



Editor - Roland Asp, CET

Issue # 439

May 12, 2020

**TechNotes Issue #439
May 12, 2020**

Best of April 2020

Following are a dozen questions answered by the NFSA's Codes, Standards, and Public Fire Protection Department staff as part of the NFSA's Expert of the Day (EOD) member assistance program during the month of April 2020. This information is being brought forward as the "Best of April 2020." If you have a question for the NFSA EOD (and you are an NFSA member), send your question to eod@nfsa.org.

It should be noted that the following are the opinions of the NFSA staff, generated as members of the relevant NFPA and ICC technical committees and through our general experience in writing and interpreting codes and standards. They have not been processed as formal interpretations in accordance with the NFPA Regulations Governing Committee Projects or ICC Council Policy #11 and should therefore not be considered, nor relied upon, as the official positions of the NFSA, NFPA, ICC, or their committees. Unless otherwise noted the most recent published edition of the standard referenced was used.

- [Question #1 -Coach Screws](#)
- [Question #2 -Fire Pump Suction Piping](#)
- [Question #3 - Hose Connections on Sprinkler Piping](#)
- [Question #4 - Water Curtain](#)
- [Question #5 - Dedicated Electrical Spaces](#)
- [Question #6 - Transfer Switch Location](#)
- [Question #7 - Sprinklers in High Temperature Zones](#)
- [Question #8 - Combustible Obstruction and Exposed Members](#)
- [Question #9 - Open Exterior Stairs](#)
- [Question #10 - Horizontal Exits](#)
- [Question #11 - Supervisory Air on Manual Dry Standpipes](#)
- [Question #12 - Multi-row Rack Depth](#)

Question #1 -Coach Screws

Are coach screws permitted to be installed in tongue and groove ceiling assemblies attached to a glue lam structure?

**Upcoming Technical
Tuesdays**

May 19, 2020

**Potential Changes to 2022
NFPA 13 Installation and
Residential (NFPA
13/13D/13R)**

Presented by Roland Asp,
C.E.T., Manager of Codes
and Standards

Register Here

EOD Submissions

Via Email : eod@nfsa.org
Via Phone : (443) 863-4464

To improve your response time, please include in the email subject line the following information: code/standard and edition year (example: NFPA 13 2016, 2018 IBC, 2017 NFPA 25, etc.).

Thank you for your membership in the NFSA.

Answer:Yes, however, a substantial amount of the coach screw must be embedded in the building structure (glue lams).

Per the 2016 edition of NFPA 13Section 9.2.1.3:

9.2.1.3* Building Structure.

9.2.1.3.1 *Sprinkler piping shall be substantially supported from the building structure, which must support the added load of the water-filled pipe plus a minimum of 250 lb applied at the point of hanging, except where permitted by 9.2.1.1.2, 9.2.1.3.3, and 9.2.1.4.1*

The coach screw is permitted to pass through the ceiling assembly; however, substantial contact with the glue lams is necessary to support from the structure. The aggregate thickness of the non-frangible ceiling assembly, plywood sheathing, and glue lam beams can be used for the minimum plank thickness required by 9.1.5.7.2.

Question #2 - Fire Pump Suction Piping

Per the 2019 edition of NFPA 20 Section 4.16.5.1, an OS&Y gate valve is required to be installed in the suction pipe. Does the OS&Y installed on a backflow prevention assembly suffice?

Answer: Yes. Suction components consist of all pipe, valves, and fittings from the pump suction flange to the connection to the public or private water service main, storage tank, or reservoir, and so forth, that feeds water to the pump per Section 4.16.1.1. As long as an OS&Y valve is installed in this area, the requirement of Section 4.16.5.1 is satisfied.

It must be noted that when a backflow prevention assembly is installed in the suction pipe, it must be installed a minimum of 10 pipe diameters from the pump suction flange in accordance with section 4.29.3. Additionally, if the backflow prevention assembly includes butterfly valves, it is required to be located at least 50 ft from the pump suction in accordance with 4.29.3.1.

Question #3-Hose Connections on Sprinkler Piping

Can a hose connection be attached downstream of a floor control assembly in a combined system to meet the 200 ft. remote hose connection travel distance requirement?

