e-TechNotes

Editor-Russell P. Fleming, P.E. *Issue No. 224* *November 8, 2011*

Best Questions of October 2011

We have selected the following questions as the "Best of October 2011" answered by the engineering staff as part of the NFSA's EOD member assistance program:

Question 1 – Flushing Installation Cement from a CPVC System

As a Fire Inspector, I have a new sprinkler system that I am concerned about. We have already found numerous sprinklers that have been obstructed by the installation cement and many other that have CPVC plastic filings in them. I believe it may be necessary to flush this system. I have read the annex in NFPA 25 and still need some help:

1. Do cemented sprinklers and filings point to a need to flush the entire system?
2. Can we flush just the CPVC portion of the system?
3. Am I correct in assuming that because of the general poor quality of installation the cost of this flush should be borne by the installer, even if nothing is found?
4. Are design standards for CPVC systems the same as steel concerning the joining of branch lines and cross mains?

Answer: When foreign material or plugged piping is found in a sprinkler system, it is one of the items in the list found in Chapter 14 of NFPA 25 that triggers an obstruction investigation (see Section 14.3.1). The CPVC filings are foreign material in that they are not supposed to be in the system. The investigation is not necessarily a full flush of the system, but if the foreign material is extensive, a full flush may be warranted. If a full flush is conducted, it should be conducted on the full system if the system has already been filled with water and drained, since the CPVC filings may have migrated to other portions of the system.

The cement in the system is a different problem. Flushing the system will not remedy this problem. The only way to completely fix this problem is to remove the cement completely. If the cement cannot be removed, it may be necessary to replace portions of the system that have been improperly cemented. Careful spot checking of the system may need to be performed in order to be sure that the few places where cement has been found were isolated incidents.

We can't address your question regarding the cost of the obstruction investigation and flushing of the system. This is a contractual and warranty matter between the contractor and client, which can vary from state to state.

Your final question has to do with installation requirements for CPVC. Since CPVC pipe is a specially listed product (meaning that the installation requirements for the pipe are not in NFPA 13, but in a special listing permitted by NFPA 13) you have to go to the manufacturer's requirements that are part of their special listing. Rules relating to the joining of CPVC using a single-step solvent cement are included in the manufacturer's installation requirements.

Question 2 – Accommodating Story Drift for Standpipes

In a 7-story building there will be horizontal drift movement between the floors in the north/south direction and east/west direction. If there are vertical standpipes going through all floors does NFPA describe how to accommodate for this? The drift will vary from 1.09 to 2.73 inches. Can clearance around the vertical standpipe be an option to accommodate for this?

Answer: You described a 7-story building in reference to the structural drift expected. You have noted that a standpipe, which penetrates the multiple floor/ceiling assemblies, needs to accommodate the anticipated movement. Specifically, you have asked how to address the drift.

First, I must ask if the expected drift is due to seismic forces anticipated for the building. If so, the anticipated drift of the building structure is incorporated into the seismic protection requirements found in NFPA 13, 2010 Edition in Section 9.3. This is done through the use of flexible couplings and clearance.

If the drift is due to other forces on the building that would not require the guidelines of the seismic section, then the sections that discuss flexibility and clearance around risers could be used as a reference for providing an allowance for movement. The goal of the fire sprinkler system is to move with the building.

Question 3 – Protecting Glass Walls of Atria with Close-Spaced Sprinklers

How do I protect glass walls of atria using the NFPA 101 *Life Safety Code*® when there are different walking surfaces adjacent to the glass? Section 8.6.7 of NFPA 101 (2006 edition) allows sprinklers positioned to spray on the glass as an alternative to the 1-hr rating of the wall, but I'm not sure if the sprinklers are required on just one side or both.

Answer: The intent of NFPA 101 is to place sprinklers on 6 ft centers just above any walking surfaces adjacent to the glass. Whether or not the sprinklers are required on both sides of the glass depends on whether or not there are walking surfaces on both sides of the glass. This position comes from extensive fire testing that was conducted between 1960 and 1995 regarding sprinkler protection of glass wall assemblies. Over this period of 35 years, a number of experiments were conducted to show that sprinklers could protect tempered, wired or laminated glass as described in Section 8.6.7(1)(c) of NFPA 101 as long as the sprinkler was positioned above where direct flame impingement could occur on the glass. The walking surfaces represent locations where combustibles could collect and a fire could directly impinge on the glass.

