

2.07 Permit Application Checklist for Diesel Generators, Diesel Fire Pumps, and Fuel Tanks Serving Generators and Fire Pumps (2019)

Reference: Documents referenced for this bulletin are the current adopted editions of the following: San Francisco Fire Code (SFFC), including Section 1203; San Francisco Building Code (SFBC); San Francisco Mechanical Code (SFMC); NFPA 13, Installation of Sprinkler Systems; NFPA 37, Stationary Combustion Engines and Gas Turbines; NFPA 30, Flammable and Combustible Liquids Code; California Electrical Code; San Francisco Electrical Code; NFPA 110, Emergency and Standby Power Systems; NFPA 704, Standard System for the Identification of the Hazard of Materials for Emergency response.

Purpose:

This checklist has been developed primarily for fuel installations in buildings. Outdoor fuel installations will require further information. This checklist is designed to assist designers, installers, plan reviewers, and field inspectors. This checklist shall be prepared by the design professional and shall be stamped and wet-signed.

This document is not all-inclusive of all requirements for fuel installations, and it is the responsibility of the designer to research the applicable codes. In addition to these requirements, the applicant is advised to contact the San Francisco Department of Public Health at (415) 252-3900 for their requirements as the designated Hazardous Materials Unified Program Agency.

Definitions:

Emergency Power Supply System (EPSS): A complete functioning EPS system coupled to a system of conductors, disconnecting means and over-current protective devices, transfer switches, and all control, supervisory, and support devices up to and including the load terminals of the transfer equipment needed for the system to operate as a safe and reliable source of electric power.

Level 1-Includes the following: emergency lighting, exit signs, fire alarm, sprinkler alarm, and detection systems, fire pumps where backup power is required, controls for smoke control equipment required by the Building Code, elevator car lighting. Includes all loads classified as Emergency Systems by the NEC.

Level 2-Includes elevators requiring emergency power, and could include heating and refrigeration systems, communications systems, ventilation and smoke removal systems (except controls), sewerage disposal, lighting, and industrial processes that, when stopped due to any interruption of the primary electrical supply, could create hazards or hamper rescue or fire-fighting operations. Includes all loads classified as Legally Required Standby by the NEC. **Tank:** A vessel containing more than 60 gallons.

Listing Requirement: The stationary emergency and standby generator systems are required to be listed in accordance with UL 2200, (Reference CFC 1203.1.1).

NOTE: The following AB 2.07 "Checklist" (including the AB 2.07 Cover Page) shall be printed on the title sheets (or as near the front of the plan set as practicable) of every plan submitted with building permit applications for diesel generators, diesel fire pumps, tanks, and/or piping, and to be completed by the design engineer for the submittal. Be sure to answer ALL parts of the following checklist where applicable. If appropriate enter "N/A" ("Not Applicable").

Circle all bullet point numbers that are applicable & check ALL of the information (where provided) that is relevant to the project and/or supply specific information as required in the blank sections. Where noted, provide the appropriate Discipline/Title taking responsibility for the answers in this checklist:

Legend for Discipline/Title: "ME"=Mechanical Engineer; "A"=Architect; "FPE"=Fire Protection Engineer; "E"=Electrical Engineer"

CHECKLIST

Diesel Generators, Diesel Fire Pumps & Fuel Tanks Serving Generators and/or Fire Pumps

STREET ADDRESS OF PROJECT BUILDING: _____

DBI Permit Application No. _____

1. Number of diesel generators under this permit application.

2. Number of diesel fire pumps under this application.

3. Number of diesel fuel storage tanks under this application. _____
4. Location(s) of generators or fire pumps under this application:
_____ In building, floor _____
_____ On roof
_____ Detached structure _____
Outdoors:
 - Minimum distance from adjacent buildings: _____
 - Minimum distance to adjacent property lines: _____
5. Type of diesel fuel tank
_____ Aboveground (Atmospheric)
_____ Underground (Atmospheric)
_____ Fire Resistant Aboveground Tank (Tank, not building components) (Atmospheric)
_____ Underground Vault
_____ Secondary Containment Aboveground Tank Indoors _____ Outdoors _____
_____ UL Listed UL 142 Double Wall Tank
_____ UL Listed UL 2085 Protected Aboveground Tank
_____ Other Specialty Tank, Please specify _____
6. Location(s) of diesel fuel storage tanks (include day tanks) under this application.
_____ In building, floor _____ Number of gallons _____
_____ On roof. Number of gallons _____
_____ Outdoors. Number of gallons _____
_____ Aboveground or _____ Underground
7. Generator or Fire Pump will be located in a combustible-free room or enclosure?
_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
8. Air Filter is of the type that will not burn freely when exposed to fire?
_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

