



Learning Objective: The student shall be able to identify the requirements for spot-type detector placement for elevator recall.

The location of this spot-type smoke detector for the adjacent elevator's Phase I Emergency Recall Operation is intriguing and deserves closer scrutiny.

According to NFPA 72®, National Fire Alarm Code, a lobby smoke detector to initiate Phase I recall must be located on the ceiling within 21 feet (6.4 m) of the centerline of each elevator door within the elevator bank under control of the detector. Spot-type smoke detectors should be located on the ceiling not less than 4 inches (100 mm) from a sidewall to the near edge or, if on a sidewall, between 4 inches and 12 inches (100 mm and 300 mm) down from the ceiling to the top of the detector.

The purpose of Phase I Emergency Recall Operation is to have the elevator automatically return to the recall level before fire can affect its safe operation.

Smoke detectors location and spacing must be based upon the anticipated smoke flows due to the plume and ceiling jet produced by the anticipated fire as well as any pre-existing ambient air flows that could exist in the protected compartment.

NFPA 72 says the design shall account for the contribution of the following factors in predicting detector response to the anticipated fires to which the system is intended to respond:

- ceiling shape and surface;
- ceiling height;
- configuration of contents in the protected area;
- combustion characteristics and probable equivalence ratio of the anticipated fires involving the fuel loads within the protected area;
- compartment ventilation; and
- ambient temperature, pressure, altitude, humidity, and atmosphere.

The code official may accept a performance-based design that differs from the prescriptive requirements of NFPA 72. Performance-based design proposals must include documentation of each performance objective and applicable design scenario. The proponent must also submit any calculations, modeling or technical substantiation used in establishing the proposed design's fire and life safety performance.

For additional information, refer to NFPA 72, National Fire Alarm Code.



The placement of this spot-type detector should be evaluated by the code official to assess its potential performance.