For example, take a look at Figure 1, which is an elevation view of a glass wall separating an atrium from the rest of a building. The atrium glass wall is 30 ft high and the atrium opens into a larger area above, which is not in question since the glass wall does not extend above the 30 ft level.

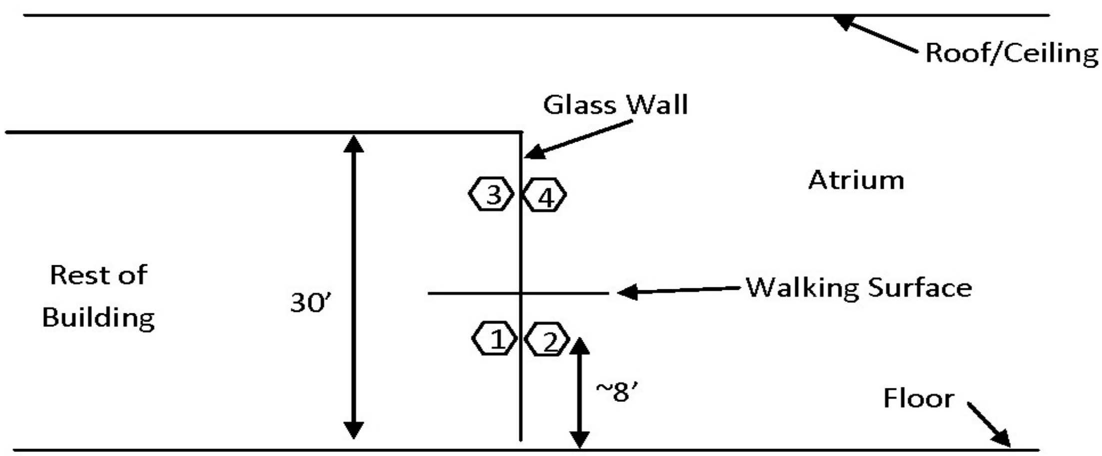

Figure 1 – 30 ft glass wall with no walkways above floor

In the configuration shown in Figure 1, sprinklers are only required at node 1 and node 2, approximately 8 ft above the only walking surface, which is the first (main) floor. Note that the Life Safety Code and NFPA 13 are silent on how far above the floor the sprinklers need to be positioned, but experience has shown that 8 ft is a good distance that allows the sprinkler to react quickly to the fire and to wet the surface of the glass while keeping the sprinkler out of reach of most potential damaging activities. Also note that it does not matter that there is nothing above the sprinkler for the heat of a fire to collect. This sprinkler only needs to open when a fire is close to the glass, and in such a fire condition, the convection of hot gasses past the sprinkler will be sufficient to activate the sprinkler. This is why these sprinklers are installed on 6 ft maximum horizontal spacing, so that a fire between sprinklers will not get past the sprinklers.

The next variation that needs to be considered is shown in Figure 2, with walking surfaces on both sides of the glass above the main floor.

