



**Lt. Mike Mason, Downers Grove, IL. Fire Dept.**

## **Elevator Fire Service System**

The purpose and intent of fire service elevator systems is to prevent elevator usage by occupants and to put the system in its entirety in the control of the fire department. It gives us the ability to gain control of the elevators immediately at the lobby as well as all functions inside the cars. This will increase the margin of safety for both the firefighters and the civilians.

Even though the fire service systems exist in order to make safer use of the elevators by fire personnel it is still considered a very dangerous operation in high-rise firefighting. The systems are known to fail or malfunction during procedural use in over one-third of the operations that they are utilized in. The Downers Grove Fire Department allows for the use of these fire service systems involving elevators at high-rise operations from the 5<sup>th</sup> floor and above only. All other operations involving possible or existing fire conditions below the fifth floor will be walked.

The main purpose for controlling elevators is for the necessary safe transport of members and equipment to upper floors of low rise and high-rise structures. Controlling elevators by firefighters is divided into 3 phases in which each member should be thoroughly familiar with in order to understand how elevators are controlled through using the fire service systems.

### ***Phase 1***

This primarily refers to the firefighter's ability in an emergency to recall the elevator through the use of the service switch in the lobby. An elevator key will be needed in order to accomplish this. They're usually found in the elevator key box near the elevator or in the command panel room of which only the fire department should have access to. Once the key is utilized it will recall all the elevator cars to the lobby without stopping at any floor whether the car has occupants or not. In order for Phase 1 to be activated it has to be done manually with the key by a firefighter from the lobby.

Most of the high-rise structures in Downers Grove are tied into the buildings fire alarm system in which case phase 1 may be initially activated by an alarm on upper floor. When this is the case all the elevator cars will return to the lobby automatically with their doors open. This is how they will be presented to you when you arrive. In other buildings or low rise structures in Downers Grove you'll need to manually activate phase 1 as described above.

## ***Phase 2***

This strictly refers to the fire service controls within the elevator car itself which allows firefighters to manually control the elevator from the inside of the car only. Once an elevator car is activated into Phase 2 operations it automatically overrides the lobby switch which is in initially Phase 1. Phase 2 is attained through the use of an elevator key and the specific positions of the key when inserted into the interior panel within the elevator car. **NOTE:** When a confirmed report of smoke or fire is known you should not under any circumstances enter and use an elevator car that is not equipped with a Phase 2 service mode. Additionally any Phase 1 or Phase 2 service mode that is not functioning correctly should also not be entered.

## ***Phase 3***

This is usually associated with an alarm activation from fire and smoke that is present in the mezzanine or lobby areas of high rise buildings. At this level there will be no elevators present in the lobby or grade entrance levels. In this case an automatic recall will bring the elevators to usually the second or third floor or to the basement. In order for fire personnel to utilize these elevators for whatever reason they will need to retrieve them by going up to the floors above or below the fire area and engage their using the same procedures.

## ***Key Panel Positions***

The panel positions on both the lobby floor and within the elevator car usually involves three positions in most low rise and high-rise buildings. The configuration of these positions may vary from the lobby panel and the interior elevator car panel depending upon the age of the building. In Downers Grove most of the high-rise buildings involving eight or more floors have "on" "off" and "bypass" positions in the lobbies while on the inside of the elevator cars you may see "on" "off" and "hold" positions.

When turning the elevator key to the "on" position at the inside panel of the elevator car you are activating the fire service system position into the Phase 2 mode of operation which now manually controls the elevator car by the firefighter. In older low rise and high-rise buildings you'll find the "on" position sometimes to be labeled "firemen service". The next key position is the "off" position which is found in both the lobby panel and interior car panel key position. When you turn the interior car panel key position to "off" you will return the fire service system to Phase 1 which will return the car to the lobby for use by other arriving companies. This mode of operation will occur as long as the lobby panel is keyed to the "on" position. If they key position is turned to "off" at the lobby panel the elevator cars will be taken out of the fire service mode and returned back to normal function. This would not be a desired function during high-rise operations.