9. Explain how sufficient air for combustion, proper cooling, and adequate ventilation is provided for generator or fire pump? _____

 For fuel tank(s)? _____

10. Generator or Fire Pump make, model number, rated capacity, & listing agency _____

11. Separate Fire Department permit is required (amount of diesel in building exceeds 25 gallons, or 60 gallons outside.)
 (Reference: SFFC Section 105.6.16, number 3):
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
12. The aggregate total volume of diesel in the building after this installation will be _____ gallons. (Aggregate total in building affects room design for fire rating. NFPA 37, 6.3.2.2, 6.3.2.3)
13. Liquid storage room is properly placarded in accordance with NFPA 704 and when located in a high-rise building, hazardous material inventory and locations are prominently posted on a permanent placard in the fire control room, SFFC, Sections 5003.5, 5003.6, 5703.5, and 5704.2.3.
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
14. Generator serves which type of loads as defined by NFPA 110 (See definitions above). Check all applicable boxes:
 _____ Level 1 or Emergency Systems
 _____ Level 2 or Legally Required Standby
 _____ Optional-Base Building loads
 _____ Optional-Tenant Loads
15. If installation serves optional loads, is the intent of the installation to keep the business up and running during a power failure (building occupied)?
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
16. GENERATOR / FIRE PUMP (circle one) #1 consumes _____ gallons of diesel per hour @ 100% rated load
 GENERATOR / FIRE PUMP (circle one) #2 consumes _____ gallons of diesel per hour @ 100% rated load
 GENERATOR / FIRE PUMP (circle one) #3 consumes _____ gallons of diesel per hour @ 100% rated load
 GENERATOR / FIRE PUMP (circle one) is required to run _____ hours x _____ 100% rated fuel consumption
 x 1.33 = _____ fuel tank capacity (NFPA 110 Sec. 5.5.3 / NFPA 20 Sec. 11.4.1.5.4.2)
 . (Attach additional sheets if necessary)
17. Starting **kVA** of the generator is _____. If more than one generator, attach info
18. Running **kVA** of the generator is _____. If more than one generator, attach info
19. Provide a list (minimum 11 x 17-inch sheet) of all equipment served by the generator and “demand” calculations Attached / Scanned (circle one) onto plan set. If applicable, also provide information regarding separate loads by Levels 1, 2 and optional. Indicate if load shedding is provided.

ENGINES LOCATED IN STRUCTURES
(Answer 20-21) (If installing an engine inside a structure.)

_____ 20-21 not applicable

20. What is the fire rating of the walls and opening protection in the room where the engine is located? Note, minimum one-hour fire barrier separation shall be provided for engines installed in a building. The system shall be designed in such a way that required opening protection is provided without choking off vital combustion air and ventilation.)
Reference: SFBC Section 442.

- _____ 1-hour
- _____ 2-hour
- _____ 3-hour

OTHER _____

21. Fully Sprinklered building, per NFPA 13?

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

If no, interior openings are not permitted between the Engine Room and other portions of the building, except Group I and R-2.1 occupancies. Reference SFBC, Section 442.2.2.1

ENGINES LOCATED ON ROOFS
(Answer 22-23) if you are installing an engine on a roof.

_____ 22-23 not applicable

22. Engines and their weatherproof housings, if provided, that are installed on roof structures shall be located at least (5ft) for structures having combustible walls and wall openings, NFPA 37, 4.1.3.1. A minimum separation shall not be required where all of the following conditions exist:

- The adjacent wall has a rating of at least 1 hour.
- The weatherproof enclosure is constructed on noncombustible material, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure. **Note:** Corrosion protection is required for fuel tanks per SFFC, Section 5704.2.7.9

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

23. Where engine or skid mounted assembly containing an engine is mounted on a roof, the surface beneath the engine and beyond the engine, and any containment dike is noncombustible to a minimum distance of 12 inches Reference: NFPA 37, Section 1.3.3

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

ENGINES LOCATED OUTDOORS
(Answer 24 if you are installing an engine outdoors)

_____ 24 not applicable

24. Engines and their weatherproof housings are located at least 5 ft. from openings in walls and at least 5 ft. from structures having combustible walls. Reference: NFPA 37, Section 4.1.4

_____ The adjacent wall has a rating of at least 1 hour.

_____The weatherproof enclosure is constructed on noncombustible material, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure.

