



Office of Compliance  
Safety and Health  
***FAST FACTS***

## **Fire Wall Penetrations**

An important part of any building's fire safety system is built right into its walls. Fire walls are a passive fire protection technology that aim to slow or stop the spread of fire and smoke. Fire walls operate through "Compartmentation": They divide a building into subsections in order to confine fire and smoke to the compartment in which it started. The extra time provided by fire wall protection is very useful, as it allows building employees more time to escape to safety. For the same reason, all exit stairwells that may be used during an evacuation are required to be enclosed by fire-resistant walls and doors so that they protect occupants exiting a building in a fire emergency.



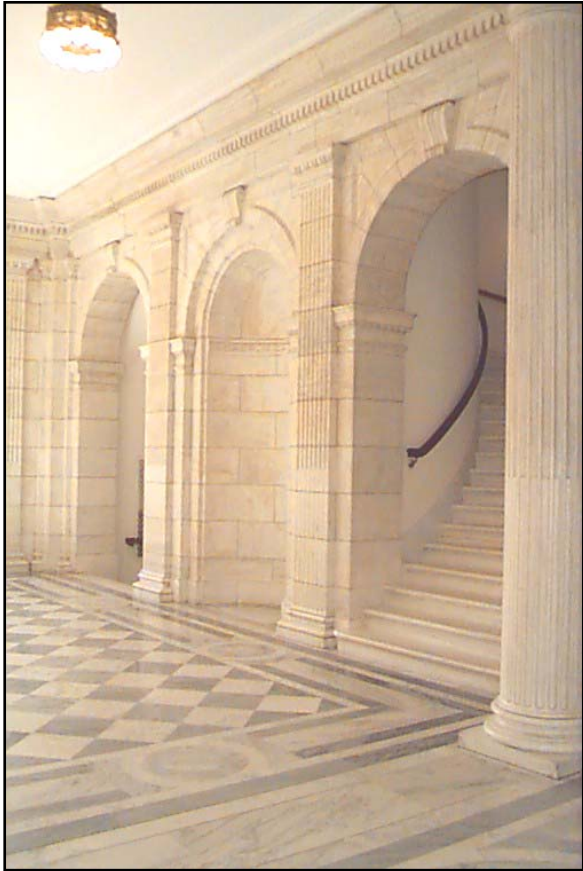
***Figure 1: Pipe poking through a wall***



***Figure 2: Filled poke-throughs***

### ***FIRE WALL POKE-THROUGHS***

The Office of Compliance found many examples of penetrated (poked-through) fire walls in recent inspections, as well as blocked or held-open fire doors and unenclosed exit stairwells. Although fire doors may be held open if equipped with a device to close them when a fire alarm is activated, fire-rated walls with holes or stairwells without fire protection are never acceptable. During the 109<sup>th</sup> Congress Biennial Inspections in 2005, the Office of Compliance safety and health inspectors found 250 cases of unsealed penetrations in fire barriers, 29 of which were in exit stairwells. Figure 1 above shows a wall in a congressional building with a pipe poking through it. If a fire were to occur on one side of this wall, the spaces around the pipe would allow smoke and flame to travel to the space on the other side. Holes such as these need to be filled to prevent this kind of incident, and they must be filled with a material which is as fire resistant as the surrounding wall. Figure 2 above pictures a wall penetration that has been properly filled to prevent the spread of smoke, gases, and fire.



*Figure 3: Open stairwell*



*Figure 4: Stairwell open to hallway*

### ***UNENCLOSED STAIRWELLS***

Similarly, many stairwells in congressional buildings are enclosed, as seen in Figures 3 and 4. Multi-story exit stairwells are perhaps the most important structures that must be enclosed by fire resistant walls, because they must remain intact during emergencies so employees can safely exit. Open stairwells allow toxic gases and smoke to flow to other floors. Both the National Fire Protection Association (NFPA) and Occupational Safety and Health Administration (OSHA) require that stairwells be enclosed by fire-resistant walls and doors.

### ***EMPLOYEES WITH DISABILITIES***

Enclosed exit stairwells are also important for the safe evacuation of employees with disabilities. People who are mobility-impaired (and, to a lesser extent, those who have respiratory conditions, are pregnant, are hearing- or vision-impaired, or have cognitive disabilities) may need assistance and may also require more time to descend several flights of stairs in order to safely evacuate the building. Stairwell landings are also sometimes designated as areas where individuals with mobility impairments should wait for rescue.

## ***FAST STATS***

- The National Fire Protection Association (NFPA) requires that penetrations for cables, cable trays, conduits, pipes, tubes, combustion vents and exhaust vents, wires, and similar items to accommodate electrical, mechanical, plumbing, and communications systems that pass through a wall, floor, or floor/ceiling assembly constructed as a fire barrier be protected by a firestop system or device. (NFPA 101 Section 8.3.5.1)
- The Code of Federal Regulations (CFR) requires that safeguards such as sprinkler systems, fire doors, and exit lighting that are designed to protect employees during an emergency be in proper working order at all times. (29 CFR 1910.37(a)(4))
- The CFR requires that all exits be separated by fire-resistant materials. Construction materials used to separate an exit from other parts of the workplace must have a one-hour fire-resistance rating if the exit connects three or fewer stories, and must have a two-hour fire-resistance rating if the exit connects four or more stories. (29 CFR 1910.36(a)(2))
- The Life Safety Code requires that openings through floors be enclosed with fire-barrier walls, be continuous from floor to floor or roof to roof, and be protected as appropriate for the fire-resistance rating of the barrier. (NFPA 101 Section 8.6.2)
- The United States Department of Labor Bureau of Labor Statistics reported that fires and smoke caused 90 workplace fatalities and 2,790 workplace injuries in 2004.

*Office of Compliance  
Room LA-200, Adams Building  
110 Second Street, SE  
Washington, DC 20540  
202/724-9250*

*[www.compliance.gov](http://www.compliance.gov)*

*April 2006*