Answer: No.While the 2016 edition of NFPA 13 permits a 2 ½ inch hose connection in Section 8.17.5.2, it cannot be installed to comply with the 200 ft. requirement of NFPA 14. The building and fire codesrequire the hose connections for standpipes to meet the NFPA 14 standard.



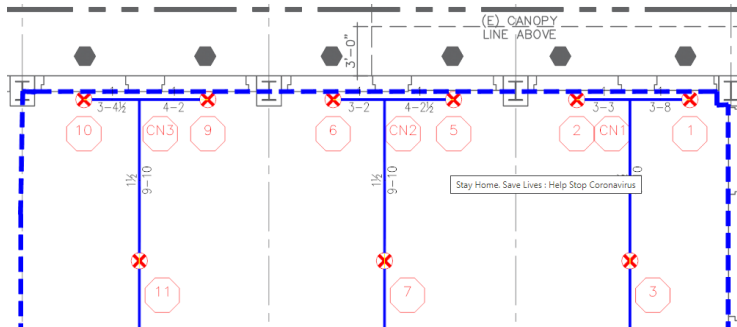
View older issues in the "Member's Only" section



Combined sprinkler and standpipe systems are combined only at the riser/water supply only. It sounds like semantics and technical committee nuances, but NFPA 13 is for sprinkler systems and NFPA 14 is for standpipe systems. The permission from NFPA 13, Section 8.17.5, is to allow hose connections for some existing systems to remain and allow for a hose connection in industrial or storage mop-up operations.

Question #4 - Water Curtain

Given the arrangement below, is there any reason why the sprinklers protecting the windows are not installed with a maximum 6 ft spacing?



Answer: Sprinklers are required to be spaced 6 ft on center when protecting large openings or openings to stages per NFPA 13-2016 Section 8.15.4 and 8.15.17.2, respectively. In this case, a water curtain would not be required by those sections since there is no opening or stage-just a corridor.

These sprinklers are probably protecting each individual window to provide an alternative to a required fire-rated wall or window assembly per Section 8.15.26 and must be listed as specific application window sprinklers unless the building code application standard allows standard spray sprinklers. These are essentially six individual water curtains and the spacing should be based on the width of the window that they are protecting. As long as the windows are less than 6 ft in width, one sprinkler would suffice for protection. If this was one large continuous window, then the 6 ft maximum spacing would be applicable. If listed window sprinklers are used, the listing requirements must be followed.

Question #5 - Dedicated Electrical Spaces

If piping is installed above a gypsum or acoustical tile ceiling but will transverse directly above a fire pump and jockey pump controller at an elevation greater than 6 ft above the controllers, is leak protection required for the pipe installed above the ceiling?

Answer: Yes. For sprinkler pipe installed directly above the dedicated electrical space, leak protection is required. This is required per the 2020 edition of NFPA 70 Section 110.26(E)(1)(b) and is called out in the annex language of the 2019 edition of NFPA 13:

VIKING®

Institutional Sprinklers



NEW MODELS

- Fully installed with protective cap in place
- Flush, unobtrusive finish
- Available in ordinary and intermediate temperature ratings

Layout Technician Training

Layout Technician Training:

<https://LayoutTechnicianClass>

Layout Technician Training -

Fundamentals

Online Training

Open for Registration

Jan 1 - Dec 31, 2020

A.9.2.6 *Sprinklers and sprinkler piping is permitted in and is permitted to pass through an electrical room as long as the piping is not within the "dedicated electrical space" as defined by NFPA 70.*

In 110.26(E)(1)(a) of NFPA 70, a dedicated electrical space is defined as the space equal to the width and the depth of the equipment extending from the floor to a height of 6 ft (1.8 m) above the equipment or the structural ceiling, whichever is lower. This section further states that no foreign systems are allowed in this zone. So, as long as the sprinkler piping does not run through this dedicated electrical space, it can go in and out of the electric room without issue. Paragraph 110.26(E)(1)(b) of NFPA 70 allows foreign systems in the area above the dedicated electrical space as long as the electrical equipment is properly protected against leaks or breaks in the foreign system. So, the sprinkler piping can run above the dedicated electrical space [6 ft (1.8 m) above equipment] as long as the equipment below is protected from leaks. Additionally, sprinklers and sprinkler piping are not permitted to be located directly within the working space for the equipment as defined by NFPA 70. See Figure A.9.2.6.