Note: Corrosion protection is required for fuel tanks per SFFC, Section 5704.2.7.

ENGINES HANDLING HAZARDOUS MATERIALS (Other than their own fuel supply)
(Answer 25-28 when applicable)

_____ 25-28 not applicable

25. Engine is suitably isolated from areas not having a similar hazard. Reference: NFPA 37, Section 4.4.1 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

26. Provisions for the venting of an explosion with minimal structural damage is provided. Reference: NFPA 37, Section 4.4.2.

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

27. Rooms containing engines located within structures have interior walls, floors, and ceilings of at least 2-hour fire resistance rating. Reference: NFPA 37, Section 4.4.2

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

28. Rooms containing engines are adequately ventilated from a non-hazardous area. Reference: NFPA 37, Section 4.4.2

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

ENGINE WIRING (Answer 29-31 for all engine installations.)

_____ 29-31 not applicable

29. Wiring is in accordance with NFPA 70 and NFPA 37, Section 4.5

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

30. Are the Electrical circuits designed to be fail-safe , i.e. Engine shuts down automatically in case of control wire break, disconnect, or cutting. Reference: NFPA 37, Section 4.5.3.4

_____ YES, circuits are fail safe or _____ NO, circuits are not fail safe or _____ N/A

31. Batteries, wiring, and electrical protective devices are protected against arcing and accidental shorting. Reference: NFPA 37, Section 4.5.

_____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

ENGINE EXHAUST (Answer 32-33 for ALL engine installations)

_____ 32-33 not applicable

32. Engine exhaust termination location is _____.
(Required to terminate outside structure at a point where hot gases, sparks, or products of combustion will be discharged harmlessly and guarded to prevent personnel burns where necessary).

Reference: NFPA 37, Section 8.2.3.

33. Anticipated engine exhaust temperature_____. Reference NFPA 37, Section 8.3 and 8.4 for clearance requirements.

ENGINE REQUIREMENTS (Answer 34-39 for all engine installations)

_____ 34-39 not applicable

34. Is Engine provided with an automatic engine speed control, as required? Reference: NFPA 37, Section 9.1

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

35. Reciprocating engines that are 10 Horsepower or more are provided with ALL of the following: _____YES or

_____NO or _____N/A [_____DISCIPLINE/TITLE]

- Device for high jacket water temperature or, high cylinder temperature
- Device for low lubricating oil pressure or, in the case of a splash lubricated engine, for low oil level
- Provisions for shutting down the engine at the engine and a remote location
- An automatic engine shutdown device for engine over-speed
- An automatic engine shutdown device for high-lubricating oil temperature
- Provisions for shutting down, from a remote location, lubricating oil pumps not driven by the engine.

Reference: NFPA 37, Section 9.2.1

36. Combustion gas turbine engines are equipped with the item in 34 above, and at least ALL of the following additional features:

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

- An automatic main speed control and over speed shutdown control
- A backup over speed shutdown control that is independent from the main control specified above
- An automatic engine shutdown device for low lubricating oil pressure
- An automatic engine shutdown device for high exhaust temperatures
- Provisions for shutting down the engine from a remote location
- Provisions for shutting down, from a remote location, lubricating oil pumps not directly driven by the engine
- An automatic shutdown device for high exhaust temperatures
- A means of automatically shutting off the fuel supply in the event of a flameout Reference: NFPA

37, Section 9.3

37. One set of operating and maintenance procedures will be located where readily accessible to personnel operating or maintaining equipment. Reference: NFPA 37, Section 10.1

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

38. Emergency shutdown procedures will be conspicuously posted near the engine indicating the location of the fuel shutoff valve(s). Reference: 2015 Edition of NFPA 37, Section 10.2 _____YES or _____NO or _____N/A

[_____DISCIPLINE/TITLE]

39. **Remote Emergency Power Off (EPO) in high-rise buildings shall be located in Fire Command Center (FCC)**

FUEL SUPPLY/FUEL TANKS (Answer 40-87 for all fuel tank installations)

