SAN FRANCISCO FIRE DEPARTMENT
DIVISION OF TRAINING

TRAINING BULLETIN

TRAINING BULLETIN 20-1

FIRE SERVICE ACCESS ELEVATORS

INTRODUCTION

Beginning in 2008 the fire code required Fire Service Access Elevators (FSAE) in all buildings over 200 feet. Since then the code has evolved to require the elevator at 120 feet and under certain circumstances they may be found in buildings as low as 75 feet. The FSAE is a more thoroughly protected elevator system with enhanced safety features. There are currently over 100 FSAE in San Francisco with more in the planning stages.

PURPOSE

- Describe the construction, mechanical and design features that allow FSAE use during high rise firefighting operations
- To establish clear operation guidelines for FSAE
- To establish a policy for San Francisco Fire Department's use of FSAE during high rise firefighting operations

GENERAL INFORMATION

Under normal conditions, FSAE act as a regular passenger elevator car, servicing all levels and floors of a building. FSAE are constructed so that in Phase II, firefighters are protected from fire, heat, smoke, and water while maintaining the integrity of the elevator system. They are outfitted and constructed with numerous safety measures to ensure the safety of firefighters. The use of FSAE still require us to ensure that the fire has not compromised the elevator lobby, hoistway, or machine room. The FSAE should not be expected to transport firefighters through flames, but they should be relied upon to transport us to the fire area of the building if conditions warrant. One of the major difficulties with high rise fires is the amount of time it takes to access the fire on upper floors. The fire will have additional time to intensify and the firefighters will spend energy and effort to make it to the fire floor. Using a FSAE allows firefighters to access and suppress a fire quickly and efficiently.

DEFINITIONS AND SPECIFIC FEATURES

Fire Service Access Elevator (FSAE):

The FSAE is designed to provide enhanced protection for firefighters and to allow the immediate use of the elevator to access involved fire floors. In order to accomplish this, FSAE have several design characteristics which differ from conventional elevators. These include the following:

- Direct, protected access from a two hour rated protected lobby to a standpipe equipped stairwell
- Pressurized FSAE lobby of at least 150 square feet
- Presence of sloped floors, drains, dams, and additional waterproofing to prevent water intrusion into the hoistway and lobby
- Protected primary and emergency power supplies
- No sprinklers in hoistway, machine rooms or control rooms
- No shunt trips for water or smoke detection in hoistway, machine room or control room
- Illuminated hoistway
- Minimum 3500lb capacity and ability to fit a gurney

- Every floor is served by the FSAE
- Emergency radio coverage with 99% signal strength in all FSAE cars in lieu of a Fire phone-jack.

FSAE have a dedicated panel located in the Fire Command Center (FCC) or Building Control Station (BCS). This panel indicates heat and smoke conditions in the elevator machine room, FSAE lobbies, and FSAE hoistway. This panel has a manual switch to turn on the lights to illuminate the hoistway from the FCC.

OPERATION

Upon arrival, the Fire Service Access Elevator Status Panel needs to be checked prior to operation. The FSAE Status Panel is located in the Fire Command Center (FCC). Elevator lobby alarms and elevator machine room alarms shall be checked for heat and smoke. If no alarms are present, the FSAE shaft must be checked for fire, smoke, or water prior to use. If clear, FSAE may be used for firefighting operations. If any of these conditions are present, the FSAE should not be used until these alarms have been investigated.

PHASE I - ELEVATOR RECALL

Place all elevators in Phase I Recall. This action must be done, even if the elevator was automatically recalled. This could be done from the FCC using the two-position FIRE RECALL switch and/or from each elevator lobby using the three-position FIRE RECALL key-switch.

Features:

1. Elevators will not respond to a call from any of the floors.
2. Door re-opening devices for power-operated doors (electric eye) which are sensitive to products of combustion, heat or flame are rendered inoperative.
3. All car and corridor call buttons are rendered inoperative and call registered lanterns are extinguished and become inoperative.
4. A car stopped at a landing has its emergency stop switch rendered inoperative as soon as the doors close and it starts toward the main floor. Moving cars have their Emergency Stop Switch rendered inoperative immediately.

SAFETY ALERT

When the FSAE arrives, check the Fire Helmet Visual Indicator light inside the elevator. If the indicator light is blinking, the elevator may be unsafe to use and should not be placed into Phase II. The blinking light is an indicator of an alarm activation in the elevator machine room, control room, control space, or hoistway. The FSAE should not be used until the alarm has been investigated.

PHASE II – EMERGENCY OPERATION
After all elevators have been put into Phase I the elevator car must be put into Phase II.

The following features apply to an elevator in Phase II Operation:

1. An elevator shall be operable only by a person in the elevator.
2. Elevators shall not respond to elevator corridor calls.
3. The opening of power-operated doors shall be controlled only by continuous pressure "Door Open" buttons or switches. If the switch or button is released prior to the doors reaching the fully open position, the doors will automatically re-close. Open doors will be closed by registration of a car call or by continuous pressure on "Door Close" switch or button.
4. The car will stay on emergency service as long as the car key is in the on position even though the main floor key-operated switch is returned to its off position. This allows the fire department to return other elevators to normal operation while keeping one elevator in Phase II.
5. The emergency stop switch is rendered inoperative.

