NFSA NATIONAL FIRE SPRINKLER ASSOCIATION
The Voice of the Fire Sprinkler Industry

TechNotes

Editor - Roland Asp, CET #504 01/24/2023

This edition of TechNotes is written by Roland Asp, Manager of Codes and Standards for the NFSA.

Potential Changes to the 2025 edition of NFPA 13 – First Draft Review

The NFPA 13 Technical committees finished the first step in the revision process that will lead to the 2025 edition of this document. The first draft stage is complete and significant changes have been proposed and accepted as First Draft Revisions by the various technical committees responsible for this standard. As the revision cycle is in the early stages, these proposed changes are not considered as complete as they may be revised or even rejected during the next stage (second draft) of the revision cycle.

This issue of TechNotes will highlight a few of the proposed major changes that may impact the fire sprinkler industry. This will not be a list of every change proposed to the standard but is intended to help everyone understand some of the potential major changes to expect from the 2025 edition of NFPA 13.

Supplemental Sprinklers

NFPA 13 has always required sprinklers to be installed under certain obstructions. Generally, if an obstruction is greater than 4 feet wide (2 feet for ESFR) sprinklers are required under the obstruction. The existing rules for these sprinklers are relatively general in nature, although in recent editions, some specific guidance such as: the sprinkler under obstructions are permitted to be located adjacent to the obstruction (up to 3 inches from the outside edge of the obstruction), this sprinkler is required to be the same type as at the ceiling level and this sprinkler must be located no more than 12 inches below the obstruction. Some significant changes to this concept have been proposed for the 2025 edition of NFPA 13.

The first proposed change was to name and define sprinklers under obstruction. A new term has been proposed. Sprinklers under obstructions are to be referred as “Supplemental Sprinklers” and a new definition was proposed to define Supplemental Sprinklers simply as “A sprinkler that is installed below an obstruction”.

The existing rules for these types of sprinklers remain but have been expanded on based upon the First Revision No. 1209. A few of the expanded requirements for Supplemental sprinklers include:

- Supplemental sprinklers are required to be quick response and of ordinary temperature rating (with some exceptions)
- Supplemental sprinklers are permitted to have different K-factor, orientation, and coverage than the ceiling sprinklers under certain conditions.
- Specific spacing requirements have been added. Proposed section 9.5.5.3.4.2 includes 7 scenarios with specific spacing requirements for various types of obstructions including:

    -
    - Flat solid obstructions (that require supplemental sprinklers) that do not exceed 2 ft in width – Supplemental sprinklers must be spaced no more than 8 ft apart.
    - Nonflat or nonsolid obstructions that do not exceed 2 ft in width – Supplemental sprinklers must be spaced no more than 4 ft apart and no more than 16 sq ft in coverage area.
    - Flat solid obstructions (that require supplemental sprinklers) greater than 2 ft and not exceeding 10 ft in width – Supplemental sprinklers must be spaced no more than 10 ft apart.
    - Flat solid obstructions (that require supplemental sprinklers) greater than 10 ft in width – Supplemental sprinklers must be spaced as for unobstructed construction.

Additionally, proposed guidance on calculating supplemental sprinklers has been proposed. Proposed Section 28.3.4.7.4.3 indicates that supplemental sprinklers do not need to be included in the hydraulic calculations of the overhead system and that as long as the supplemental sprinklers follow the same sizing pattern as the overhead system, additional calculations are not needed. If, however, the sizing pattern for the pipes serving the supplemental sprinkler do not match the overhead system, a calculation including up to four supplemental sprinklers on one level needs to be performed.

Sloped Ceilings

Traditionally, NFPA 13 did not have general protection schemes for storage occupancies with sloped ceilings (exceeding 2 in 12). This may change in the 2025 edition of the standard. A Fire Protection Research Foundation report, *Protection of Storage under Sloped Ceilings*, has identified criteria for sprinkler protection in storage occupancies with sloped ceilings up to 4 in 12. As these proposed requirements are subject to change and are technically complex, a full explanation of these proposals is outside the scope of this particular issue of TechNotes.

Additionally, the data from this research report has resulted in other changes to long standing requirements of NFPA 13 including deflector orientation and obstructed construction criteria.

Deflector Orientation

NFPA 13 has traditionally taken the stance that sprinkler deflectors under sloped surfaces need to be aligned to the slope. However, the research report, *Protection of Storage under Sloped Ceilings*, indicated that there are advantages to aligning the sprinkler deflector to the floor at least in storage occupancies. Based upon this, a new requirement has been proposed to mandate that the sprinkler deflector by installed parallel to the floor in storage occupancies with a ceiling slope grater then 2 in 12.

It must be noted that for non-storage occupancies the requirement to align the sprinkler to the slope has not been changed.