The "hold" car panel key position is used in order to keep the elevator car on the floor that you are on with the doors in an open position. You should be able to remove the service key from the elevator car panel and the car should remain in that position until you return and insert the key back into the elevator car panel. This prohibits the car from being recalled.

**NOTE:** The "bypass" is a key position usually found only on the lobby panel. This position is mainly used in order to restore the elevator to normal use when an alarm system has not been reset or is being worked on.

## Elevator Operations First Arriving Companies

First arriving companies entering the lobby area should immediately meet with a building engineer, security or systems supervisor to verify the location and extent of the fire. They will then proceed to the command panel room to accomplish the following.

- Locate the alarm designation, area, type and floor.
- Report all information to command.
- Look for and acquire elevator keys, communication systems and handphones.
- Proceed to elevators and verify their presence at the lobby in the open position.

The first arriving companies will then insert the elevator key into the lobby panel and activate the panel which now recalls all the elevators and places the system into Phase 1. When the elevators are recalled remove the key leaving it in the "on" position and enter the elevator. **NOTE:** In some of the older low rise buildings it may not be possible to remove the key while it is in the fire service position.

You're now ready to initiate Phase 2 by inserting the elevator key into the panel on the interior of the elevator car and turn it to the "on" position or "fire service" position in older systems. Remember Phase 2 allows you to control the car from the inside. The entire individual floor numbered buttons and other press activation features on the interior panel of the elevator car become INOPERATIVE and must be pressed and held in order for functions to occur.

Begin controlling the elevator door by pressing and holding the "door close" button until the door is completely closed. Next look at the control panel and make sure that it is clear of all pre-assigned floor activations. This can be done by pressing the "call cancel" button or in older buildings it may be called the "reset" button in order to clear the panel of activations. Next press the desired floor you wish to go to. If you should accidentally press the wrong floor simply press "call cancel" or "reset" and then press the correct desired floor. An elevator car that is functioning under Phase 2 operations can only be directed by signals given from the interior of the car. Any signals or call buttons that may be initiated from other floors will not be acknowledged. Unfortunately this also includes call buttons that are pressed from firefighters in the lobby area which then makes the elevator car unavailable for transport of firefighters and equipment.

Upon exiting the car the interior firefighter operating the panel will press the "open door" button and if desired switch the key to the "hold" position which will place the car with the doors open on the desired floor. If for any reason the interior firefighter operating the car leaves the car a tool should be placed in the doorway in case the car doors close unintentionally. The preferred option is to maintain an interior operator of the car allowing for members to transfer back and forth with equipment while maintaining the car doors in the open position as well as operating the car doors to close when desired and return with the car to lobby. Make sure that the interior firefighter operating the car is trained and has radio communication established at all times. At no time will an elevator car placed in Phase 2 operations be operated by anyone other than a trained individual from the fire department.

The final option when operating elevator cars in Phase 2 operations is to allow the car to return to the lobby. This should be done when all personnel are needed on the designated floor for fire suppression efforts and no one can be spared to operate the elevator car internally. This is done by switching the car to the "off" or "normal" position while all members are exiting the car and then one of them presses the lobby indicator call button. This will return the elevator car to the lobby as long as the lobby panel is still in Phase 1 operations.

**NOTE:** The Downers Grove Fire Department directs that at no time will an elevator car being operated in Phase 2 operations be left unattended during high-rise operations. Throughout the duration of the incident a firefighter with proper equipment and radio communications must control phase 2 operations at all times. At no time will elevator cars be left in the "hold" position for long periods of time.

### ***Guidelines***

The Downers Grove Fire Department will require that certain considerations and guidelines be applied to fire personnel that will be operating elevators during a high-rise response. Many considerations regarding safety will need to be paramount in the minds of those operating elevators during high-rise firefighting.

The first guideline is to ensure that fire personnel never take an elevator to the fire floor and that any ascent using elevators will stop at least two floors below the fire floor. The interior control panel inside the elevator car can be affected by heat, water and fire which can cause the elevator car to short out and stall along with an assortment of other malfunctions.