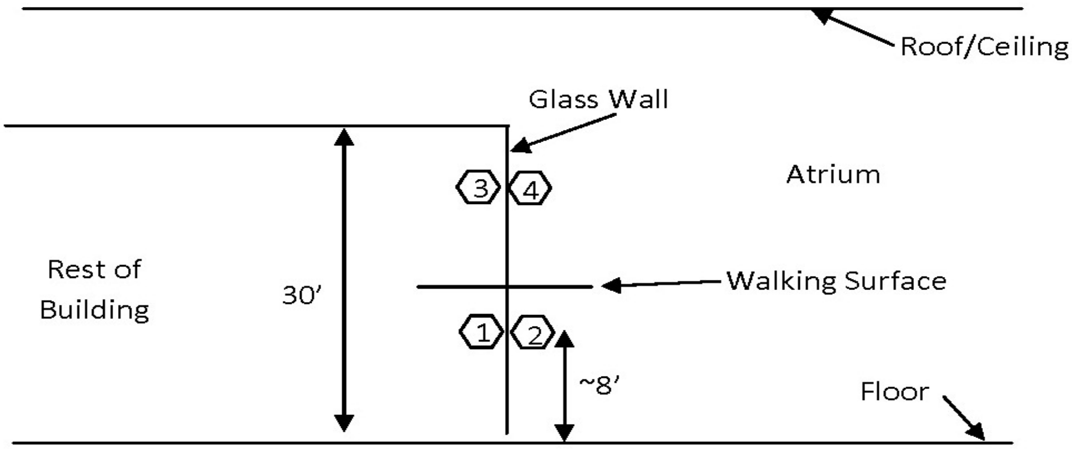

Figure 2 – 30 ft glass wall with walkways above floor on both sides of atrium

The configuration shown in Figure 2 needs sprinklers at nodes 1, 2, 3 and 4. The walking surface represents a possibility of combustibles accumulating near the glass, which needs to have protection from a sprinkler on the same side of the glass as the fire. Just like the situation in Figure 1, the sprinklers above the walkway at nodes 3 and 4 need to be about 8 ft above the walkway in order to protect the glass and stay out of the way of potential damage.

The next variation that needs to be explored is shown in Figure 3. In this case, the walking surface on the atrium side has been removed, but there is a walking surface above the main floor in the building, adjacent to the glass wall.

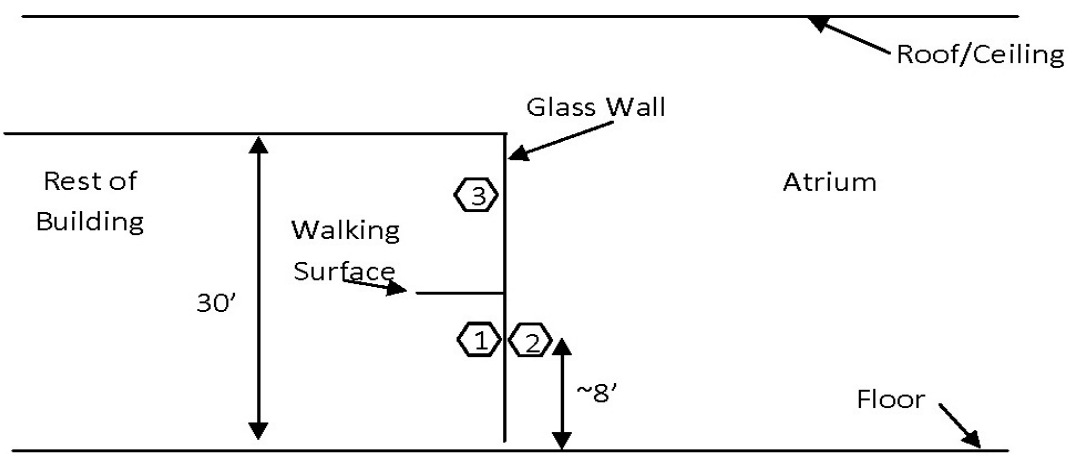

Figure 3 – 30 ft glass wall with a walkway only on the building side of the wall

The configuration shown in Figure 3 only needs sprinklers at nodes 1, 2 and 3. There are no sprinklers required at the location on the other side of the glass from node 3 (where node 4 was on the previous figure) because there is no way for combustibles to accumulate at this location. If no combustibles can accumulate, no fire can occur that specifically impinges on the glass at this location, so no sprinklers are needed to protect this portion of glass. This is what Section 8.6.7(1)(c)(iv) is specifically stating.

The last configuration that needs to be explored is shown in Figure 4, where there is an additional walking surface above the main floor on the atrium side of the glass.

