U.S. Fire Administration / National Fire Academy

Coffee Break Training

Topic: Clearance Around Sprinkler Pipe

Learning objective: *The student shall be able to explain the minimum clearances required around sprinkler pipe through rigid construction elements.*

In those areas where earthquakes may cause buildings to move, sprinkler pipe and tube must be protected from physical damage. The potential for shifting walls, floors, slabs or other rigid elements may result in shearing the sprinkler pipe with catastrophic consequences.

The size of the clear space required around sprinkler pipe depends upon the pipe or tube size passing through the construction element:

Pipe or Tube Size	Hole Diameter
1 to 3-1/2 inches	2 inches larger than pipe or tube
4 inches or larger	4 inches larger than pipe or tube

This 4-inch riser should be surrounded by an 8-inch diameter hole.

No clearance is required if:

- the pipe or tube passes through gypsum wallboard or similar construction materials that will fail before the pipe, as long as the penetration is not through fire-resistive rated construction;
- flexible couplings are located within 1 foot of each side of the structural element;
- horizontal pipe runs perpendicularly through successive joists or studs that form a wall or floor/ceiling assembly; or
- nonmetallic pipe that has been shown to have flexibility greater than or equal to the performance of flexible couplings within 1 foot of the structure.

The opening around the pipe or tube may be filled with a flexible material such as mineral wool, insulation materials, or mastic. If the opening occurs in a fire-rated assembly, the hole must be filled with an approved fire stop system or device meeting ASTM E 814, 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.

For additional information, refer to NFPA 13, *Installation of Sprinkler Systems, International Building Code®* , Chapter 7; and NFPA 5000™, *Building Construction and Safety Code™*, Chapter 8.