Firefighting personnel should make sure that the elevator car is placed in Phase 2 for operational purposes into order to increase the safety when utilizing them. No matter how well a fire service system is maintained it should be operated with caution. Any smoke, heat or water entering the elevator shaft can cause malfunctions jeopardizing the firefighters traveling within them. Even in the fire service mode their operations can be unreliable.

Fire personnel should be aware that in many buildings the lobby is not considered a floor and that the floor above the lobby will usually be designated as the first floor. Be aware of the designations on the interior control panel of the elevator car indicating floor assignments.

When proceeding to investigate a fire condition it is important to realize that the information received may have come from a floor well below or above the actual fire floor. Make sure that the information received is in agreement with the lobby alarm control panel and what it is annunciating regarding the location of the problem.

Never take an elevator directly up to the fire area. A good safety measure is to take the car up 3 or 4 floors at a time and stop the elevator car and open the doors checking for the presence of smoke on the floor which also guarantees the operator that there is control of the elevator car. If the elevator car should go to the fire floor remember that the door will not open unless the "Door Open" button is pressed and held. If this should occur leave the door closed and immediately press the "Call Cancel" button.

Another important aspect when using elevator cars during high-rise fire conditions is to make sure not to overcrowd the elevators. Try to avoid overcrowding by limiting the number of fire personnel to a maximum of five or six firefighters fully equipped. Depending upon the size of the elevator car may indicate that even this amount will be too many. It is better to make more trips when gathering the first in companies to 2 floors below the fire in order to avoid elevator car complications.

Many times the best option is simply to walk up and avoid using the elevator cars altogether. The Downers Grove Fire Department recommends that all fire personnel will walk the interior stairwell involving any fire response from the 5<sup>th</sup> floor and below.

All Downers Grove Fire Department personnel before entering the elevator cars will check and confirm the location of all necessary fire stairwells. This should be done at the lobby level as well as on upper floors checking the distance and direction of these stairwells before arriving to the fire area. Be aware that not all stairwells will provide for standpipe operations.

All fire department personnel entering an elevator car will be properly equipped with radios, full protective clothing, SCBA's, forcible entry tools, door chocks and elevator keys.

Make sure that all personnel including building engineers, elevator mechanics and lobby control will guarantee power to the building in order to operate the elevator cars safely. Elevators will usually not function once the power has been shut down. Most elevator cars in high-rise structures usually will not operate on auxiliary power supplies.

### ***Phase 2 Operational Checklist***

- Operate the Car: Insert key and turn to "ON." Press desired floor.
- Cancel Floor Selections: "Press Call Cancel" or "Reset" button.
- Close Door: Press and hold "Door Close" button.
- Open Door: Press and hold "Door Open" button.
- Hold Car at Floor: When doors open turn key to "Hold".
- Return Car to Recall Floor: With doors open turn key to "Off."

## ***Elevator Operations Checklist***

- Make sure that the elevator keys fit the elevator panel at the lobby and the panel inside the elevator car.
- Switch the elevator control panel at the lobby to phase 1 to see if it recalls the elevators properly
- Switched the interior elevator control panel to Phase 1 and see if it recalls properly.
- Determine if you can remove the key from the lobby panel while in the fire service mode.
- Check from the inside of the elevator car while in the fire service mode that the "Call Cancel" feature is operating.
- Determine that the elevator car does not open on floors other than the selected floor. This can be done by sending a member to another floor and pressing the "Call" button on that floor. If the car moves to that floor the fire service mode is NOT working.
- Operate and insure that the "Door Open" and "Door Close" buttons are functioning properly.

Test the "Hold" function to ensure that the elevator doors stay open when turned with the key.

*Lieutenant Mike Mason is a 23 year veteran of the fire service. He is a Certified Instructor III and Fire Officer II along with being a staff instructor for the Downers Grove Fire Academy, Romeoville Fire Academy, Southwest United Fire Academy and other academies throughout the state of Illinois.*

*Lieutenant Mike Mason is the co-author of Rapid Intervention Company Operations (R.I.C.O.) on Thomson/Delmar Publications which is recognized as the largest and most comprehensive text available on Rapid Intervention.*