2019 Undergound #2 Fuel Oil Storage Reminder List

Applicable Codes and Standards

I. Scope
1. Emergency and standby power systems required by the California Building Code or the California Fire Code shall be installed in accordance with the California Building Code and NFPA 110.

2. Prevention, control and mitigation of dangerous conditions related to storage, use, dispensing, mixing and handling of flammable and combustible liquids shall be in accordance with California Fire Code Chapter 50 and Chapter 57 and Sec. 603.3.

3. Flammable and combustible liquids shall not be placed, stored or handled in any occupancy within the scope of California Code of Regulations, Title 19, Division 1 regulations, except as provided in the California Fire Code.

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<td>Minimum fuel supply of 6 hrs. full-demand operation for SNF, Psych, ICF.</td>
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<td>Minimum fuel supply of 4 hrs. full-demand operation for ambulatory surgery clinics.</td>
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<td>Minimum fuel supply of 96 hours in seismic design category C, D, E, or F as determined in accordance with ASCE 7. This is not a CBC requirement. However, it may be required for CDPH, CMS or JCI approval.</td>
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<td>See OSHPD CAN 2-108 for temporary generator fuel supplies.</td>
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CEC 700-12(B)(2) Exc.1
CEC 700-12(B)(2) Exc.2
CEC 700-12(B)(2) Exc.3
CBC, Sec. 2702.1.3
CFC Sec. 5701.1 & 5701.2
CCR, Title 19, Div. 1, §3.15

II. Generator Fuel Supply

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CEC 700-12(B)(2) Exc.1
CEC 700-12(B)(2) Exc.2
CEC 700-12(B)(2) Exc.3
CBC, Sec. 108
NFPA 37, Sec. 6.9
NFPA 110, Sec. 5.5.1 & 5.5.1.1
NFPA 110, Sec. 5.5.3
NFPA 110, Sec. 5.5.2
NFPA 110, Sec. 7.9.1
NFPA 110, Sec. 7.9.1.3
NFPA 31, Sec. 7.4.5
NFPA 110, Sec. 5.6.5.1
NFPA 110, Sec. 5.6.6.2(1)
NFPA 99, Sec. 6.7.1.2.15, 6.7.1.2.15.2
NFPA 99, Sec. 6.7.1.2.15, 6.7.1.2.15.2
III. Underground Tank Installation

1. CUPA (Certified Uniform Program Agency) review and approval required.

2. Located with respect to existing foundations and supports such that the loads carried by the latter cannot be transmitted to the tank.

3. Tank location distance to wall of basement, pit, cellar or lot line not less than 1 ft.

4. Minimum distance of 1 ft. shell to shell between underground tanks.

5. Tank, tank vent and tank filler locations in accordance with NFPA 55, Table 9.3.2.

6. Signs prohibiting open flames and smoking.

7. Set on a firm foundation and surrounded by at least 6 in. of noncorrosive inert material such as sand.

8. Covered by 12 in. of backfill and 12 in. of clean earth or 12 in. of compacted backfill and 4" slab of reinforced concrete.

9. Where subject to traffic, at least 36 in. of backfill or 18 in. of compacted backfill and at least 6 in. of reinforced concrete or 18 in. of compacted backfill and 8 in. of asphaltic concrete.

10. When asphaltic or reinforced concrete is used for protection, it shall extend at least 12 in. beyond the tank in all directions.

11. When the depth of cover is greater than the tank diameter or if the pressure at the bottom of the tank can exceed 10 psi, the manufacturer of the tank shall be consulted to determine if reinforcement of the tank is required.

12. Where the vertical length of the fill and vent pipes is such that when filled with liquid, the static head on the tank bottom can exceed 10 psi, the tank and its piping shall be hydrostatically tested using recognized engineering standards.


14. Where a tank is located in an area where it is subject to buoyancy because of a rise in the water table, flooding or accumulation of water from fire suppression operations, uplift protection shall be provided in accordance with Sections 22.14 and 23.14 of NFPA 30.

15. Fill pipes shall be equipped with a spill container and an overfill prevention system in accordance with NFPA 30.

16. Provide an approved method of leak detection from any component of the system that is designed and installed in accordance with NFPA 30.

17. Fill pipe and discharge lines shall enter only through the top of tank.

18. Fill lines shall be sloped toward the tank.

19. Fuel tanks supplied by pumps shall have (1) overflow line piped to source tank, (2) high level alarm and (3) high-level automatic shutoff.

