

Fire Engineering®

Class III Standpipes

Article and photos by Gregory Havel

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We were introduced to the three classes of standpipe systems early in our fire service careers. These systems are usually required by state and local building and fire codes to comply with National Fire Protection Association (NFPA) 14, *Standard for the Installation of Standpipe and Hose Systems*, and with other NFPA standards that are incorporated by reference.

- Class I standpipes are intended to be used by the fire department, and are equipped with a valve and 2.5-inch hose connection at each location. The water supply is designed for 500 gallons per minute (gpm) for the first connection, plus 250 gpm for each additional connection, up to a maximum of 1,250 gpm.
- Class II standpipes are intended to be used by the occupants of the building, like fire extinguishers, and are equipped with a valve and 1.5-inch hose connection at each location. These are designed for 100-gpm water flow.
- Class III standpipes are a combination of Classes I and II, using both sizes of hose connections and Class I water supply requirements.



Class I and Class III standpipes may have fire department connections to supplement the building water supply.

Class I and III standpipe connections are usually located in exit stairways with fire-rated enclosures. The current edition of NFPA 14 requires standpipe connections to be located on the intermediate landings between floors. Earlier editions of NFPA 14 required the standpipe connections to be located in the stairway at each floor level. Firefighters usually connect to standpipes below the level of the fire floor to reduce congestion at the entry to the floor. Locating the connection at the intermediate landing also makes more hose

available for use on the fire floor.

Photo 1 (above) shows a Class I standpipe connection installed in 2007 in an exit stairway on the intermediate landing between floors. The riser is a four-inch steel pipe, with a 2.5-inch tap welded to it for the valve and hose connection. The manufacturer supplied this valve with a 1.5-inch cap on a 2.5-inch by 1.5-inch reducer so that the same valve and cap assembly could be used for either a Class I or Class III standpipe. (Sometimes the “authority having jurisdiction” (AHJ) allows a 1.5-inch hose station to be connected to this reducer rather than requiring a separate 1.5-inch valve and connection.) This standpipe operates at 70 pounds city water pressure, supplemented by a fire department connection at street level near a hydrant.

Photo 2 (right) shows one of two Class III standpipe connections installed in 2006 on the stage in a large high school auditorium. The four-inch steel riser pipe has separate taps for a 2.5-inch and a 1.5-inch valve with a “hose station”—a length of 1.5-inch single-jacket hose with nozzle on a rack. These standpipes are connected to the automatic fire sprinkler system. The water supply for each is an allowance added to the



calculated requirement for the sprinkler system, which is supplied by a fire pump drawing water from an underground reservoir, and which is supplemented by a fire department connection at street level. This school is located in a rural community without a public water supply.

See NFPA 14—2007, *Standard for the Installation of Standpipe and Hose Systems* for details on the design and installation of standpipe systems.

See NFPA 13—2007, *Standard for the Installation of Sprinkler Systems*, Chapter 8, for details on the design and installation of standpipes with water supplied by automatic sprinkler systems; especially Chapter 8.17.5.2.2.

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