Online Training Discounted

PRACTICE SOCIAL DISTANCING... TAKE ADVANTAGE OF NFSA'S DISTANCE LEARNING!

Use promo code "**ONLINE10**" for a **10%** discount at checkout!
Expires June 1, 2020



Question #6-Transfer Switch Location

For a building with an existing fire pump, is the retrofit of a separately listed transfer switch required to be installed "within sight" of the motor?

Answer: No. As long as the transfer switch meets the requirements of NFPA 20-2019 Section 10.8.2.2 (since it is individually listed) and the remaining requirements for power transfer switches are met in Section 10.8.3, it is permitted to be located anywhere so long as it still performs its intended function. There are no requirements for the exact location of the power transfer switch in NFPA 20.

Question #7 - Sprinklers in High Temperature Zones

If it can be demonstrated that the maximum discharge temperature from a unit heater is at least 50°F below the temperature rating of the sprinkler, can 212°F ESFR sprinklers be installed within the high temperature zone?

Answer: No. The 2013 edition of NFPA 13 Section 8.4.6.5 indicates that ESFR sprinklers shall be ordinary temperature rated unless Section 8.3.2 requires intermediate temperature rated sprinklers. Section 8.3.2.2 indicates where the maximum ceiling temperature exceeds 100°F sprinklers shall be provided in accordance with Table 6.2.5.1 based on the maximum ambient ceiling temperature. Table 6.2.5.1 indicates that intermediate temperature rated sprinklers (which includes 212°F) shall have a maximum ambient

temperature of 150°F. Section 8.3.2.5 requires sprinklers within 7 ft of the center of a unit heater to be high temperature rated and does not provide an exception for lower discharge temperatures as is found in Section 8.3.2.5(9) for ceiling diffusers.

It is recommended that the unit heater is relocated and centered immediately between four ESFR sprinklers spaced 10 ft x 10 ft apart. The center of the unit heater and sprinkler will be separated by just over 7ft -the threshold required by NFPA 13 to utilize ordinary temperature rated sprinklers. It is also advisable to orient the unit heater such that it is not directed at any individual sprinkler. Even if the sprinkler is installed outside of the 7 ft radius, the use of intermediate temperature sprinklers would provide additional protection and is permitted by the standard.

Question #8 - Combustible Construction and Exposed Members

Question 8a: *In reference to the 2016 edition of NFPA 13 Table 8.6.2.2.1(a), what would be considered an "exposed member?"*

Answer: In this table, "exposed member" refers to the outermost layer of the assembly. A simple wooden truss would be considered exposed. That same wooden truss with fire proofing or encapsulation in gypsum board would still be combustible construction but would not have exposed members.

Question 8b: *Would wooden trusses above acoustic ceiling tiles be considered unexposed?*

Answer: These trusses would be exposed; however, they would need to be protected as combustible concealed spaces with the presence of the ACT ceiling.

Question 8c: *If sprinklers are installed in combustible construction with no exposed members and those members are spaced less than 3 ft apart, what would be the appropriate maximum protection area?*

Answer: The scenario above describes combustible obstructed construction with members less than 3 ft on center requiring a maximum protection area of 130 sq. ft per Table 8.6.2.2.1(a).

Question #9 -Open Exterior Stairs

What are the differences between the IBC's and NFPA's use and application of "open exterior stairs" in their respective codes and standards?

Answer: Where the 2013 edition of NFPA 13R Section 6.6.5 exempts sprinklers in "...stairs that are open and attached," the meaning of "open" applies to the stairs being exposed to the outdoor temperatures. Section 1027 of the 2015 IBC deals with exterior stairs and applying "open" in the context of the means of

egress for the building. The 2015 IBC Section 1027.3 qualifies what is considered "open" for exterior stairs. Each floor level and landing shall have at least 35 sq. ft to be considered open per this section. If the openings exceed 35 sq. ft, then exempting sprinklers per NFPA 13R may be applicable.

