

# 2009 Building Code Basics – Building

## Sprinkler credits

When fire sprinklers are installed in a building, the IBC gives credit for the added protection the system provides. These credits or modifications are generally permitted even when the system is required to be installed throughout by Section 903 of the code. The installation of fire sprinklers can increase the permitted area and height of the building as discussed earlier in this book. We also discussed the increase in the maximum allowable quantities of hazardous materials when fire sprinklers are installed throughout a building. Fire sprinklers can be used to modify many other requirements of the code in several other different ways.

The modifications permitted are sometimes limited to the type of sprinkler system to be installed. There are three different standards used in the design of automatic sprinkler systems. The National Fire Protection Association (NFPA) develops these standards. NFPA Standard 13 is used to design and install automatic sprinkler systems in most buildings. This type of system is primarily designed to protect the building and occupants from fire. The standard requires that all portions of the building be protected by sprinklers. This includes concealed combustible spaces like open frame floor systems and attics.

An automatic sprinkler system installed in accordance with NFPA Standard 13R is designed for residential occupancies up to and including four stories in height. This system is designed to detect and control fires in residential occupancies.

Its primary purpose is to protect the occupants of the building. NFPA 13R systems are not as restrictive as NFPA 13 systems. The design requirements do not require concealed combustible spaces to be provided with sprinklers. It also allows bathrooms less than fifty-square feet and small closets to be constructed without having to be



**FIGURE 9-5** NFPA 13R sprinkler systems are limited to residential occupancies with a maximum of four stories

provided with sprinklers. Both NFPA 13 and NFPA 13R systems are supplied with a separate water supply from the building domestic water system (see Figure 9-5).

NFPA Standard 13D is used for sprinkler systems installed in one- and two-family dwellings and manufactured homes. This system is less restrictive than the NFPA 13R systems. It is designed to protect the occupants within a dwelling unit by suppressing the fire long enough for them to get out. In many cases, the systems extinguish the fire before the fire department arrives. Sprinkler heads are not required in concealed combustible spaces, small bathrooms, and small closets. An NFPA 13 D

system is permitted to be connected to the domestic water supply.

The fire sprinkler modifications in the IBC require a system installed according to either NFPA 13 or NFPA 13R, or both. It is important that the user of the code pay close attention to the exceptions and requirements permitting an automatic sprinkler system to be substituted for an IBC requirement. For example, the allowable area of the building can be increased when an NFPA 13 system is installed but not when an NFPA 13R system is installed. However, the height of a building can be increased one story and twenty feet if either type of system is installed throughout the building. NFPA 13D systems are not permitted to be used for any modifications or substitutions.

[\[Ref. 903.3.1\]](#)

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