

New One- or Two-Family Dwellings

Installing NFPA 13D or P2904 Instead of NFPA 13R Sprinkler Systems

A dwelling has been destroyed due to a storm and it had to be demolished. Now you have to rebuild. To rebuild or to build a new dwelling, you need to use the current requirements of the One-and Two-Family Dwelling Subcode of the Uniform Construction Code (UCC.) Currently, new homes of Type VB construction are limited to two stories and a maximum of 35 feet in height. Type VB construction is woodframe without a fire resistance rating. Some people rebuilding two story homes are being required to elevate their homes making the new height above 35 feet. This means that Type VB construction cannot be used unless a fire sprinkler system is installed. These homes are currently required to have a National Fire Protection Association (NFPA) 13R fire sprinkler system installed or to be built of Type VA construction. Type VA construction requires a one hour fire resistance rating on all load-bearing walls and floor/ceiling assemblies. *(NOTE: This bulletin addresses only rebuilds and new construction. For elevating existing houses to greater than 35 ft., see Bulletin 13-1A)*

When the Department proposed the adoption of the 2000 International Residential Code (IRC) back in 2003, the 2000 IRC allowed three story unlimited area dwellings without sprinkler protection. There were valid concerns expressed about fire fighter safety in such a large dwelling and an additional concern that the first one-and two-family sprinkler system requirement would be lost. The Department agreed with these concerns and modified the proposal to maintain the requirements of the 1996 BOCA National Building Code. These requirements were to retain the thresholds of 4,800 sq ft in area and not more than two stories, 35 feet in height for Type VB construction and 10,200 sq ft in area and not more than three stories, 40 feet in height for Type VA construction. Along with this, the height increase section of the 1996 BOCA National Building Code was also maintained to address the concerns of the fire service. The height of a building would be increased one story, up to three stories or 55 feet, when a NFPA 13 or 13R system was installed.

When installing a NFPA 13 or 13R system instead of a 13D or International Residential Code (IRC) P2904 system, there are additional components that really don't provide any extra benefit for the evacuation of the occupants. The requirement to install NFPA 13 or 13R systems, with the associated higher costs, may actually discourage the installation of residential sprinkler systems.

The NFPA 13R and the 13D/P2904 systems essentially provide the same level of life safety protection for the occupants and some property protection of the building. None of the combustibles concealed spaces are required to be protected unless they contain gas-fired equipment, then only the area above the equipment would need sprinkler protection. While sprinklers are not required in garages of a dwelling with a NFPA 13D system, they would be required in a NFPA 13R system. However, the same residential-style sprinkler heads that were used inside the dwelling can be used in the garage. With the installation of NFPA 13D systems in Phoenix, Arizona and Prince Georges County, Maryland, the protection of life and property has been proven for over 20 years. There have been no deaths from accidental fires in dwellings that have had 13D systems installed, and in many cases, the sprinklers have extinguished the fires before the fire department has arrived.

The following is a list of differences between a NFPA 13 or 13R vs. a 13D or IRC P2904 system:

1. Fire Dept Connection (FDC) vs No FDC for 13D or P2904
2. Separate Water Supply Connection vs Allowance for a Combined Plumbing and Sprinkler Water Supply for 13D or P2904
3. Four Sprinkler Head Design vs Two Head Design for a NFPA 13D or P2904
4. 30 Minute Water Supply vs 10 Minute Supply for a NFPA 13D or P2904
5. Monitored vs No Monitoring for a NFPA 13D or P2904

NOTE: Installers of fire sprinklers need Division of Fire Safety certification.

The unamended 2009 IRC now requires the installation of a NFPA 13D or P2904 fire sprinkler system and a dwelling is limited to three stories in height and may be unlimited in area. Under the current One- and Two-Family Dwelling Subcode of the UCC, when someone wishes to build a new dwelling or increase the height of an existing Type VB dwelling beyond 35 feet, they are required to install a monitored NFPA 13 or 13R system. While we maintained the sprinkler system requirements of the 1996 BOCA National Building Code when we adopted the 2006 and 2009 IRC, many new dwellings are not being built with fire sprinkler systems. The higher cost of the NFPA 13R system is discouraging people from installing these systems and many are just building of Type VA construction.

As such, the Department recommends the granting of variations to construct dwellings in accordance with the unamended 2009 IRC. An NFPA 13D or P2904 sprinkler system is required to be installed and the dwelling is limited to a maximum height of three stories and may be unlimited in area.