



TechNotes

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Best of EOD - NFPA 14 Standpipes

The NFSA processes over 1,200 informal interpretations a year from its members. This is done through the Expert of the Day (EOD) program, where members ask the industry's top fire sprinkler subject matter experts questions on fire sprinkler related rules, codes, and standards.

One of the important NFPA installation standards for our industry is NFPA 14 *Standard for the Installation of Standpipe and Hose Systems*. Based upon the data collected from the NFSA Expert of the Day (EOD) program, the majority of standpipe questions asked have centered around hose connection locations, calculations, combined systems, fire department connections and include general standpipe questions.

The following are some of the common standpipe topics answered by the NFSA's Codes, Standards, and Public Fire Protection staff as part of the Expert of the Day (EOD) member assistance. If you have a question for the NFSA EOD submit your question online through the "My EOD" portal. Unless otherwise noted, the following is based upon the 2019 edition of NFPA 14.

Horizontal Exit Hose Valve Locations

NFPA 14 Section 7.3.2.2 requires hose connections on each side of a wall adjacent to the exit opening of a horizontal exit. Section 7.3.2.2.1 allows the removal of one hose connection, on the opposite side, where the travel distance does not exceed 200-feet.

While there is no current definition of adjacent, the 2023 edition includes a change that if approved, will require a hose connection at horizontal exits to be visible and within 20-feet of the exit.

The International Building Code (IBC) is more restrictive but also allows the removal of a horizontal hose connection when the adjacent side of the horizontal exit is reachable from a 30-foot hose stream from a nozzle attached to 100-feet of hose, connected to an interior exit stairway hose connection. This 130-foot limitation was amended in the code to specifically address the lower level of firefighter protection afforded by horizontal exits. Allowing hose-lines to be initially deployed from the stairwell and extended from a protected location in reach of the initial hose-line.

Supervisory Air on Dry Systems

The requirements found in chapter 5 of NFPA 14 for supervisory air are extracted from NFPA 13 *Standard for the Installation of Sprinklers* and are for dry valves installed on standpipe systems. These requirements have been a bit confusing for several cycles of the standard and the technical committee is looking to address this issue in the 2023 edition of NFPA 14.

The 2023 edition of NFPA is looking to clarify this section with new requirements for supervisory air on all dry systems. There was a unanimous position taken by the technical committee and would require all manual dry standpipe to be supervised with air.

Note: There are requirements in NFPA 241 *Standard for the Safeguarding of Construction, Alteration, and the Demolition Operations* for temporary supervisory air on dry system.

Pipe Protection and Installation of Standpipes in Vertical Center Shaft of Stairs

NFPA 14 *Standard for the Installation of Standpipe and Hose Systems* does not have any specific location requirements for the installation of standpipe (risers) in a stair and does not prohibit hanging a standpipe (riser) in the vertical center shaft space.

The center open area of stairs is often used when retrofitting existing building with standpipes and sprinklers, as it affords a path of least resistance. However, this application does provide complications with pipe configurations that meet the requirements for protection, hanging and hose valve locations.

All standpipes must meet the requirements for pipe protections found in Section 6.1.2 Protection of Aboveground Piping of the 2019 edition of NFPA 14. Hose connections must be installed at the intermediate floor landing (Section 7.3.2) unless permitted at the main landing of exit stairs by the authority having jurisdiction (Section 7.3.2.1).

Interconnecting Standpipes

The intent of NFPA 14 *Standard for the Installation of Standpipe and Hose System*, Section 7.5 is to require all standpipes within a single building to be interconnected. The requirement for being close to the supply is to meet other requirements of the standard.

Examples - All standpipes are required to have control valves to allow each system to be isolated and must have a fire department connection (FDC) on the system side of the isolation valve. The isolation control valves must also be installed between the water supply and the first hose connection on the system.

Where a building or structure is separated by horizontal or vertical firewalls, they are considered separate buildings and are not required to be interconnected as noted in Annex of the standard.

Standpipe systems in separate buildings or structures fed by the same water supply are not required to be interconnected.

Example, a building might have an automatic-wet standpipe system while an adjacent parking garage has an automatic-dry standpipe system fed by the same fire pump and water main. These two standpipe systems are not required to be interconnected since they protect different structures.

Please also see [NFSA Guidance for Sprinkler Contractors Confused About Mixed-Use Building Sprinkler Requirements](#)



General Fire Department Connection Questions

A common question is: Are NFPA 13D systems required to have a fire department connection? Fire department connections (FDC) are not required on NFPA 13D sprinkler systems. This is explained in the annex of the 2019 NFPA 13D *Standard for the Installation of Sprinkler Systems in One-and Two-Family Dwellings and Manufactured Homes*. The annex states that FDCs are not required for NFPA 13D systems but may be installed per the owner's request. If a FDC is installed, hydrostatic tests in accordance with NFPA 13 requirements are needed.

Another common question regards the general location requirements for fire department connections: The intent of the installation standards is that FDCs are within 100-feet of a fire hydrant, recognizable within 50-feet of fire department access point and arranged so that hose lines can be attached to the inlets without interference from nearby objects, including buildings, fences, posts, landscaping, vehicles, or other fire department connections.

