

Opening Protection in Fire Protection-Rated Assemblies

To limit the spread of fire from one area to another, a building can be divided into compartments. These divisions have specific fire-resistance ratings that are based on their intended use. Openings into these compartments must be protected to ensure the integrity of the overall fire-resistive rating of the wall, floor or ceiling assembly.

Four items need to be considered to develop the fire protection requirements. These include the combustibility of the product penetrating the division, the physical size of the space around the product penetrating the division, the filler that will be used to seal the penetration, and the distance the penetrating product remains non-combustible from the rated assembly.

There are two types of penetrations that are addressed in the building code. The most severe are those that penetrate through the entire assembly. The other type is single membrane penetrations, which only penetrate one membrane of a fire rated assembly. As an example, a wall may have sprinklers on both sides where each sprinkler penetrates only one membrane. This installation would be considered a single membrane penetration, provided that the sprinklers are not in the same stud space. However, if the sprinklers are back to back in the same space, they are considered through penetrations that would require through-penetration firestopping.

When sprinkler piping penetrates through a fire rated assembly it must have through-penetration firestopping.

Specific protection assembly installation requirements may be identified on the plans and in the specifications or it may be stated to “comply with the code” and left to the installing contractor. In any case, the codes do not specify who should perform the installation, only what is required and how it is to be tested and listed.

For additional information on fire-resistance-rated construction, see the 2003 International Building Code, Chapter 7: Fire-Resistance-Rated Construction.

Excerpts from a Code Update article in the July 2003 issue of “Plumbing Engineer” magazine: “Opening Protection in Fire Protection-Rated Assemblies”, written by Gene Endthoff.