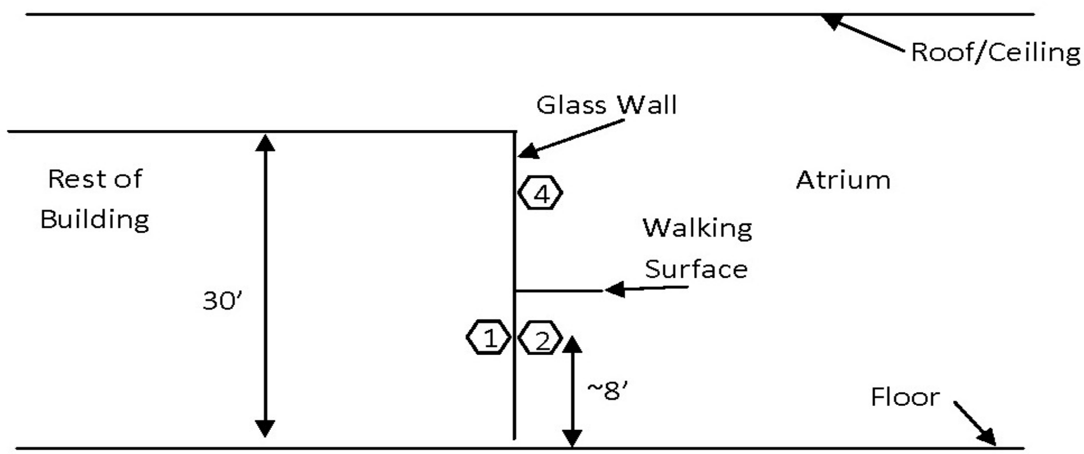

Figure 4 – 30 ft glass wall with a walkway only on the atrium side of the wall

For the situation shown in Figure 4, sprinklers should only need to be installed at nodes 1, 2 and 4. This is the inverse of the situation shown in Figure 3 and a logical application of the rules given the knowledge of where the rules come from and the concern about direct flame impingement. However, since Section 8.6.7(1)(c)(iv) only discusses sprinklers on the atrium side of the glass being eliminated, we could see how a code enforcement official might want sprinklers on the other side of the glass opposite from node 4 (where node 3 was in the previous figure). The AHJ could accept the omission of the sprinklers at node 3 as an alternative arrangement that meets the same level of protection as prescribed by the code (using the Figure 3 analogy), which is permitted by Section 1.4 of the Life Safety Code. This would ultimately be up to the AHJ.

Question 4 – Hydraulic Design Requirements for Residential Sprinklers in NFPA 13

What is the required hydraulic design area for a NFPA 13 residential system?

1. The building is 3-story residential occupancy for retired persons. It includes complete units with bedrooms, kitchens, living rooms, bathrooms, closets etc.
2. The project specification calls for the building to be sprinklered per NFPA 13, not NFPA 13R.
3. The attic and closets will be protected per NFPA 13.
4. NFPA 13 annex Section A.5.2 suggests all areas are classified as light hazard, residential.
5. Section 8.1 provides sprinkler layout for residential sprinklers.
6. Section 11.3.1 provides a hydraulic design approach for residential sprinklers.
7. Section 11.3.1.1 tells us to calculate the 4 most remote sprinklers.

8. Section 11.3.1.3 tells us to use a density of 0.10 gpm per sq ft over the floor space and allows us to use Section 8.6.2.1.2 to calculate the actual square footage per sprinkler in a room.

We need your opinion. Do the requirements of NFPA 13 require us to calculate a 1,500 sq ft design area within the living space at 0.10 gpm per sq ft or do the above referenced “residential” allowances apply even though we are required to meet NFPA 13 rather than NFPA 13R?

Answer: For the dwelling unit portions of the building where residential sprinklers are used to protect the rooms, the design area will be the most demanding 4 contiguous sprinklers. The flow from these four sprinklers needs to achieve a density of at least 0.1 gpm per sq ft or the listed flows of the sprinklers, whichever is greater. In order to determine the area of coverage for each sprinkler, you use the “SxL” rule or the Small Room Rule.

Note that you are not required to use residential sprinklers under NFPA 13. You are allowed to use quick response sprinklers in the dwelling units if you choose. If you go with quick response sprinklers in the dwelling units, then the design area starts at 1500 sq ft and can be decreased for certain conditions. If the system is provided as a dry pipe system, you would need to increase the design area accordingly.

For areas outside the dwelling unit (like the attic), you are not allowed to use residential sprinklers. You need to use quick response sprinklers if the space is considered light hazard. In this case, the sprinklers need to be calculated using a minimum of 1500 sq ft with that area being increased or decreased according to the rules of Chapter 11.

If you end up with two different types of sprinklers in the same building (such as residential and quick response) then you need to provide at least two different sets of hydraulic calculations, since you need to ensure that each design area is being properly supplied from the water supply.