The 2019 edition of NFPA 13 *Standard for the Installation of Sprinkler Systems* does have requirements for sprinkler FDC locations found in Section 16.12.5 Arrangements.

Sizing of Fire Department Connections

The requirement for fire department connection (FDC) sizing can be found in Section 7.12.3 of NFPA 14. This section states that FDC shall be sized to include one 2 1/2 inch inlet for every 250 gpm. This means if the design requires 1250 gpm, five - 2 1/2 inch inlets would be needed.

Fire Department Connection Signage Requirements

Three things are generally required on a fire department connection (FDC) by the standards. There are often additional local amended requirements that may also need to be considered.

1. System type, including if the standpipe is manual wet or dry
2. System demand pressure greater than 150psi
3. Where a FDC services only a portion of a building or multiple buildings

A fire department connection supplementing or supplying automatic fire sprinkler and standpipe systems is required to be marked as a combined system. "STANDPIPE AND AUTOSPKR" or "AUTOSPKR AND STANDPIPE" with 1-inch letters.

Signage is also required to include the pressure required to provide system demand of the standpipe system when greater than 150psi. (NFPA 14 Section 6.4.5.2.2 and 6.4.5.2.2.1.)

Manual standpipes, both "wet" or "dry" are also required to be identified by signage at the FDC. (NFPA 14 (2019) Section 6.4.5.2)

Flow Requirements for 1978 Class II Standpipes

Class II standpipes installed under the 1978 edition of NFPA 14 *Standard for the Installation of Standpipes and Hose Systems*, would be required to provide 100 gpm for a period of at least 30 minutes at a residual pressure of 65 psi at the topmost outlet of each standpipe with 100 gpm flowing (1978 NFPA 14 Section 5-4.1).

When conducting the required 5-year flow test of Class II standpipes, NFPA 25 *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, requires the system demand to be based on the design criteria in effect at the time of installation.

*All pressure-reducing valves or pressure-restricting devices on hose valves, must be inspected tested and maintain in accordance with Chapter 13, and flow tested every five years.



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Hose Connections at Exit or Intermittent Landings

NFPA 14 *Standard for the Installation of Standpipe and Hose Systems* requires standpipes to be installed at each main floor landing of required exit stairs.

While hose connections are required at the main floor landing, both NFPA 14 *Standard for the Installation of Standpipe and Hose Stations* and the *International Building Code (IBC)* have allowances for intermittent landing installation with AHJ or fire code official approval.

NFPA 14 requires hose connections at each main floor landing in required exit stairs. This requirement can be found in Section 7.3.2.1 but does have an exemption allowing them to be installed at the highest intermediate floor landings between floor levels where required by the authority having jurisdiction (AHJ) (7.3.2.1.1*).

The 2021 *International Building Code (IBC)* requirements for Class I hose valve locations can be found in section 905.4 Location of Class I standpipe Hose Connection sub section (1). The IBC also requiring hose connections in every interior exit stairway at the main floor landing unless approved by the fire code official.

Note: The fire department should be consulted to determine the preferred hose valve location need for operational use and tactical coordination.

Combined System

Standpipe systems are allowed to be combined or independently supplied directly from the feed main. Feed mains are used to supply water to one or more standpipes or sprinkler systems.

Combined systems must be sized in accordance with NFPA 14 Section 7.6. Combined systems are allowed to share the water supplying both the standpipe and sprinkler systems with the standpipe supplying the sprinkler system.

NFPA 13 *Standard for the Installation of sprinkler Systems* does allow hose connections on a sprinkler system but where a standpipe is required to meet NFPA 14, it would not be allowed to be supplied directly from the sprinkler system.

Hose Connections Thread Protection

Plastic caps are allowed by NFPA 14 to be used to protect hose-connections threads on a standpipe connection and are not considered a deficiency per NFPA 25.

NFPA 14 *Standard for the Installation of Standpipes and Hose Systems* requires caps only for the protection of hose threads and does not require any listing for use. Even if the local authority having jurisdiction (AHJ) were to require the caps to be metal (brass) at installation, there would still be a concern for failure for unlisted brass caps, if the valve was to be charged with the cap on. The NFPA 14 technical committee has discussed this issue and is considering adding weep holes to caps.

NFPA 25 *Standard for the Installation, Testing and Maintenance of Water Based Fire Protection Systems* requires caps to be inspected and replaced if missing/damaged or have missing/deteriorating gaskets. The standard does not address the type of material that caps are made from and would not consider a plastic cap to be a deficiency.

Summary

As with any codes and standards and as indicated by the questions being submitted to NFSA's EOD service, there are areas that cause some confusion in NFPA 14. NFSA uses the data from the Expert of the Day program to make changes to NFPA 14 to help make this standard even more effective and clear. In fact, the next edition NFPA 14 will be significantly reorganized and expanded to make the requirements clearer and in step with modern fire protection practices.

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National Fire Sprinkler Association

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