Question #10 - Horizontal Exits

Does the 2013 edition of NFPA 14 Section 7.3.2.3 permit the omission of hose connections on both sides of the horizontal exit if each side of the horizontal exit are within the travel distances requirements of Section 7.3.2.3.1 to another hose connection?

Answer: No. Section 7.3.2.3 only allows the omission on one side of the horizontal exit when the other side is protected by an outlet within the travel distances referenced in Section 7.3.2.3.1.

***7.3.2.3** Hose connections on one side of a horizontal exit shall not be required where another outlet on that side of the building on the other side of the horizontal exit within the distances required by 7.3.2.3.1 that would have been protected by the outlet that was omitted.*

***7.3.2.3.1** This travel distance shall be 200 ft for sprinklered buildings and 130 ft for nonsprinklered buildings.*

It is important to verify which model codes are adopted in local jurisdictions to properly apply this provision. Even though NFPA 14 allows the hose to be 200 ft long in a fully sprinklered building to use this concept to eliminate a hose outlet at the horizontal exit, the IBC does not. The IBC only allows the outlet at the horizontal exit to be eliminated if the area can be covered by 100 ft of hose and 30 ft of throw from the nozzle coming from an outlet in one of the exit stairwells.

Question #11 - Supervisory Air on Manual Dry Standpipes

Does the 2016 edition of NFPA 14 Section 6.1.1 require manual dry standpipes to be monitored with supervisory air?

Answer: No. It is not the intent of NFPA 14 to require supervisory air on manual dry standpipes. It is clear from the two definitions below that manual dry standpipe systems do not contain air or nitrogen under pressure.

3.3.17.1 Automatic Dry Standpipe System. *A standpipe system permanently attached to a water supply capable of supplying the system demand at all times, containing air or nitrogen under pressure, the release of which (as from opening a hose valve) opens a dry valve to allow water to flow into the piping system and out of the opening hose valve.*

3.3.17.4 Manual Dry Standpipe System. A standpipe system with no permanently attached water supply that relies exclusively on the fire department connection to supply the system demand.

The changes made from the 2013 edition of NFPA 14, Section 6.1.1 to the 2016 edition makes the current question more convoluted with the removal of language specific to a concealed location requirement. The committee statement did not relate the substantiation of the public input that triggered this revision. The substantiation for the change proposed clarifying that NFPA 72 does not give the guidance for the requirement for supervisory air and only provides requirements for monitoring.

When supervisory air is required per NFPA 14, monitoring is required per NFPA 72; however, it is not the indicator that supervisory air is required. Those requirements come from Chapter 5 which does not have any specific requirements for supervisory air in manual dry standpipe application.

Question #12 - Multi-row Rack Depth

Is there a maximum rack depth with multi-row racks when using ESFR?

Answer: No. The 2019 edition of NFPA 13 Section 3.3.127 defines a multiple row rack as greater than 12 feet in depth or single or double row racks separated by aisles less than 3.5 feet wide having an overall width greater than 12 feet. There is no maximum width defined for multiple row racks.

NFPA 13 Section 23.6.1 and Table 23.6.1 provide the design criteria for ESFR protection of exposed non-expanded Group A plastic commodities on multiple row racks. There is no limit placed on the depth of the multiple row rack in this section for this edition; however, there is consideration for the 2022 edition of NFPA 13 to limit multi-row racks to 16 ft (See FR-1263).

NFSA TechNotes is Copyright. 2020 National Fire Sprinkler Association, and is distributed to NFSA members on Tuesdays for which no NFSA Technical Tuesday Online Seminar is scheduled. Statements and conclusions are based on the best judgment of the NFSA staff, and are not the official position of the NFSA, NFPA or its technical committees or those of other organizations except as noted. Opinions expressed herein are not intended, and should not be relied upon, to provide professional consultation or services. Please send comments to Roland Asp, CET at asp@nfsa.org.



National Fire Sprinkler Association, 514 Progress Dr, Ste A, Linthicum Heights, MD 21090

[SafeUnsubscribe™ {recipient's email}](#)

[Forward this email](#) | [Update Profile](#) | [Customer Contact Data Notice](#)

Sent by technotes@nfsa.org powered by



Try email marketing for free today!