Question 5 – Lateral Bracing Exemption with Variable Length Hangers

In NFPA 13 (2002 ed.) Section 9.3.5.3.7 states if hanger rods are less than 6 inches in length, lateral sway bracing is not required. My question is: What if some of the hangers are more than 6 inches long? I have a 100 ft run of main that I am hanging tight to the bottom of 18-inch beams (using 3-inch rods), but in one or two spots I have to catch a hanger on a 10-inch beam, so the rods are 11inches long. Do I have to put lateral braces on the entire main? Does having one hanger longer than 6 inches take away the exception for the entire main?

Answer: If at least one hanger that exceeds 6 inches in length is used on a main, bracing would be required. Short of a detailed engineering analysis, there is no way of knowing whether or not the piping support would adequately resist seismic movement. Because the natural frequency associated with the movement of main would vary, the loads would not be balanced, and excessive loads might be placed on some of the hangers.

Question 6 – Supporting Piping from Ceiling Sheathing Supports

According to NFPA 13 2007 edition Section.9.2.1.1.1, the sprinkler piping shall be supported independently of the ceiling sheathing. Would it be permissible to hang from the black iron or channel steel supporting the ceiling sheathing?

Answer: Section 9.2.1.3.1 states in part that sprinkler piping must be substantially supported from the building structure, which must support the added load of the water-filled pipe plus a minimum of 250 lb (114 kg) 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. If the components you are referring to are considered part of the building structure then and they meet the requirements of 9.2.1.3.1 then, yes, the sprinkler piping supports would be permitted to be attached to them.

Question 7 – Tire Storage in Portable Metal Racks

We are working with a customer that is proposing using metal portable racks for tire storage. Table 18.4(a) of NFPA 13 (2010 edition) makes a considerable distinction between "palletized portable rack storage" and "open portable rack storage". Section 3.9.4.9 defines palletized tire storage as storage of tires on portable racks of various types utilizing a conventional pallet as a base.

My questions are as follows:

1. Is an actual pallet required to qualify as palletized storage or could a metal rack with an open wire base be considered palletized?
2. What is the reason that "palletized portable rack storage" requires considerably lower protection criteria than "open portable rack storage?"

The owner has an existing building and wants to make sure his fire protection is adequate, but obviously wants to keep his costs as low as possible. He (and I) are confused as to why adding a wooden pallet to a storage arrangement would make it less hazardous from a fire protection standpoint.

Answer: These types of storage have been included in the standards since the initial publishing of NFPA 231D, *Standard for Storage of Rubber Tires* in 1974 and the requirements were developed based on testing of in these arrangements. In the initial standard only two piling methods were identified (1) on-floor storage (pyramid piles and arrangements with no horizontal channels) and (2) palletized rack storage (on-side and on-tread, bundled and compressed).   On-tread storage in portable metal racks was a third option but only included in the appendix.

The 1974 appendix of NFPA 231D states that only on-floor and palletized rack storage had actually been tested. No other storage arrangements had been tested at that time; the appendix item for the portable metal racks was intended to be good engineering judgment.

In the 1975 edition of NFPA 231D, the sprinkler protection criteria had been expanded to include open portable racks, double- and multiple-row fixed rack storage on pallets, and double- and multiple-row fixed rack storage without pallets or shelves, as well as the first two piling methods . All three of these added piling methods included tires on-side and on-tread. The height limits in NFPA 231D were 12 ft (3.7 m) for the on-floor storage, 30 ft (9.1 m) for the palletized storage, but only with high-expansion foam aiding the sprinkler protection, and 20 ft (6.1 m) for each of three added piling methods, but with high-expansion foam aiding the sprinkler protection.

Since then, palletized portable rack storage had been permitted to exceed 20 ft to 30 ft, but only when high-expansion foam aided the sprinkler protection. In 1993 testing showed that this storage could extend to 25 ft (7.6 m) and be protected with a density of 0.60 gpm per sq ft when the ceiling was provided with 1-hour fireproofing. In the 1998 edition of NFPA 231D, the density was changed to 0.75 gpm per sq ft to add conservatism.

Question 8 – Gravity Tank Check Valves

I have a question concerning NFPA 22 – *Water Tanks*, 2008 edition. We have been asked to provide design and installation services to an existing site where there are two 100,000 gallon water towers on site. The site underground water system was installed in 1952 and has deteriorated to the point of no longer being serviceable. The water system serves a site with six cotton storage warehouses, fire hydrants, fire sprinkler systems with yard PIV's as the system controls and no FDC's, a domestic non-potable service to a maintenance shack and a non-potable connection to a facilities maintenance residence on the site. There are no other connections to this private water system.