_____ 40-87 not applicable

40. Fuel Tank is listed. Make, model, listing agency: _____

41. Tank is constructed of:
 _____ Combustible Materials: as allowed per NFPA 30, Section 21.4.1.2 (1 and 2) _____
 Noncombustible Materials
42. Engine-mounted tanks securely mounted on the engine assembly and protected against vibration, physical damage, engine heat, and the heat of exhaust piping.
 Reference: NFPA 37, Section 6.3.1
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
43. Indoor and roof fuel tanks are securely mounted on substantial noncombustible supports.
 Reference: NFPA 37, Sections 6.3.2.1, and 6.3.4.
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
44. Fully Sprinklered Building per NFPA 13 (affects exempt amounts). Reference: CBC, Table 307.1(1), and SFFC Section 5003.1.1 and Table 5003.1.1(1)
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
45. Tank is located in an exhausted enclosure (affects exempt amounts). Reference: CBC, Table 307.1(1), and SFFC Section 5003.1.1 and Table 5003.1.1(1)
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
46. Room where tank is stored is sprinklered to Extra Hazard Group II hazard classification. Reference: NFPA 13, Section 5.4.2
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
47. Tank has a nominal capacity of 480 gallons or less, building is fully sprinklered in accordance with NFPA 13, and tank is located in an exhausted enclosure. Reference: SFBC, Table 307.1(1), & SFFC Section 5003.1.1 and Table 5003.1.1(1)
 _____ Yes (**If yes, do not answer questions 48-55.**) or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
48. Tank has a nominal capacity of more than 480 gallons and is located in a room with the proper occupancy separation for H-3 occupancies (SFBC, Table 508.4).
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

You must also answer questions 49-55 (most restrictive section applies)

49. Fire rating provided is _____ for separation from a _____ occupancy. Building is fully sprinklered per NFPA 13, and tank is located in an exhausted enclosure. Interior wall and ceiling finish per SFFC, Table 803.3. Shelving, racks, and wainscoting in such rooms shall be non-combustible material compatible with the hazardous material stored. Reference: SFFC 5003.8.5.1 and 5003.9.9
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
50. Room where diesel tank is located is less than 1000 sq. ft. in area, not required to have an exterior wall.
 Reference: SFBC, Section 415.3, exception 2
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]

51. Room where diesel tank is located is as required by NFPA 30, Section 9.9, but not less than that required by SFBC, Table 508.4 Reference: NFPA 30 Section 9.9
 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]
52. Room where diesel tank is located is greater than 1000 sq. ft. in area, 25% of the perimeter wall shall be an exterior wall. Two exits are required; with one door directly to the exterior, that also serves as Fire Department access. Reference: SFBC, Section 1015.1 and Table 1015.1
 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]
53. Fuel tank exceeds 660 gallons; the tank must be in a room by itself. Reference: NFPA 37, Section 6.3.2.2
 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]
54. Amount of fuel connected to any one engine exceeds 660 gallons, or the aggregate capacities of all fuel tanks in a structure exceed 1320 gallons. Provide a technical report, justifying design in regard to: recognized engineering practices, with suitable fire detection, fire suppression, and containment means, to prevent the spread of fire beyond the room of origin. Report shall be prepared without charge to the City- Approval of storage amounts in this category requires specific approval of the Fire Marshal. Reference: NFPA 37, Section 6.3.2.2 and 6.3.2.3, SFFC, 5704.2.10
 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]
55. Spill control / Leakage control in accordance with SFFC, Section 5004.2 is provided. Reference: SFFC, Sections 5704.2.10; and SFBC, Section 415.6.2.5
 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]
 Method used: _____

56. Indoor secondary containment in accordance with SFFC Section 5004.2.2 is provided. Volume of largest vessel + 20 minutes sprinkler flow for room or minimum sprinkler design area, whichever is smallest. A monitoring method to detect hazardous materials in the secondary containment system is required (leak detection), and shall be equipped with a distinct visual or audible alarm to an approved area and signage per SFBC, Section 415.6.2.6. Reference: SFFC Sections 5004.2.2.1, 5004.2.2.3, 5004.2.2.4, and 5004.2.2.5; and CBC Section 415.6.2
 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]
 Method used: Include volume of secondary containment and justification (attach calculations).

