

5.08 Fire Service Access Elevators (2016)

Reference: SFFC-2016, Section 511.2. SFBC, Section 403.6.1 and Section 3007. NFPA 72-2016 Section 21.5.

1.0 PURPOSE. The purpose of this document is to provide for safeguards and fire safety features in high rise buildings such that the fire department has a more efficient means than stairs, and safer means than Phase II In-Car Emergency Operation by firefighters utilizing standard elevators. The FSAEs will provide firefighters with safe means for reaching and fighting fires and rescue occupants on upper floors of high-rise buildings.

2.0 SCOPE. This document applies to all new high-rise buildings more than 120 feet in height as defined by the California Building Code Section 403.6.1. For those buildings covered by the scope of this document, two (2) FSAEs designed for firefighters use during fire emergencies are required to be provided in accordance with paragraphs 1 through 5 of this document, Sections 403.6.1 and 3007 of CBC-2016 and Section 21.5 of NFPA 72-2016. Each FSAE shall have a capacity of not less than 3,500 pounds and shall comply with Section 3002.4 (ambulance stretcher size).

3.0 PROTECTION FROM FIRE, HEAT, SMOKE AND WATER. Fire Service Access Elevators shall be designed so that they are protected from the effects of fire, heat, smoke, or water. This will be accomplished through an approved performance-based design narrative submitted to SFFD by a qualified Professional Engineer licensed in the state of CA. All features under this section shall have a minimum duration of six hours. The design shall include, but is not limited to, the following:

a. Protection of the FSAE hoistway, its associated Elevator Machine Room (EMR), or Elevator Control Room (ECR) or Elevator Control Space (ECS), and associated enclosed FSAE lobbies is required. The protection (from smoke) of these associated FSAE areas and spaces shall be described on the Smoke Control report and approved by SFFD.

b. Sloping floors or floors of varying levels with strategically placed drainage. At a minimum, a trench drain at all FSAE lobby doors openings shall accommodate a 100 GPM flow of the automatic fire sprinklers in remote areas outside the FSAE lobbies. On the ground floor, where an FSAE lobby is not required, trench drain shall also be provided at the FSAE hoistway opening or at other approved location on the ground floor, to prevent water intrusion to the FSAEs' hoistway from sprinkler/s activation on upper floors. This design shall not violate accessibility requirements in regard to level landing or threshold height requirements. The required drainage is not intended to accommodate water from sprinklers flowing within the FSAE lobby.

c. Providing approved water proofing system around all hoistway walls on all levels served by the FSAEs to prevent water from infiltrating into the FSAE hoistways. The water proofing system shall be provided around the hoistway walls for a minimum of six (6) inches height above the finished floor.

d. Provisions for keeping elevator equipment at the appropriate temperature to sustain operation for the length of time the building generator is designed to operate (6 hours minimum, unless the fire pump is tied in to the load in which case the required run time is 8 hours). This may require a careful review of the equipment, its operating temperatures, the HVAC system and the standby power system required for all other life safety systems in the building.

e. An approved means for firefighters to monitor heat conditions in FSAE lobbies and associated machine/control rooms, such as analog heat sensing system annunciated at the Fire Command Center (FCC). This is intended to provide firefighters with more information to determine whether the FSAE protection has been compromised. This means shall include a dedicated FSAE Status Panel located at the FCC. (Reference NFPA 72-2016 Section 21.5 indicated in item 4.g below)

4.0 PRESCRIPTIVE REQUIREMENTS. The design shall include the following prescriptive requirements:

a. FSAE hoistways, lobby, and machine room pressurization mechanical components used to protect the FSAEs, shall be protected in accordance with smoke control system requirements as described in Section 909 of the California Fire Code and shall be included in UUKL weekly self-testing of smoke control components. This system shall be illustrated and controllable at the firefighter's smoke control panel located in the FCC.

b. The FSAEs and their installation shall conform to the currently adopted California Elevator Code: CCR Title 8 Elevator Safety Orders (ESO) – for Group 4 Elevators, and the adopted national elevator code - ASME A17.1-2004.

c. Power transfer switches for FSAEs shall be located as close as practicable to the motors and controls they supply. The normal power feeders and the stand-by feeders supplying the transfer switches shall be by independent routes, and shall comply with the San Francisco Electrical Code.

d. The entire hoistway shall be illuminated at not less than 1 foot-candle (11 lux) as measured from the top of the car of each fire service access elevator when in Phase I Manual or Automatic Emergency Operation. This lighting shall be provided with standby power. A separate manual switch to activate the hoistway lights shall be provided on the FSAE Status Panel at the FCC. The FSAEs vendor shall provide an output from the FSAE system indicating when the FSAEs are in Phase 1 Emergency Recall Operation. The hoistway lights shall turn off automatically when the FSAEs are returned to normal service operation.