We have completed a survey of the existing water tower and valve pit arrangement and it appears to conform to NFPA 22, including Figure B-1(u) in appendix B of typical installations. The site is remotely located and the only water supply for the site and the tower tanks is a non-potable well. The well fills the tanks by opening the 2-inch check valve bypass included in Figure B-1(u) and referenced in Section 14.4.

Our question has to do with the functionality and purpose of the check valve in the pit. It appears to serve no real purpose unless you could imagine a scenario where a fire truck connected to a hydrant could somehow reverse suction to discharge and put water back into the underground system. To take one of the tanks off line for service, the check valve would allow draining of the tank without entering the pit, but would still require that the check bypass be opened after the service to fill the tank. This is the only realistic scenario I can imagine where the check serves a purpose.

Your knowledge on the reasoning for this check valve would be greatly appreciated.

Answer: Paragraph 14.2.11.1 requires a listed check valve to be placed horizontally in the discharge pipe and must be located in a pit under the tank where the tank is located on an independent tower. The purpose of the check valve is mainly to protect against backpressure into the tank should pressure be added to the system through a fire department connection. The system you described does not have FDCs but there is no exemption for such systems in NFPA 22. Another purpose for the check valve is to prevent possible pressure surges from water hammer from reaching up into the tank.

Question 9 –Galvanized Pipe for Preaction Systems

Is there anything in NFPA 13 (2002 editon) that states what type of piping is required in a preaction system? I have it stuck in my head that it should be galvanized piping downstream of the preaction valve.

Answer: If you are using CMSA sprinklers (Control Mode Specific Application, also known as Large Drop Sprinklers in the 2002 edition of NFPA 13), you need to use galvanized pipe for the preaction system (see Section 8.4.7). But if you are using any other kind of sprinkler, you can use any kind of pipe that is acceptable for the hazard classification.

Question 10 – Concrete Screw Anchors in Seismic Areas

It seems many concrete anchor manufacturers have concrete screw anchors that are now included in an ICC ES Report in accordance with AC 193. And in turn these anchors would be prequalified per ACI 355.2 for seismic applications, and would comply with NFPA 13 (2010 edition) Section 9.3.5.9.7.2 as sway brace fasteners.

Our company had separate discussions recently with two of these manufacturers, and the question came up again if concrete screw anchors would finally be included in NFPA 13 Figure 9.3.5.9.1. Could you please let me know when this might happen?

Answer: The answer to your question is that there are no specific plans to include such anchors in the NFPA 13 figure. However, not all fasteners are required to be in the figure in order to be used. Other fasteners that are listed can be used according to Section 9.3.5.9.2. NFPA 13 defines “listed” in Section 3.2.3. AC193 and the ICC-ES reports may qualify under that definition if the organization/laboratory doing the testing is acceptable to the authority having jurisdiction. However, it is extremely important to note that AC193 has two certifications it can produce and only one of those is for seismic. It is typically noted at the beginning of the report that the anchors have been seismically qualified.

The final item to note with using a listed product is that often the loads presented by the manufacturer are not in ASD (the calculation method used by NFPA 13). In most cases, the data sheets will provide a formula for determining the load. This value then needs to be adjusted for the angle of installation. NFSA has had discussions with a couple of the manufacturers and we are continuing to talk to them about the presentation of their data so that it may be simpler to use within NFPA 13 applications in the future.

Question 11 – Balancing Flows in NFPA 16

NFPA 16 contains the following wording relative to balancing of foam and water distribution:

7.4 Hydraulic Calculations.
7.4.1 Foam-Water Deluge Systems.
7.4.1.1 System piping shall be hydraulically designed to obtain uniform foam and water distribution and to allow for loss of head in water supply piping.
7.4.1.1.1 The adjustment in pipe sizes shall be based on a maximum variation of 20 percent above the specified discharge rate per sprinkler or nozzle.

It appears that the maximum 20 percent variation only applies to a deluge system and not a closed head system. Is this correct? Is it because you take the over-discharge into account with the two sets of required calculation for this type of a system? Was this requirement 15% at one time?