57. Fuel Tank is filled via a closed piping system with remote fill. Required for all new installations of aboveground storage tanks in buildings, unless specifically approved by the Fire Marshal. Reference: SFFC, Sections 5703.6 & 5704.2.7.5.6
 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]
58. Remote fill inlet is located outside of building, free from sources of ignition and a minimum of 5 ft. away from building openings or of lines of property that can be built on. Opening is provided with a tamper-proof, liquid-tight cap which is closed when not in use and is properly identified. Reference: SFFC, Sections 5704.2.7.5.2 and 5704.2.7.5.6

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

59. Remote fill inlet is provided with a permanent spill containment basin to prevent the inflow of hazardous substances into the environment. Reference: SFFC, Section 5704.2.9.7.7

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

60. An audible and visual alarm for ALL leak sensors; High and High High fuel levels at the fill port.

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

61. Service personnel (driver) has visual sight of the fuel port, alarm panel and fuel truck when fueling.

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

62. Overfill protection shall be provided in accordance with SFFC, Sections 5704.2.7.5.8, 5704.2.9.7.5, 5704.2.9.7.5.1 and 5704.2.9.7.5.2

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

63. All tank openings are in accordance with SFBC, Section 415.6.2.10; CFC, Section 5703.6.7; and NFPA 30, Section 24.14

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

64. Metallic fill pipes are designed to minimize the generation of static electricity by terminating the pipe within 6 inches of the bottom of the tank, and will be installed to avoid excessive vibration. SFFC, Section 5704.2.7.5.5

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

65. Piping systems are supported and protected against physical damage and excessive stresses in accordance with MSS SP-69, Pipe Hangers & Supports–Selection and Application. Flexible connectors are provided to protect the piping system against damage caused by settlement, vibration, expansion, contraction, or corrosion. Reference: NFPA 37, Section 6.8.2

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

Flexible connector details and specifications are included with this submittal. Make and model number: _____

66. Fuel piping supports are protected against exposure to fire by one or more of the following:

_____Draining liquid away from piping system at a minimum slope of not less than 1 percent, or

_____Providing protection with a fire-resistive rating of not less than 2 hours, or _____Other

approved methods. Please specify:

Reference: NFPA 30, Section 27.6.2; NFPA 37, 6.8; and SFFC, Sections 5703.6.2 and 5703.6.8

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

67. All equipment, tanks, piping, pumps, etc. listed for their respective application and complete equipment list with submittal data submitted with the building permit plans.

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

68. Tank is provided with vents for normal venting in accordance with SFFC Section 5704.2.7.3 (**if tank is double-wall construction, interstitial space shall be vented also**).

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

69. Size of tank normal vent piping is _____, determined by (circle one) NFPA 30 *Section 21.4.3* API Standard 2000. Size of emergency vent piping is _____, determined by NFPA 30, *Section 22.7*. Provide manufactures UL listing for tank vent sizes. Attach all calculations to verify vent calculations.
70. Location of vent pipe outlet(s) for tank: _____
 Vents shall be vented not less than 12 ft. above the adjacent ground level, shall be vented upward or horizontally away from closely adjacent walls, so that vapors will not be trapped by eaves or other obstructions, and shall be at least 5 ft. from building openings or property lines of properties that can be built on. Reference: SFFC, Section 5704.2.7.3.3
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
71. Check the appropriate responses for the tank being installed as applicable (check all that apply):
- (a) **UL 142** Tank is provided with emergency venting in accordance with SFFC Section 5704.2.7.4 and NFPA 30 Section 22.7
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
- (b) **UL 2085**-Secondary Contained Protected Tank with emergency vents allowed to discharge inside the building in accordance with SFFC 5704.2.7.4 exception no.2 and NFPA 30, Section 22.7 and complies with all requirements of UL 2085 and the following:
 _____ Shall not discharge into a lesser hazard area;
 _____ Shall not discharge into a normally occupied space;
 _____ The emergency vent cap shall be equipped with a listed flame arrestor;
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
72. Room where tank is located is ventilated in accordance with SFFC, Sections 5004.3 and 5004.3.1
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
73. Tank supports and connections are designed to resist damage as a result of seismic activity. Reference: SFFC, Sections 5003.2.8, and 5704.2.9.3; and NFPA 30, Section 22.5.
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
74. Piping, valves, tanks, or fittings are subject to vehicular damage. (Guard posts or other approved means of protection shall be installed) Reference: SFFC, Sections 5003.9.3 and 5704.2.9.7.5
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
75. Fuel supply system is provided with adequate alarms, float-controlled valves, or mechanical or remote-reading-level gauges or protected sight glass gauges to aid personnel in properly operating the fuel system. Reference: NFPA 37, Section 6.5.2 (Note: all openings are restricted to the top of the tank).
 _____ YES or _____ NO or _____ N/A [_____ DISCIPLINE/TITLE]
76. All piping is double-walled, meets the requirements SFFC Section 5003.2.2, 5004.2.2.5, 5703.6 and 5704.2.8.11

