R302.4

Dwelling Unit Rated Penetrations

CHANGE TYPE: Clarification

CHANGE SUMMARY: Water-filled fire sprinkler piping of any approved material joins the list of metal penetrating items that do not require a firestop system provided the annular space is filled with the prescribed materials.

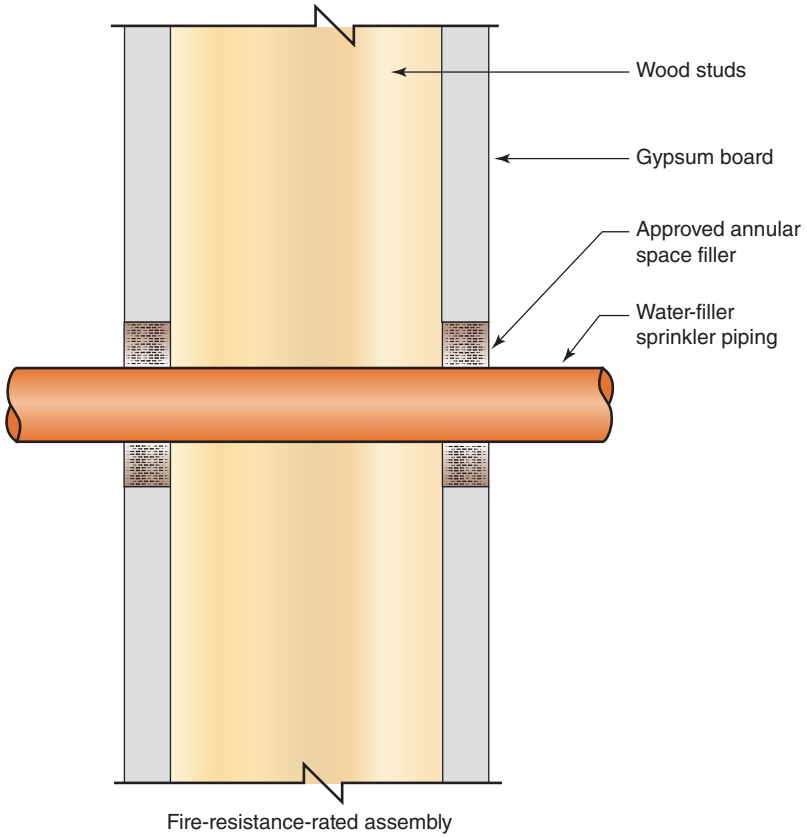
2021 CODE: R302.4.1 Through penetrations. Through penetrations of fire-resistance-rated wall or floor assemblies shall comply with Section R302.4.1.1 or R302.4.1.2.

Exceptions:

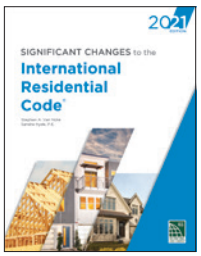
1. Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space shall be protected as follows:

   ~~1.~~ 1.1 In concrete or masonry wall or floor assemblies, concrete, grout or mortar shall be permitted where installed to the full thickness of the wall or floor assembly or the thickness required to maintain the fire-resistance rating, provided that both of the following are complied with:

      ~~1.1~~ 1.1.1. The nominal diameter of the penetrating item is not more than 6 inches (152 mm).



Water-filled fire sprinkler piping penetrating a fire-rated assembly.



This excerpt is taken from ***Significant Changes to the International Residential Code, 2021 Edition***. The Significant Changes series takes you directly to the most important changes that impact projects. Key changes are identified then followed by in-depth discussion of how the change affects real-world application. Photos, tables and illustrations are included to further clarify application. Available for the IBC, IRC, IFC, IECC and IPC/IMC/IFGC, the Significant Changes publications are very useful training and review tools for transitioning to a new code edition.

~~1.2~~ 1.1.2. The area of the opening through the wall does not exceed 144 square inches (92 900 mm).

~~2.~~ 1.2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 or UL 263 time temperature fire conditions under a positive pressure differential of not less than 0.01 inch of water (3 Pa) at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

2. The annular space created by the penetration of water-filled fire sprinkler piping, provided that the annular space is filled using a material complying with item 1.2 of Exception 1.

R302.4.2 Membrane penetrations. Membrane penetrations shall comply with Section R302.4.1. Where walls are required to have a fire-resistance rating, recessed fixtures shall be installed so that the required fire-resistance rating will not be reduced.

Exceptions:

1. and 2. *No changes to text.*

3. The annular space created by the penetration of a fire sprinkler or water-filled fire sprinkler piping, provided that ~~it~~ the annular space is covered by a metal escutcheon plate.

4. *No changes to text.*

CHANGE SIGNIFICANCE: When items such as pipes or ducts penetrate one or both sides of the fire-resistance-rated wall assembly separating dwelling units, both the penetrating item and the space around it must be protected to maintain the integrity of the fire-resistant assembly. In general, penetrations by metal pipe require that the space around the pipe be filled with approved materials to prevent the passage of flame and hot gases. Other penetrating materials, such as plastic pipe, must be protected by an approved penetration fire-stop system. Such a system often consists of intumescent material that expands when heated by fire conditions, filling the penetration as the plastic pipe melts and preserving the fire-resistance rating of the wall assembly.

Listed nonmetallic fire sprinkler piping is ignition resistant and will not sustain combustion. The IRC now permits water-filled fire sprinkler piping to penetrate a fire-resistance-rated membrane or both membranes of a through penetration without a listed firestop system provided that the annular space is filled using an approved material. This matches the installation requirements for metal piping penetrations. Exception 1.2 of Section R302.4.1 sets the criteria for the material filling the annular space of the membrane or through penetration.