

High Rise Procedure Appendix 3

Elevator Use and Fire Department Control during a High Rise Incident

Introduction and Scope

The intent of this supplement is to review and outline accepted practices for elevator use under Fire Department Control at high rise incidents, identify common issues that may arise, and briefly explain how modern day elevator controls function. The information described within this document is for informational purposes and does not supersede your Department SOP/SOG's, or directives established by command at any specific incident.

The use of elevators during a high rise incident is a potentially high risk activity, and therefore an informed decision whether to use or not use them should be made by command or interior officers. Every incident is a dynamic event and the decision to use elevators should be based on information known at the time, as well as forecasting potential fire growth in the immediate future, and the effect that fire and smoke conditions will have on future elevator use.

If the decision is made to use the elevator(s), it is important for all personnel at the incident to recognize that elevator usage may be short-lived due to changing conditions. Recent studies suggest that a large percentage of elevators must be taken OOS for safety reasons after only 25-35 minutes of usage at an incident. A secondary plan for moving personnel, tools and equipment, and occupants should be drafted and in place as soon as possible.

Firefighter Service

The ASME Code (A17.1-4) requires elevators to have a Firefighters' Service to aid emergency responders during a building fire. This feature is divided into two separate operations, Phase I and Phase II, which are described below.

Phase 1 Operation (Recall)

The purpose of Phase I activation is to return elevator cars to the main egress floor, ensuring that occupants will not be delivered to an upper floor with fire and/or smoke conditions present. The Phase I activation can only occur if a smoke detector in the elevator lobbies, hoistway, or machine room activates, or by manually using the 3 position key switch found in the elevator lobbies.

While in Phase I operation, an elevator car will automatically return to the main egress floor without stopping, and stay there. This allows any occupants that were in the car upon Phase I activation to exit, as well as facilitate entry by fire department personnel in order to initiate Phase II operation (described later). It is important to note that the "door open" and "emergency stop" functions will be temporarily disabled once the car leaves the landing on recall (Phase I). This will allow the car to move away from the potential hazards and transport occupants to the main egress floor. Also, be aware that if the smoke detectors activate on the main egress floor, the car in that hoistway will stop and open on an alternate floor.

If fire department personnel encounter elevators working normally (not recalled) upon arrival, they should activate Phase I by inserting the fire service elevator key into the 3 position switch located in the elevator lobby. The 3 positions, ON, OFF, and BYPASS are described below.

OFF- Normal car call operation

ON- Phase I activation; recalls car(s) to the main egress floor.

BYPASS-** Overrides smoke detectors and returns car(s) to normal use.

Remember that once an elevator is in Phase I control, it cannot be operated until the fire service key is used to activate Phase II operation, and then should only be used by trained fire department personnel.

**The Bypass mode should NEVER be used during an active fire incident, since anyone using it is at risk of being transported to a floor with fire and/or smoke conditions. The intent of the Bypass is to restore service to elevators in the event of fire detection system trouble, without actual smoke or fire present. The fire service key cannot be removed from the switch while in Bypass mode. This encourages the responsible party to address the issues with the fire detection/elevator interface.

Phase II (Firefighter Operation)

The purpose of Phase II operation is to allow firefighters to utilize elevators for the transport of personnel and equipment closer to an elevated fire floor. Phase II operation is activated by a 3 position key switch located in the elevator car on the operating panel. The switch should be red in color, and may also display a fire helmet and/or be labeled as “Firefighter Operation”. Phase II operation also uses the Fire Service key, which can be withdrawn from the Phase I switch once activated, and placed into the Phase II switch located in the car.

The 3 position key switch for Phase II functions as follows:

OFF: Normal (non-emergency) operating position

ON: Activates Phase II operation, giving firefighters control of the elevator car

HOLD: Allows firefighters to hold the car at a specific floor until needed

In order to move a car in Phase II operation, a sequence of events must occur. Please note that any change in key position is only recognized by the elevator system when the car is on a floor with the doors open.

1. Turn the lobby switch (Phase I) to “ON”.
2. Turn the in-car key switch to “ON”.
3. Press and hold the “DOOR CLOSE” button until they close completely.

The elevator can now be used to travel to the desired floor. The doors will not open automatically when the car reaches the destination floor. This is a safety feature that will minimize exposure to smoke or fire in a dynamic event. If the ECF presses and holds the DOOR OPEN button and encounters poor conditions, he/she only has to release the button to automatically close the doors.

While operating at an incident in Phase II control, a firefighter should be assigned to stay in the elevator car. This person should be designated as the Elevator Control Firefighter (ECF). The ECF should be in full gear, have a portable radio, and a fire extinguisher available. The ECF must be familiar with elevator operations in Phase II control, and constantly monitor conditions that may render the elevator unsafe to use.

Elevator Size Up

Before using an elevator during a working fire, a detailed size up/assessment must be done. First, look through the hoistway by looking up through the space between the elevator lobby (threshold) and the elevator car. If any water is seen falling through the hoistway, or heavy

smoke is present in the hoistway, do not use the elevator car in that hoistway. Another elevator/hoistway should be located and assessed.

Once the hoistway is assessed, the next step in an elevator size up is enter the car, and look for the Phase II (FD) keyed switch. Older elevators may not have an FD control. If the elevator does not have a Phase II function, it should never be used during firefighting operations. If the elevator does have a Phase II (FD) control, it should be activated and checked by holding the door close function, and selecting a lower floor to ensure that the Phase II control is functioning properly.

Lastly, a continuing size up must be done, looking for any change in conditions. As stated earlier, it is not unreasonable to expect that the elevators may not be safe to use for firefighting operations after 25-35 minutes of a working fire.

Consideration for Use

The ECF should always stop at a lower floor to ensure that the car is functioning properly in Fire Service mode. While at the lower floor, the hoistway should be checked again for water or smoke hazards. Personnel should be transported to 2 floors below the lowest known fire floor. At large incidents, using two separate elevators for transport to and from fire floors may be considered. If this option is exercised, the hoistways chosen for use should be labeled with an up or down arrow to reduce confusion. One elevator would then be used for transport to the fire area, and another elevator be used for transport from the fire area to the main egress floor.

Restoring Service

To remove the car from Phase II, first return the car to the recall floor, then turn the FD keyed switch to the OFF position. Phase I can then be removed by switching the elevator lobby keyed switch to OFF while on the recall (main egress) floor.