After the FSAE is placed in Phase II operation, the elevator will be used in the following manner:

1. Shaft checked for signs of fire, smoke, and water.
2. Car door operation tested
    a. In the lobby
    b. On the next floor
    c. Every five floors after
3. If any fire, smoke, or water is visible the elevator should be exited immediately

POLICY
Effective immediately, it is the policy of the SFFD that the use of FSAE to access upper floors of a building for the purposes of fire suppression or investigation is allowed provided the following conditions are met:

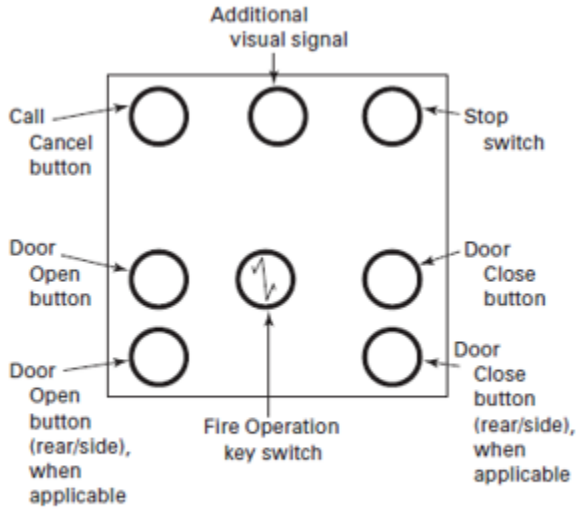
- No alarms are present in elevator machine rooms, control rooms, lobbies or in the hoistway
- The hoistway has been illuminated and no signs of smoke, fire, or water are present
- Elevator has been placed in Phase II operation
- Elevator car doors operate properly

One member from the first truck company, as part of the initial attack group, will be tasked with the elevator operator position. This member is to remain with the elevator at all times and will report to Lobby once established. This member is to be equipped with full PPE including SCBA, water extinguisher, and forcible entry tool.

CONCLUSION
Fire Service Access Elevators provide firefighters an efficient means to access floors in a high rise building and are the preferred means to access floors in a high rise when conditions warrant. Using FSAE in the proper fashion allows us to access and suppress a fire quickly and efficiently.

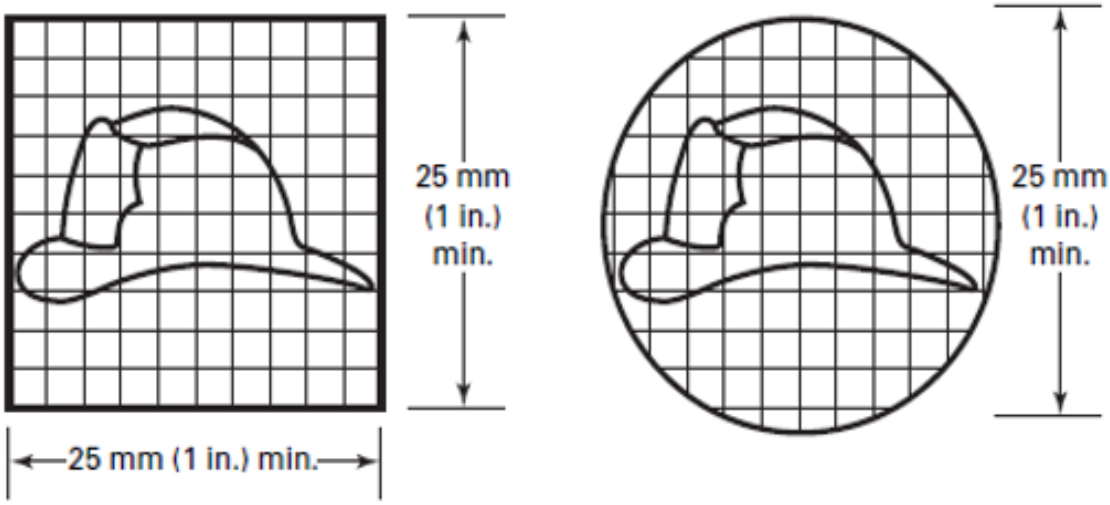
ALL FSAE ARE PROVIDED WITH THE FOLLOWING FEATURES:

CAR OPERATING PANEL – PHASE II KEY-SWITCH IS LOCATED BEHIND A LOCKED DOOR INSIDE THE CAR



GENERAL NOTES:
(a) Switches and buttons show only the location not the labeling.
(b) Not to scale.

VISUAL SYMBOL – FIREFIGHTER HELMET VISUAL INDICATOR LIGHT LOCATED ABOVE THE CAR OPERATING PANEL AND INSIDE THE PANEL. THE VISUAL SYMBOL WILL BE SOLID ANY TIME THE ELEVATOR IS IN PHASE II. THE INDICATOR WILL BE BLINKING ANY TIME AN ALARM IS PRESENT IN THE MACHINE ROOM, CONTROL ROOM/SPACE OR HOISTWAY.



ALL FSAE ARE OPERATED WITH A FEO-K1 KEY-SWITCH. THIS KEY IS USED TO INITIATE PHASE I RECALL FROM THE FCC VIA THE 2-POSITION FIRE RECALL SWITCH LOCATED ON THE ELEVATOR STATUS AND CONTROL PANEL, OR FROM THE FSAE LOBBY VIA THE 3-POSITION FIRE RECALL SWITCH. THIS SAME KEY IS USED TO OPERATE PHASE II IN-CAR EMERGENCY OPERATION WHEN INSERTED TO THE PHASE II SWITCH ON THE FSAE CAR OPERATING PANEL.

PHASE II INSTRUCTION LOCATED ON THE INSIDE OF THE CAR OPERATING PANEL DOOR INSIDE THE CAR

FIRE OPERATION

When  flashing, exit elevator

To operate car	Insert fire key and turn to "ON." Enter floor selection.
To cancel floor selection	Press "CALL CANCEL" button.
To close door	Press and hold "CLOSE" button.
To open door	Press and hold "OPEN" button.
To hold car at floor	With doors open, turn key to "HOLD."
For emergency stop	Use "STOP" switch.
To automatically return to recall floor	Turn key to "OFF."

EXAMPLE FSAE STATUS PANEL LOCATED IN THE FCC