

### **13R vs 13D Fire sprinkler systems in residential construction Under the 2007 Minnesota Building Code**

The Residential Code, Minnesota Rules Chapter 1309, covers one and two family dwellings and townhouses having open space on two sides. The amended International Building Code (IBC), Minnesota Rules Chapter 1305, can be used for any type of residential occupancy.

NFPA 13D is the standard for the “*Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes*” (basically an individual unit system)

NFPA 13R is the standard for the “*Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*” (a whole building system)

The amended 2006 International Residential Code (IRC), section 1309.0301 subpart 1, states that the sprinkler system shall be installed in accordance with NFPA 13D-2002, with modifications to the installation in section R301.1.4.2.

A question has arisen: Was it the intent of the division to prohibit NFPA 13R systems to fire sprinkle IRC townhouse buildings?

NFPA 13D is the minimum system that can be installed. An NFPA 13R system is an acceptable substitute and may be installed with the modifications in R301.1.4.2. It was not the intent to prohibit the use of NFPA 13R systems in IRC units.

The question that follows then is: How can the sprinkler pipe of an NFPA 13R system be run between IRC townhouse units which are defined as separate buildings in R1309.0202?

The definition of “Townhouse” in Section 1309.0202 states, in part, that, “Separate building service utilities shall be provided to each single-family dwelling unit when required by other chapters of the State Building Code.” There are no provisions in any State Building Code Chapters that require separate fire sprinkler water service piping for townhouses, so a single water service pipe can be used to supply the sprinkler system for townhouses. The IRC section 302.1 regulates, “Construction, projections, openings and penetrations of exterior walls and refers to Table R302.1. This table requires penetrations with a fire separation distance of less than 5 feet to be protected in accordance with R317.3. Since townhouses are “constructed in a group of two or more attached units” the fire separation distance between each single-family dwelling is less than 5 feet thus making the provisions of R317.3 applicable. The state building code does not prohibit this piping across property lines or dictate the location of valve assemblies, however, proper legal mechanisms, such as easements or associations, should be in place to deal with the private property issues.

Under the IBC, R3 occupancies, not more than two dwelling units, with individually owned units, separated by fire walls or party walls, would be allowed to use 13D systems.

Provision to protect penetration at property lines in the IBC are contained in Section 712, so the use of NFPA 13R systems in the IBC is very similar to that in the IRC.