



Tuesday e-Tech Alert July 26, 2005

Recent NFSA Interpretations – Ceilings

Some recent informal interpretations by the NFSA Engineering staff on the subject of ceiling configurations and sprinkler placement:

Q: What is the intent of the first sentence of Section 8.6.4.1.1.3 of the 2002 edition of NFPA 13? It refers to the requirement in Section 8.6.4.1.1.1 that sprinkler deflectors be located 1 to 12 inches below unobstructed ceilings, but states: "The requirements of 8.6.4.1.1.1 shall not apply for light and ordinary hazard occupancies." What would stop anyone from installing sprinklers 10 feet below the ceiling?

A: A subtle change was made to 8.6.4.1.1.1 in the 2002 edition. The phrase "throughout the area of coverage of the sprinkler" was added at the end of the sentence so that sprinklers at lower ceiling elevations were not counted as protecting up into deep pockets or places where ceilings change elevation. The first sentence in 8.6.4.1.1.3 is intended to say that for light and ordinary hazard occupancies, the sprinkler deflector can be more than 12 inches (but never more than 36 inches) below a portion of the ceiling several feet away from the sprinkler. Fortunately, the illustrations of Figure 8.6.4.1.1.3, added for the 2002 edition, show the intent much better than the wording of the section.

Q: A project has 30-inch and 36-inch deep composite wood joist construction on 16-inch and 20-inch centers. Type X 5/8-inch gypsum board is attached directly to the bottom of the joists and t-bar ceilings are suspended approximately 2 feet below the gypsum board. Is the space between the composite wood joist channels required to be sprinklered?

A: Section 8.14.1.2.6 of NFPA 13 (2002 edition) allows sprinklers to be omitted from the construction outlined as long as draft stops are installed at 160 cubic ft intervals. For the purposes of this situation, the "ceiling" described by NFPA 13 is the limited combustibile gypsum board attached directly to the bottom of the joists. The fact that the owner is installing an additional (false) ceiling below that is irrelevant to the application of NFPA 13 to the concealed space formed by the joists.

Q: When the floor/ceiling construction is flat slab, pan type reinforced concrete, are there any limitations on how large or shallow the pans can be? Is there a specific definition under which pan type reinforced concrete can be considered unobstructed construction? One project involves pans that are 16 inches deep and vary in size, the largest being 5 ft 6 inches by 18 ft 6 inches, and the smallest being 2 ft 6 inches by 5 ft 9 inches.

A: The construction described is pan type reinforced concrete, but it does not meet the definition of Unobstructed Construction and should be treated as Obstructed Construction. There are many different types of pan type reinforced concrete construction, but only some of them meet the definition of Unobstructed Construction. For this reason, the NFPA 13 Committee took the term out of the body of the standard (along with all of the other terms of construction) when they

introduced the concept of “Unobstructed” and “Obstructed” construction. You have to rely upon the basic definitions of unobstructed and obstructed construction in Sections 3.7.1 and 3.7.2 to determine which one you have. In this case, the structural members are 16 inches deep and are therefore expected to impede the flow of heat across the ceiling and hamper the distribution of water from the sprinklers. Therefore, the only way to use Unobstructed Construction rules is if the members are more than 7.5 ft apart (on center) in both directions. With this kind of wide separation, the heat flow from the fire would move across the sections of the ceiling (pans) similar to a flat, smooth ceiling and the sprinklers could be spaced in the middle of the pan without concern for obstruction of the spray pattern.

Upcoming “Nine for Eight” Online Seminars on NFPA 13 Issues

The “Technical Tuesday” online seminars scheduled for the last five months of 2005 will feature nine special topics from NFPA 13. These topics were addressed briefly during the 10-session series on the 2002 edition of NFPA 13, but now will be addressed in more detail. Although the individual registration fee for these seminars will be the usual \$125 for members and \$250 for nonmembers, a special “nine for eight” rate of \$800 will be available to NFSA members who sign up for all nine. This represents a discount of nearly 30 percent. The same percentage discount will be given from the nonmember rate. **This will be the only discount available in this series.** Go to www.nfsa.org for full descriptions and registration for the online seminars. Registering for all nine seminars will trigger the discounted price. The seminars in the series:

August 2, 2005 – **Vertical Shafts**

August 23, 2005 – **Atria and High Ceilings**

September 13, 2005 – **Sprinkler Temperature Ratings**

September 27, 2005 – **Meters, Backflow Preventers, and Pressure Reducing Valves**

October 11, 2005 – **Sloped Ceilings**

October 25, 2005 – **Hose Stream and Hose Stations**

November 8, 2005 – **Pitching and Draining of Sprinkler Systems**

November 22, 2005 – **Obstructions**

December 6, 2005 – **Fire Department Connections**

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