

U.S. Fire Administration / National Fire Academy

Coffee Break Training

Topic: Sprinkler Deflector Positions Under Obstructed Construction

Learning objective: The student shall be able to identify sprinkler placement rules beneath composite wood joist construction.

Correct sprinkler placement is essential for heat collection and effective water discharge patterns. The sprinkler must be located close enough to the elevation where heat will accumulate, and positioned so when it operates the water spray is not impeded by the construction elements.

It is important to note that sprinkler placement rules vary by the sprinkler type: standard spray, quick response, extended coverage, Early Suppression Fast Response (ESFR), etc. Always refer to the manufacturer's listing information and NFPA 13, *Installation of Sprinkler Systems*, for specific guidance. Dimensions given are relative to the sprinkler's deflector position.

Standard Pendent and Upright Spray. Deflectors may be installed 1 to 6 inches below the bottom of the joist as long as the distance between the sprinkler and ceiling does not exceed 22 inches, and where the joist channels are firestopped into individual areas not exceeding 300 sq. ft. The firestopping should be material equivalent to the wood joist web, and extend through the full depth of the joists.



Large Drop. Deflectors may be installed 1 to 6 inches below the bottom of the joist as long as the distance between the sprinkler and ceiling does not exceed 22 inches. Firestopping is not required because large drop sprinklers are limited to a protection area of 100 sq. ft. and a maximum spacing of 10 feet.

Extended Coverage and **ESFR** sprinklers are not permitted to be installed under combustible obstructed construction.

For additional information, refer to NFPA 13, *Installation of Sprinkler Systems*.