

Dealing with Accessory Spaces in the 2016 NFPA 13R

This issue of TechNotes was written by Russell P. Fleming, P.E., currently Senior Adviser for the NFSA. Russ was a member of the task group that originally drafted NFPA 13R, and continues to serve on the NFPA's Correlating Committee on Automatic Sprinkler Systems.

The NFSA Engineering and Standards Committee has requested a special edition of *TechNotes* to explain the situation regarding accessory spaces and mixed occupancies in the 2016 edition of NFPA 13R- *Standard for the Installation of Sprinkler systems in Low-Rise Residential Occupancies*.

In the 2016 edition, wording was deleted from the annex that had been in place since 2002. In the 2013 edition, this wording had appeared in A.1.1 as follows:

It is the intent of this standard that if NFPA 13R is appropriate for use, it be used throughout the entire building. It is recognized that an accessory or incidental occupancy to the operation of the residential occupancy might exist within that residential occupancy.

As explained in the NFPA's 2016 *Automatic Sprinkler Systems for Residential Occupancies Handbook*, this annex wording has been deleted out of concern that the provisions of the standard are always pre-empted by the requirements of the adopted building code. Building codes have specific requirements on mixed occupancies and allowable amounts of accessory spaces that are permitted before triggering such requirements.

As such, the new wording of A.1.1 includes the following:

Buildings that contain multiple occupancies (either separated or non-separated), accessory occupancies or incidental uses are often subject to special rules that may restrict the use of NFPA 13R. Refer to the adopted building code to determine whether such restrictions are applicable.

Is this a big deal? It can be if it means that NFPA 13 is required to be used in some parts of the building. While NFPA 13R has traditionally called for NFPA 13 design densities in non-residential areas exceeding certain minimum allowances, it has

never required the full use of NFPA 13. The biggest single difference would be the need for sprinklers in combustible concealed spaces where the NFPA 13 exceptions do not apply. As an example, an above-ceiling area constructed with open-web wood trusses would generally be required to have a full complement of sprinkler protection if it must be protected in accordance with NFPA 13, but not with NFPA 13R. If that above-ceiling space is an attic, then the attic would be required to be sprinklered. Even if an above-ceiling combustible concealed space area qualified for a sprinkler exemption, the minimum 3,000 sq ft design area required to accompany the exemption could result in a considerably higher water demand for the system.

Fire sprinkler contractors and design technicians are generally not experts on the provisions of the building code, so it is important that the project specifications clearly differentiate the areas where an NFPA 13R system is adequate and where an NFPA 13 system must be provided.

The NFPA's 2016 *Automatic Sprinkler Systems for Residential Occupancies Handbook* contains a summary of three types of situations going forward:

1. The Low-Rise All-Residential Occupancy – If consisting only of dwelling units, these multi-family dwellings or dormitories are straightforward NFPA 13R applications, provided they do not exceed the four-story or 60 ft height limitation that is set for the scope of NFPA 13R.
2. The Residential Occupancy with Accessory or Incidental Occupancies – These occupancies, including low-rise hotel and motels, are mainly residential but also often contain nonresidential occupancies that relate to the operations of the residential occupancy, including dining areas, swimming pools, business centers, laundry rooms and storage areas. The allowable percentage of such nonresidential areas may have been overlooked in the past, but is often as small as 10 percent of the area on a given floor, which is especially easy to exceed on ground floors.
3. Mixed or Multiple Occupancy Buildings – Buildings that exceed the limitations on accessory or incidental spaces fall into this category. If the occupancies are considered “separated” by the building code, NFPA 13R could still be utilized in the residential portion. If “unseparated,” an NFPA 13 system would be required throughout the entire building.

How would an architect or other building designer figure out which type of a system to specify for which building areas? The process can be fairly complicated. For example, applying the 2015 International Building Code, Section 508 deals with Mixed Use and Occupancy. It requires that all accessory spaces be individually classified. While allowing such accessory spaces, it limits aggregate accessory occupancies to not more than 10 percent of the floor area of the story in which they are located. For most types of occupancies no separation is required between the accessory spaces and the main occupancy, but an exception does require some

separations between the accessory spaces and adjacent dwelling or sleeping units, just as it requires separations between sets of adjacent dwelling units and adjacent sleeping units. Where the 10 percent threshold is exceeded for accessory spaces, the code requires fire barriers or horizontal assemblies to separate what are then considered separate occupancies. A further complication is that Table 508 contains the minimum fire-resistance rating for such barriers or assemblies, and while reducing the normal 2-hour requirement to 1-hour for sprinklered buildings, the reduction only applies where NFPA 13 systems are provided, not NFPA 13R systems. Building designers should be aware that there are some similar code allowances only available for NFPA 13 sprinkler systems, not NFPA 13R systems, including the reduction from 1-hour to 30-minutes for the fire partition rating between adjacent dwelling units and between adjacent sleeping units in some types of construction.

While it would be ideal if NFPA 13R could address and simplify the situation, the rules come from the building code, not the standard. NFSA has submitted code change proposals in the past to try to relax the 10 percent limitation on aggregate accessory spaces within NFPA 13R protected occupancies, but has not had success in this effort to date.

For decades, the NFSA has taken the position that the designation of the appropriate NFPA sprinkler standard to be used is one of the key design decisions to be made by the architect or engineer acting as the building design professional. Once that decision is made, design technicians working in the employ of qualified contractors are in the best position to apply the provisions of the specified NFPA sprinkler standards. The clarification within NFPA 13R that the building codes are nuanced in their allowance of NFPA 13R makes it more important than ever that this design decision be made correctly. Fire sprinkler contractors should seek clarification of the extent of NFPA 13R protection in contract documents in order to avoid future problems.