is not exposed to the open air during the filling operation. Where any portion of the fill pipe exterior to the tank extends below the level of the top of the tank, a check valve shall be installed in the fill pipe not more than 12" from the fill hose connection (CFC §5704.2.9.7.6)

10. **Tank Vents for Normal Venting:** Normal venting shall be provided for the primary tank as follows:

- a. The diameter of the normal vent opening shall be equal to the size of the fill/withdrawal opening, or, at a minimum, 1.25", whichever is greater (CFC §5704.2.7.3, NFPA 30§21.4).

Indicate the vent diameter on the plans. Plan Page Number: _____.

- b. Vapors shall be directed to discharge upward or horizontally away from closely adjacent walls, and the top of the vent shall be a minimum of 12' above adjacent ground level. The vent opening shall be at least 5' from any building opening and/or property line (CFC §5704.2.7.3.3).

Indicate the height of the vent and the distance between the vent opening and the nearest building opening and property lines on the plans. Plan Page Number: _____.

- c. Vent pipes shall be installed such that they will drain toward the tank without sags or traps in which liquid can collect. Vent pipes shall be installed such that they are not subject to physical damage or vibration (CFC §5704.2.7.3.4).

Show the vent path from the tank to the terminus on the plans. Plan Page Number: _____.

11. **Tank Vents for Emergency Venting:** Tanks shall be equipped with additional venting that will relieve excessive internal pressure caused by exposure to fires. The pressure relief device shall not discharge inside a building. The venting device shall be installed and maintained in accordance with NFPA 30 §22.7 (CFC §5704.2.7.4).

(NOTE: Each emergency venting device shall have the (1) start-to-open pressure; (2) pressure at which the valve reaches the full open position; and (3) the flow capacity at the full open position either stamped or cast into the metal body of the device or included on a metal nameplate permanently affixed to it.)

Attach manufacturer's cut sheets on the pressure relief valve and calculations that determine adequate sizing. Plan Page Number: _____.

12. **Antisiphon Devices:** For protected tanks, approved antisiphon devices shall be installed in each external pipe connected to the tank when the pipe extends below the level of the top of the tank (CFC §5704.2.9.7.9).

Attach manufacturer's cut sheets on the antisiphon device.

C. **Additional Requirements**

1. **Security:** Access to the aboveground tanks shall be secured by means of fences and/or locks (MVCC §24.3.3).

Indicate how the aboveground tank will be secured and protected. Plan Page Number: _____.

2. **Electrical:** Electrical wiring and equipment shall be installed and maintained in accordance with Section 605 of the California Electrical Code (CFC §5703.1).

Indicate the type and class of electrical wiring on the plans. Plan Page Number: _____.

3. **Monitoring:** Tank and piping secondary containment systems shall be monitored either visually or electronically. Monitoring shall occur at the low point of each secondary containment system. If electronic monitoring is used, it shall be connected to attention-getting visual and audible alarms. Contact your local agency for approved monitoring methods (MVCC §24.3.0(m)).

Indicate the form of monitoring and location of the alarm, if applicable. Plan Page Number: _____.

4. **Testing*:** Prior to being placed in service, tanks and associated piping shall be field tested in accordance with the following (NFPA 30 §21.5):

	Field Test	Duration
Primary Tank Test	3 to 5 p.s.i.g.	60 minutes
Secondary Tank Test	3 to 5 p.s.i.g.	60 minutes
Primary Piping Test	Hydrostatically at 150% of anticipated pressure OR Pneumatically at 110% of anticipated pressure	60 minutes
Secondary Piping Test	3 to 5 p.s.i.g.	60 minutes

* If the manufacturer's specifications do not support the above testing procedures, follow the manufacturer's recommended procedure.

Indicate the type of field test that will be used and that you will contact the Fire Department to observe this field test. Plan Page Number: _____.

5. **Hazardous Materials Signage and Labeling:** All aboveground tanks shall be labeled as follows:

- a. A "Diesel Fuel Only" sign with red letters at least 3" high on a white background shall be placed on the tank (MVCC §24.3.9).
- b. A NFPA 704M diamond placard shall be placed at entrances to locations where tanks are stored (MVCC §24.3.8).
- c. "No Smoking or Open Flame" signs shall be posted at entrances to locations where tanks are stored (CFC §5704.2.3).
- d. All product piping shall be labeled (MVCC §24.3.9).
- e. A sign shall be placed at the main electrical shutoff box identifying type and location of all normal and emergency power sources connected at that location (CEC §700.7).

Indicate the location of all labeling and signage on the plans. Plan Page Number: _____.

6. **Fire Protection:** At least one 40-B:C portable fire extinguisher shall be provided near and within 30' of the aboveground tank (CFC §5703.2.1, 906).

Indicate the size and location of the fire extinguishers on the plans. Plan Page Number: _____.

7. **Access:** The required width of a fire apparatus access road (20') shall not be obstructed in any manner, including the siting of generator/tank assemblies (CFC §503.2.1).

If applicable, indicate this on the plans. Plan Page Number: _____.

8. **Spill Prevention Control and Countermeasure (SPCC) Plan:** The owner and operator of any facility that stores an aggregate quantity of more than 1,320 gallons of petroleum (including used oil) aboveground, in containers or tanks 55 gallons or larger, must prepare an SPCC Plan in accordance with guidelines contained in Part 112 of Title 40 of the Code of Federal Regulations. Contact the Santa Clara County Environmental Health Department for additional information.

(Exception: Tank facilities located on a farm, nursery, logging site, or construction site are not required to prepare an SPCC Plan if no tank exceeds 20,000 gallons and cumulative storage capacity does not exceed 100,000 gallons).

Attach a copy of the completed SPCC Plan if required. Plan Page Number: _____