and is provided with a leak-detection system. Provide leak detection alarm SFBC Section 415.9.1.5, 415.5 and SFFC, Section 5004.2.2.5, with supervision as required by SFBC Section 415.5.3 transmitting a trouble signal to a central station. The leak detection **shall also** provide Emergency Alarm per SFBC Section 415.5.1 and SFFC Section 5004.9. All piping is "double wall" unless within a containment area.

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

77. The Fire Alarm panel shall have the 5 points listed below; that call to the remote monitoring station individually:

1. All leak sensors. 2. Generator running. 3. Low fuel. 4. Trouble. 5. Not in Auto

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

78. Above ground fuel piping shall be schedule 40 welded steel for the primary fuel piping and schedule 10 welded steel for the secondary fuel piping or other listed product approved for above ground use.

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

79. List product used for above ground fuel piping: _____

80. If using product other than schedule 40 welded steel for the primary and schedule 10 welded steel for the secondary, provide listing showing product is approved for above ground use. _____

81. Fuel line for underground fuel piping listed by an approved testing company (for proposed use).

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

82. Listed underground pipe transitions to steel outside the building in a transition box in the ground.

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

83. Stationary-powered fuel pumps supplying fuel tanks have stop controls sensitive to a tank's high liquid level.

Reference: NFPA 37, Section 6.5.3

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

84. Fuel tanks supplied by pumps are provided with an overflow line, a high-level alarm, and a high-level automatic shut-off. Overflow piping complies with section. Reference: NFPA 37, Section 6.5.4

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

85. Clearance provided around tank is a minimum of 15 inches. Reference NFPA 37, Section 6.3.5.1.2

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

86. Pressure relief valves and relief piping are provided where the potential exists for over-pressurizing fuel system piping, and is routed without valves or traps to the source tank or collection system. Reference: NFPA 37, Section 6.5

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

87. Hydrostatic test will be performed in the presence of the Fire Inspector for all piping and underground tanks.

Reference: SFFC, Sections 5703.6.3 and 5704.2.12

____ YES or ____ NO or ____ N/A [____ DISCIPLINE/TITLE]

**ADDITIONAL REQUIREMENTS FOR INSTALLATIONS SERVING REQUIRED
EMERGENCY POWER SUPPLY SYSTEMS (EPSS)**

**(THIS CATEGORY INCLUDES EMERGENCY SYSTEMS AND LEGALLY REQUIRED STANDBY AS DEFINED BY
THE NATIONAL ELECTRIC CODE. SEE DEFINITIONS SECTION.)
(COMPLETE QUESTIONS 88-101 WHEN INSTALLATION SERVES THIS TYPE OF EQUIPMENT)**

88. Locations housing required EPSS and Standby equipment will be provided with battery-powered emergency lighting. The charging system and the normal service room lighting shall be supplied from the load side of the transfer switch. Reference: NFPA 110, Section 7.3

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

89. Generators serving EPSS systems will have a remote panel, powered by the storage battery that complies with the NFPA 110, Section 5.6.5.2. Such panel will be located immediately outside of the EPSS service room and will include all status indicators as required as by NFPA 110, Table 5.6.5.2

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

90. EPS equipment is provided with a minimum of 36 inches clearance on all sides. Required when generator is used for required emergency loads. Reference: NFPA 110, Section 7.2.5

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE] 88. Installation is serving high-rise building emergency power systems.

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

NOTE: Emergency and standby power status indicators are required in the Fire Command Center per SFFC, Section 911. Status indicators shall include but not be limited to: running, failure to start, controller off automatic, trouble (e.g., low oil, high temperature, over speed), fuel leak detection alarms (piping, tank room), and low fuel level alarms. Generator supervision devices, manual start and transfer features. See SFFD AB #3.01.