Obstructed Construction Criteria

Again, based on the sloped ceiling research, a significant change to a long standing NFPA 13 requirement has been proposed. Traditionally standard spray upright and pendent sprinklers installed under obstructed construction were positioned 1 to 6 inches below the structural member and no more than 22 inches below the ceiling or roof deck. There were other options available such for concrete tee construction which permitted the sprinkler to be 1 inch below the stem and no maximum distance from the high point. Based upon First Revision No. 1217, these requirements have been restructured and changed to provide sprinkler positioning criteria based upon the slope of the ceiling. Four separate options for obstructed construction have been proposed: For standard spray pendent and upright sprinklers the options are as follows:

Obstructed Construction for Ceilings with Slopes Not Exceeding 1 in 12

- Sprinklers located in each channel - Sprinkler deflectors located 1 to 12 inches below roof ceiling.
- Structural members (including concrete tees) 18 inches or less – Sprinkler deflectors are permitted 6 inches maximum below the bottom of the structural member.
- Structural members (including concrete tees) greater than 18 inches to a maximum of 24 inches – Sprinkler deflectors are permitted 6 inches maximum below the bottom of the structural member provided that the channels are “firestopped” to volumes not exceeding 400 cubic feet.

- Composite wood joists - Sprinkler deflectors are permitted 6 inches maximum below the bottom of the structural member provided that the channels are “firestopped” to volumes not exceeding 400 cubic feet and a maximum distance of 22 inch from the sprinkler deflector and the roof/ceiling is maintained.

Obstructed Construction for Ceilings with Slopes Not Exceeding 2 in 12

- Sprinklers located in each channel - Sprinkler deflectors located 1 to 12 inches below roof ceiling.
- Structural members (including concrete tees) 12 inches or less – Sprinkler deflectors are permitted 6 inches maximum below the bottom of the structural member.
- Structural members (including concrete tees) greater than 12 inches to a maximum of 24 inches – Sprinkler deflectors are permitted 6 inches maximum below the bottom of the structural member provided that the channels are “firestopped” to volumes not exceeding 400 cubic feet.
- Composite wood joists - Sprinkler deflectors are permitted 6 inches maximum below the bottom of the structural member provided that the channels are “firestopped” to volumes not exceeding 400 cubic feet and a maximum distance of 22 inch from the sprinkler deflector and the roof/ceiling is maintained.

Obstructed Construction for Ceilings with Slopes Not Exceeding 4 in 12

- Sprinklers located in each channel - Sprinkler deflectors located 1 to 12 inches below roof ceiling.
- Structural members (including concrete tees) 12 inches or less and are installed perpendicular to the ceiling slope
- Sprinkler deflectors are permitted 6 inches maximum below the bottom of the structural member provided that the channels are “blocked” into volumes not exceeding 300 cubic feet.

Obstructed Construction for Ceilings with Slopes Exceeding 4 in 12

- Sprinklers located in each channel - Sprinkler deflectors located 1 to 12 inches below roof ceiling.

This proposed criterion is a departure from the existing requirements. It now allows a greater distance below the ceiling deck of up to 30 inches in some situations. Additionally, this proposal, as written, limits this criterion to concrete tees to 24 inches of less in depth.

Conclusion

The above are just a few of the notable potential changes to NFPA 13. As the revision cycle is not complete, these (and other) proposed changes will likely be revised significantly prior to the final document. It must be noted that the entire revision process must be completed before they can truly be called changes. The next step is the Second Draft. Public comments are due on May 31, 2023

It is encourage that all who are interested in this process review the proposed first draft with can found on the NFPA 13 Page under *Next Edition*.

This month's Tech Tuesday which will air on February 21, 2023, will delve into this topic in more detail.

Learning and Development

Join us for our Virtual Layout Technician: Application Class in March!

A 3-day in-person instructor-led class that applies the fundamental content learned in the previous course. Using project-based learning , students apply their knowledge of fire sprinkler layout concepts to a legitimate plan, learning through problem solving, research, and simply doing.

You will receive access to Layout Technician: Fundamentals in your My eLearning dashboard within 72 hours of registration for Layout Technician: Application.

You must complete Layout Technician: Fundamentals before you attend Layout Technician: Application.

There is a virtual option for this class.

Registration closes 02/28/2023

Register for LTP Here!

All 2023 Tech Tuesdays are NOW available for registration!

Our next Tech Tuesday will be February 21st, 2023 at 12:30 - 1:30 PM eastern time. The topic will be Integrating Potential Changes to the 2025 edition of NFPA 13 – First Draft Review. NFPA 13 has finished the first step in the revision process that will lead to the 2025 edition. This presentation will highlight some of the major potential changes that may significantly affect the layout and installation of sprinkler systems and is a “must-know” for layout technicians, installers, AHJs and others in the industry. These updates may change by the time the final edition is published; however, it is valuable information on what changes may affect our industry.

Register for Tech Tuesdays Here

National Fire Sprinkler Association
514 Progress Dr, Ste A,
Linthicum Heights, MD 21090
1-800-683-NFSA (6372)

Manage my Preferences

Unsubscribe