

U.S. Fire Administration / National Fire Academy

*Coffee Break Training***Topic: Penetrations through Fire-rated Wall Assemblies**

Learning objective: The student shall be able to identify the building code requirements for sealing penetrations through fire-rated wall assemblies.

Two workers are sitting in a bar. One asks, “How big of a hole do you need to make to run three wires through a wall?” The second one answers, “I don’t know. How big are your shoulders?”

A bad joke? Yes. A common problem? Also, yes. Fire and building officials often find fire-resistive-rated assemblies that have been compromised by electrical wires, telecommunications wires, pipes, ducts, tubes, and other penetrations through one or more sides of the membrane protection. Often, the holes are substantially larger than the item going through the barrier.

These holes and penetrations create an unrestricted path for heat, smoke, and other toxic gases to pass through the wall into adjoining spaces, including rooms and means of egress. The results can be disastrous.

The model building codes require that many penetrations through fire-resistance-rated walls be sealed with materials to prevent the passage of flame and hot gases, or be protected by listed through-penetration firestop systems installed in accordance with ASTM E814, *Standard Test Method for Fire Tests of Through-Penetration Fire Stops*, or UL 1479, *Standard for Safety for Fire Tests of Through-Penetration Fire Stops*. The model fire codes also require that these protection methods be maintained.



This compromised fire-rated wall assembly should be repaired to meet the building code requirements for fire resistance.

Firestop systems in wall assemblies must have an F rating of at least 1 hour, and be equal to the fire-resistance-rating of the wall in which they are located. The “F rating” is the time period that the through-penetration system limits the fire spread during the controlled laboratory testing to obtain its listing.

Most firestop manufacturers and suppliers will sponsor local training sessions for building and fire officials to explain how their products work and how to inspect them to verify compliance.

For additional information, refer to *International Building Code*[®], Chapter 7; or *NFPA 5000*[®], *Building Construction and Safety Code*[®], Chapter 8.