



## Building Construction: Motorized Fire Door Radii

No. FP-2010-27 July 6, 2010

**Learning Objective:** The student shall be able to identify the minimum track radius for a motorized fire door installation.

In some circumstances, the model building codes require elevator shafts to be separated from fire- and smoke-rated corridors to protect the integrity of the means of egress from smoke, heat, and flames rising in the shaft.

Depending upon the architectural design of the space connecting the corridor to the elevator waiting area, this separation often is accomplished by fixed partitions and side-swinging fire and smoke assemblies that create an elevator lobby.

In some arrangements, the owner and architect prefer to maintain a sense of visual openness between the elevators and the corridor. This creates a design challenge to protect the corridor.

One solution may be a motorized fire and smoke door assembly that normally stays in the open position, but upon operation of an individual smoke detector or fire detection system, closes to create a temporary elevator lobby. In this picture, the motorized door is concealed in the wall, and—when activated—travels along the ceiling track to the opposite wall where it engages the gray stanchion to the right of the elevator door.

A concern in the design and installation of these motorized assemblies is the minimum track radius they can use to remain reliable. With too narrow of a radius, the door might bind or jump the track preventing its closure. The door manufacturer will specify the minimum radius on which the assembly can be installed. The minimum radius for this product is 5 ft to the centerline of the door.

The curved doors do require some routine maintenance to continue to operate properly. A frequent lubrication of the drive chain is necessary as well as maintaining the tension of that chain. Ensuring that there are no obstructions in the path of the door in operation will also ensure longevity of the door operation.

The door's performance should be checked annually in accordance with the fire door testing requirements of the model fire codes and National Fire Protection Association (NFPA) 80, Standard for Fire Doors and Other Opening Protectives. For inspection and test criteria, see NFPA 80, Chapter 5.



The curved track on the ceiling guides a motorized fire door used to create an elevator lobby.