e. The following features serving each FSAE shall be supplied by both normal power and Type 60/Class 6/Level 1 standby power:

- Elevator equipment - simultaneous use for both FSAEs
- Elevator hoistway lighting
- Elevator machine room (or ECR or ECS) ventilation and cooling equipment.
- Elevator controllers cooling equipment.

f. Wires or cables that provide normal and standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire/smoke and heat-detecting systems to the FSAEs, shall be protected by construction having a minimum 2-hour fire resistance rating or shall be circuit integrity cables in conduit (CIC) having a minimum 2-hour fire-resistance rating.

g. The FSAEs shall be continuously monitored at the FCC per NFPA 72-2016 Section 21.5 via the Elevator System Monitoring Panel, FACU and FSAE Status Panel.

- h. Where Machine Room-less(MRL) elevators are utilized as FSAEs, a smoke detection system utilizing air aspirating type smoke detectors, or other approved smoke detection devices accessed from outside the hoistway through a listed access hatch door, shall be provided at the top of the hoistway in an approved location.
- i. Emergency Responders Radio Coverage with 99% signal strength shall be provided in all FSAEs cars to provide radio communication between the FSAEs cars and the FCC.
- j. The FCC shall be located in an approved location proximate to the FSAEs. The approved location must be close to an entryway where Fire Department vehicle access is provided. The preferred location is near the main entrance. The FCC must be two-hours fire rated with a 90 minute door and it must be protected from water intrusion from sprinkler/s activation on upper floors.
- k. FSAE Symbol: Designated FSAEs shall be identified with the symbol for fire department operation (firefighter's hat symbol). Each symbol shall be not less than 78 inches, and not more than 84 inches above the floor level at the threshold. It shall be a white helmet symbol on a black background - 3-inches tall Metal sign with same ratio between the hat size to background as specified in CBC-2016 Section 3007.6.5. **The FSAE sign shall be installed on each side of every FSAE entrance on every floor, on the hoistway door frame, per the specific height requirements indicated in CBC-2016 Section 3007.6.5.**
- l. Per CBC-2016 Section 3002.4, each elevator provided with "Ambulance Stretcher" size car, shall be required with an international symbol of emergency medical services (star of life). This symbol is required on every level and both sides of elevator hoistway door frame.
- m. Automatic fire sprinklers shall not be installed in FSAEs machine or control rooms, control spaces, associated machinery spaces or the top of their associated hoistways. Shunt Trip function is prohibited for all FSAEs.
- n. The storage of combustible materials in elevator machine or control rooms is prohibited. The San Francisco Fire Department will consider the building to be equipped throughout with an automatic sprinkler system if all other areas are sprinklered in accordance with the NFPA 13-2016 Standard.
- o. Hoistway Venting. If pressurized FSAEs hoistways are provided for FSAEs that comply with this bulletin, these specific hoistway venting are not required to comply with the requirements of CBC-2016 Section 3004 for hoistway venting. Exception: For Machine Room-less (MRL) elevators where the elevator equipment is installed in the hoistway, a means for venting smoke and hot gases to the outer air in case of fire in the hoistway, shall be provided.

p. Submittal Requirements. All FSAEs designs shall be described in an FSAE Design Narrative, written by either the smoke control author on a separate FSAE section within the Smoke Control Report, or by other qualified Professional Engineer, in a dedicated FSAE Design Narrative. The preliminary FSAE Design Narrative shall be submitted for SFFD review at the site permit stage of the project. A Final FSAE Narrative shall be submitted at the architectural permit stage. Such Narrative shall include a description of the proposed strategy for the FSAEs protection and will include justification for the performance criteria. The FSAE Design Narrative shall be written by a qualified Professional Engineer who is licensed in the State of California. This individual shall take responsibility for describing the safety features of the building that will protect the elevator under this requirement.

q. FSAE addendum submittal. All FSAE projects shall include a separate FSAE addendum submittal as the last addendum to the site permit. This addendum shall incorporate all approved associated FSAE sheets from the Architectural and MEP addenda. The purpose of the FSAE addendum is mainly for record keeping. No work is required to be performed under this addendum. The FSAE Narrative author shall be responsible to review this submittal to ensure all FSAEs protection features described in the Narrative are provided on associated approved permit plans. A compliance review stamp and signature shall be provided by the FSAE Narrative author on the cover sheet of all FSAE addendum submittals.