91. Power Distribution/Riser Diagram has been reviewed and approved by the Electrical Inspection Division.

Name of approving ELECTRICAL inspector: _____

92. For generators serving EPSS, prime movers are provided with instruments and accessories as required by NFPA 110, Section 5.6.3

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

93. Engines for EPSS are located in a separate room of minimum 2-hour fire-rated construction. Only EPSS equipment is permitted in room. Reference: NFPA 110, Section 7.2.1 _____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

94. Electrical rooms for normal building power will be free of EPSS equipment. Reference: NFPA 110, Section 7.2.2

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

95. Engines serving EPSS are provided with a remote manual stop station of a type to prevent inadvertent or unintentional operation station located immediately outside the generator room. Reference: NFPA 110, § 5.6.5.6

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

96. At least two sets of instruction manuals in accordance with Section 8.2.1 of NFPA 110 will be provided to the building. One set will be located in a secure, convenient location near the equipment. The other set will be kept in a different secure location. Reference: NFPA 110, Sections 8.2.1 and 8.2.2

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

97. For EPSS systems, a routine and operational testing program has been designed and a written record in accordance with 2016 Edition of NFPA 110, Section 8.3.3 is in place to begin immediately after acceptance, including transfer switch and battery requirements. Reference: NFPA 110, §§ 8.3.5 and 8.3.7

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

98. Generators serving EPSS shall employ a program-timing device to exercise the EPSS as described in Chapter 8 of the NFPA 110. *The transfer switches for Level 1 and Level 2 EPSS shall transfer the connected load to the EPS per NFPA 110, Sections 6.2.11 and 6.2.11.1*

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

99. All elements of the fuel delivery systems serving emergency generators and fire pumps for required emergency power are provided with a means of secondary power. Reference: NFPA 110, Section 7.9.9 and SFFD Interpretation.

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

100. Fuel Tank is sized so that fuel is consumed within storage life (1-1/2 years), or provisions will be made to replace stale fuel with fresh fuel. Reference: NFPA 110, Section 7.9.1.

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

101. Fuel tanks for EPSS are placed as close as practicable to the prime mover. Reference: 2016 *Edition of NFPA 110, Section 7.9.2*

_____YES or _____NO or _____N/A [_____DISCIPLINE/TITLE]

NOTE: Final approval of fire pumps requires completion of a field acceptance test conducted in accordance with NFPA 20, Section 14.2.1. Pump test shall be attended by the pump manufacturer representative, engine manufacturer representative, transfer switch manufacturer representative (when supplied), installing contractor, and should be attended by the owner representative. The SFFD District Fire Inspector shall be notified in advance of the time and place of the test, and shall be provided with the pump acceptance test data.

Final approval of required emergency generators requires completion of **Installation Acceptance Testing** in accordance with NFPA 110, Section 7.13. Person(s) responsible for testing the generator shall have experience and exhibit competence, or may be rejected at the time of the test. The SFFD District Fire Inspector and the DBI Electrical Inspector shall be notified in advance of the time and place of acceptance testing, and shall be provided with written testing data.

Prepared by (signature):

_____ Mechanical Engineer-Ventilation

Firm Name: _____

Address: _____

Phone No.: _____ **Fax No.:** _____



NOTE: If more than one discipline is assisting in the preparation of this checklist please provide ALL names and professional titles/stamps on the following page.

Prepared by (signature):

_____ Mechanical Engineer-Plumbing

Firm Name: _____

Address: _____

Phone No.: _____ **Fax No.:** _____



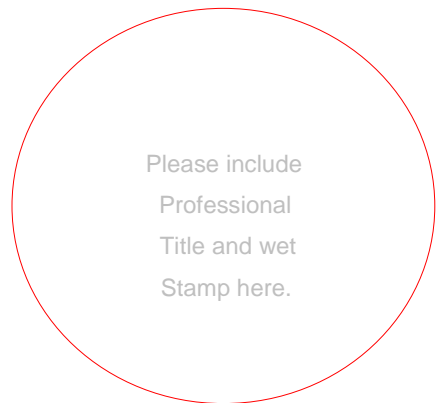
Prepared by (signature):

_____ Fire Protection Engineer

Firm Name: _____

Address: _____

Phone No.: _____ **Fax No.:** _____



Architect

Prepared by (signature): _____

Firm Name: _____

Address: _____

Phone No.: _____ **Fax No.:** _____



Prepared by (signature):

Electrical Engineer

Firm Name: _____

Address: _____

Phone No.: _____ **Fax No.:** _____