Answer: You are correct that the 20% variation only applies to deluge systems. The concern is over-discharge and keeping the foam blanket uniform and consistent, which would be difficult with a large deluge system. Due to friction loss, the nozzles closer to the water supply would discharge more foam/water solution, which would make the foam much thicker at that location. Even if you account for it in the foam concentrate calculations, it makes the foam non-uniform and inconsistent, which could be a problem. So, with a deluge system, you need to control friction loss to a maximum of 20%.

You are also correct to recall a figure of 15%, but it has always been 20% in NFPA 16. NFPA 409 – *Aircraft Hangars* has always had the same concern for foam/water deluge systems, but limits you to 15%. So, when you remember 15%, it is for a foam/water deluge system in an aircraft hangar.

For closed-head systems, there is still a concern about keeping the discharge uniform and making sure we have enough foam. But for closed-head systems (wet, dry and preaction) NFPA 16 addresses these concerns in a different way. Since the design area is small (compared to a deluge system) the committee does not worry about a maximum variation in flow between any sprinklers. The assumption is that the friction loss will not be excessive between any two sprinklers in the design area. To deal with the issue of having enough foam concentrate, the committee makes you perform two sets of hydraulic calculations (one for the most remote area and one for the least remote area). Then the committee makes you calculate the foam concentrate supply based on the water supply pressure, not the system demand pressure. See sections 7.4.2.2 and 7.4.2.3. Together, these sections make sure that you don’t run out of foam too early, even if the fire occurs close to the riser and on a day of good water supply.

Question 12 – Mechanical Room Obstructions

Using a 140 sq ft mechanical room as an example with two heads in it, how can you possibly meet all the obstruction rules with all the pipes and ducts going in all directions. No ducts are wider than 48” and there is a 12” clear path from ceilings to obstructions for sprinklers to run in. NFPA seems to read if all obstruction rules are adhered to you might have 20 to 25 heads in this small room. Is this the intent of the standard?

Answer: Mechanical rooms can be challenging. Usually, there is a way to meet all of the obstruction rules with a small number of sprinklers. In the unusual circumstances where that is not possible, we see people take at least three different approaches:

1. Install a drop ceiling under the ducts and pipes. As long as the drop ceiling (and the construction above it) are limited combustible or non-combustible, this creates a concealed space that does not need to be protected above the drop ceiling. The area under the drop ceiling can be easily protected.

2. They protect the space with an extra hazard density with only one or two sprinklers above the obstructions. During a fire in a small space like this, heat will get up to the ceiling and open the sprinklers. Water will bounce off of everything and soak everything in the room. Even though the obstructions block direct water spray from the sprinkler to certain parts, it would be difficult for a fire in the room to survive given the compartmentation and the fact that the water has to go somewhere. This is permitted under section 5.4.2 of NFPA 13 where the definition of Extra Hazard Group 2 includes “occupancies where shielding of combustibles is extensive.”

3. Work something reasonable out with the AHJ. For this option, you can reference section 1.5, 1.6 and 8.1.1(6) of NFPA 13, which all allow alternative arrangements to be used as long as they meet the same level of safety as the standard. In a small, well compartmented room, the distances of sprinklers below the ceiling and the direct application of water spray on a piece of floor are less important. For example, assume you could put one or two sprinklers below the ducts and pipes to cover the room, with the sprinklers 30 inches below the ceiling. In a normal room that is 140 sq ft in area with a flat ceiling (and no ducts or pipes), and sprinklers 12 inches below the ceiling, there would be a volume of 140 cubic feet of air between the ceiling and the sprinkler deflectors. In your proposed room with sprinklers 30 inches below the ceiling, there is 350 cubic feet of space between the sprinklers and the ceiling. But all of this space is not air. If the ducts and pipes take up at least 210 cubic feet above the sprinklers, then the remaining air space (where the hot gasses of the fire would go before banking down and setting off the sprinklers) would be the same (or better) than a wide open room with sprinklers 12 inches below the ceiling. In this case, this is a calculation that would show that sprinklers installed 30 inches below the ceiling in your room should react in a fire similar to sprinklers 12 inches below a ceiling in a wide open room, so section 8.1.1(6) of NFPA 13 would allow this arrangement.