20. Filling, emptying and vapor recovery connections shall be located outside buildings, away from sources of ignition not less than 5 ft. from building openings.

21. Prior to being placed in service, tanks shall be tested in accordance with NFPA 30. An approved listing mark on tank is evidence of compliance.

22. Before covering, tanks and connected piping shall be tested for tightness in the presence of the fire code official.

23. Tanks and piping shall be protected by a cathodic protection system or constructed of approved or listed corrosion-resistant materials or systems.
IV. Generator Fuel Supply/Return Piping

1. Provisions shall be made for pressure testing of piping.  
   NFPA 30, Sec. 27.7
2. Protected from corrosion and galvanic action.  
   NFPA 30, Sec. 27.6.4
3. Piping protected from damage by guard posts or other approved means.  
   NFPA 30, Sec. 27.6.1
4. Supports protected by 2-hr fire rating, draining away or other approved means.  
   NFPA 30, Sec. 27.6.2
5. Approved metallic or nonmetallic flex connectors permitted to protect the piping.  
   NFPA 37, Sec. 6.8.2.1
6. Valves shall be provided to control normal flow and shut off flow for breaks.  
   NFPA 37, Sec. 6.8.3
7. Fuel piping shall be of compatible metal to minimize electrolysis and be properly sized.  
   NFPA 37, Sec. 6.8.3
8. Galvanized fuel lines shall not be used.  
   NFPA 110, Sec. 7.9.4.2
9. Approved flexible fuel lines shall be used between the prime mover and the fuel piping.  
   NFPA 30, Sec. 27.6.1
10. Fuel line solenoids shall be battery powered.  
    NFPA 110, Sec. 7.9.9 & Sec. 5.6.3.2
11. EPS piping shall be designed to minimize damage from earthquakes.  
    NFPA 110, Sec. 7.11.5
12. Gravity return fuel lines between the day tank and main supply tank shall flow freely to the main tank.  
    NFPA 110, Sec. 7.9.4.2
13. Gravity feed to generator not permitted.  
    NFPA 30, Sec. 27.3.1
14. Spill control, drainage control & secondary containment not required for piping connected to systems. See ANSI/ASME B31.3  
    NFPA 110, Sec. 7.9.3.2
15. Listed flexible joints required on underground liquid, vapor and vent piping at tank connections, connections at vent risers and where differential movement can occur.  
    NFPA 30, Secs. 27.5.2 & 27.6.1
16. Listed flexible joints are not required for fiberglass-reinforced piping ≤ 4 in. in dia. and piping has a straight run of not less than 4 ft. on one side of a connection changing direction. The installation of nonmetallic piping shall be in accordance with the manufacturer’s instructions.  
    NFPA 30, Sec. 27.6.1

V. Underground Tank Venting

1. Vent pipes from tanks storing Class II or Class IIIA liquids shall terminate outside of the building and higher than the fill pipe opening.  
   NFPA 30, Sec. 27.8.2.6
2. Vent pipes shall terminate at least 5 ft from building openings and at least 15 ft from powered ventilation air intake devices.  
   NFPA 30, Sec. 27.8.2.2
3. Vent pipe outlets shall be located and directed so that vapors will not accumulate or travel to an unsafe location, enter building openings, or be trapped under eaves.  
   NFPA 30, Sec. 27.8.2.9
4. Vent pipes and vapor return piping shall be installed without sags or traps in which liquid can collect.  
   NFPA 30, Sec. 27.8.2.4
5. Vent outlets and devices shall be protected to minimize the possibility of blockage from weather, dirt, or insect nests.  
   NFPA 30, Sec. 27.8.2.4
6. When vent piping is manifolded, piping shall be sized to prevent excessive pressure when tanks are filled simultaneously.  
   NFPA 30, Sec. 27.8.2.12
7. Vent pipes shall be permitted to be fitted with return bends, coarse screens, or other devices to minimize ingress of foreign material.  
   NFPA 30, Sec. 27.8.2.78
8. Vent piping protected from physical damage by guard posts or other approved  
   NFPA 30, Sec. 27.8.2.11
9. The tank end of the vent pipe shall enter the tank through the top.  
   NFPA 30, Sec. 27.8.2.11

NOTE
Compliance with all items on this list does not necessarily assure compliance with all provisions of the applicable codes and standards. This reminder list should be used only by persons with a comprehensive knowledge of the applicable codes and standards.
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