Upcoming NFSA “Technical Tuesday” Seminar – November 15th

Topic: Following Hydraulic Calculations Step by Step
Instructor: James D. Lake, NFSA Vice President of Education and Training
Date: Tuesday, November 15, 2011- 10:30 am EST

To many people in the fire sprinkler industry, hydraulic calculations are those mysterious numbers spit out by a computer. But the knowledge of how the computer conducts its calculations is critical to making good decisions regarding the layout of the fire sprinkler system. Understanding how the water flows through the system and the variables that are critical to system efficiency can save a contractor serious amounts of money and provide better fire protection systems. This presentation will follow the hydraulic calculation of a typical fire sprinkler system to demonstrate the simple step-by-step procedure that mirrors how the computer would calculate the same system.

To register or for more information, click HERE or contact Michael Repko at (845) 878-4207 or e-mail to seminars@nfsa.org

Upcoming NFSA "SAM Friday" Seminar – November 18th

Topic: Corrosion Solutions
Instructors: Jim Curtis and Josh Tihen, Potter Corrosion Solutions
Date: Friday, November 18, 2011 - 10:30 am EST

Steel pipe corrosion issues have been a huge topic of discussion in recent years, with new attention focused on microbiologically-influenced corrosion (MIC) as well as traditional types. Past means of dealing with corrosion, even galvanizing, are being characterized as inadequate, while NFPA 13 has placed new responsibilities for corrosion considerations prior to system installation.

To register or for more information, click HERE or contact Michael Repko at (845) 878-4207 or e-mail to seminars@nfsa.org.

Register Now for 2012 "Tech Tuesday" Series on Standpipes

NFSA Engineering has announced a new series of 12 "Technical Tuesday" online seminars for the first half of 2012, focusing on all aspects of standpipe system design, installation, testing and inspection. The series starts on January 10th, so register now and take advantage of the multi-seminar discounts of up to 25 percent:

Jan 10th - Introduction to Standpipes
Jan 24th - Class II Standpipe Systems
Feb 7th - Class I and Class III Standpipe Systems
Feb 21st - Pressure Control in Buildings with Standpipe
Mar 6th - Pumps and Standpipe Systems
Mar 20th - NFPA 20 and NFPA 14 for High-Rise Buildings
April 3rd - Hanging, Bracing and Protection of Standpipe System Piping
April 17th - Manual Standpipe Systems
May 8th - Dry Standpipe Systems
May 22nd - Horizontal Standpipes and Lateral Piping
June 5th - Acceptance Testing of Standpipes
June 19th - Inspection, Testing and Maintenance of Standpipe Systems

Price for NFSA Members - $125 per session
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Upcoming In-Class Training Seminars

The NFSA training department also offers in-class training on a variety of subjects at locations across the country, and in recognition of the current recession has adopted a new reduced fee structure. Here are some upcoming seminars:

Nov 10	Rochester, NY	Inspection, Testing & Maintenance for the AHJ
Dec 13-15	Noblesville, IN	Inspection and Testing for the Sprinkler Industry
Jan 10	Poughkeepsie, NY	NFPA 13, 13R & 13D Update 2007/2010
Jan 11	Poughkeepsie, NY	Basic Seismic Protection for Sprinkler Systems (1/2 day a.m.)
Jan 11	Poughkeepsie, NY	Protection of Flammable & Combustible Liquids (1/2 day p.m.)
Jan 12	Poughkeepsie, NY	Inspection, Testing & Maintenance for the AHJ

These seminars qualify for continuing education as required by NICET, and meet mandatory Continuing Education Requirements for Businesses and Authorities Having Jurisdiction.

To register for these in-class seminars, click HERE. Or contact Michael Repko at (845) 878-4207 or e-mail to seminars@nfsa.org **for more information.**

About the National Fire Sprinkler Association

Established in 1905, the National Fire Sprinkler Association (NFSA) is the voice of the fire sprinkler industry. NFSA leads the drive to get life-saving and property protecting fire sprinklers into all buildings; provides support and resources for its members – fire sprinkler contractors, manufacturers and suppliers; and educates authorities having jurisdiction on fire protection issues. Headquartered in Patterson, N.Y., NFSA has regional operations offices throughout the country. www.nfsa.org.