e-TechNotes

*Editor-Kenneth E. Isman, P.E.* *Issue No. 237* *Issued: April 24, 2012*

**Follow-Up from Last Issue**

Two of the items in last issue's "Best of March 2012" generated some additional discussion, and warrant some clarification. So, this issue will be a more in-depth discussion of the answers to those two questions.

**Fire Wall Penetrations**

Question 2 had to do with the use of a single sprinkler system to protect two separate buildings that share a fire wall. The question was whether this was allowed.

The answer was that the situation was allowed as long as the sprinkler system's total area in both buildings did not exceed 52,000 sq ft (or 40,000 sq ft if it was extra hazard or high piled storage) and as long as the penetration of the fire wall was sealed in a manner consistent with the fire resistance rating of the wall.

After publication, we received a few comments that we did not go far enough with the answer. Before discussing this further, it is important for us to point out that there are 241 pages of requirements in NFPA 13 and 585 pages of requirements in the International Building Code. Most of these requirements are interconnected. Our responses always assume that you are following the rest of the standard and code requirements, and we don't always have the time or space to spell all of these additional requirements out. In this case, we answered the question correctly, but we probably should have taken one more step with the response.

While a single sprinkler system is allowed to serve the buildings on both sides of the fire wall, there is also a requirement in section 706.2 of the International Building Code (2012 edition, similar sections in previous editions) that also says that the wall needs to have structural stability so that the construction on either side of the wall can collapse without collapse of the wall itself. This means that if sprinkler piping penetrates the wall, the sprinkler system has to be designed so that the intent of section 706.2 is maintained. There are a number of ways to do this. One way might be to make the penetration at a low point in the wall. There is no requirement for a riser to only be vertical pipe. Section 3.5.12 of NFPA 13 (2010 edition, similar sections in previous editions) describes the "system riser" as the "horizontal or vertical pipe between the water supply and the mains". By recognizing that the riser can be both vertical and horizontal pipe, the standard is allowing a single riser to penetrate a wall horizontally and then rise vertically on both sides of the wall to connect to the mains on either side of the wall.

**Rubber Hose for Air Line to Dry-Pipe System**

The other item that generated a significant amount of comment was Question 8 and whether rubber hose could be used for the connection from the air compressor to the dry pipe trim. We answered that rubber hoses could not be used.

Some people questioned whether this applied to specially manufactured heat resistant rubber hoses. Others questioned why we would worry about the hose connection when the next question pointed out that the fire protection aspects of the dry-pipe system would work without the compressor and therefore the compressor would not need back-up power. A third group of people pointed out that NFPA 13 allows the use of shop air and since it is possible for components of shop air systems to have similar materials to rubber hoses, we should allow rubber hoses. A fourth group of people insisted that we were interpreting the standard incorrectly by placing too much emphasis on the word "pipe". We'll try and address these issues one at a time.

Regarding specially manufactured heat resistant hoses, they do not meet the description of "pipe", so they are not specifically permitted by the standard. NFPA 13 does have equivalency clauses in sections 1.5 and 1.6, so a local authority is permitted to accept them on an equivalency basis if the authority is convinced that they provide an acceptable level of performance. It would be up to the authority in each individual case to determine what the level of acceptable performance would need to be.

Regarding the comparison of the reliability of power supplies to the reliability of potentially inferior materials, it is not an appropriate comparison. Even in a community where the power supply is a concern due to storms, there is still power a significant amount of the time. In a community where the power is lost for a full day every year, there is still power 99.7% of the time. But a rubber hose does not give you the same performance as steel pipe 99.7% of the time.

With respect to shop air systems, it is true that we don't always know what all of the components of a shop air system are. But prior to deciding to use the shop air, someone needs to evaluate the shop air system to decide to use it in place of a compressor. This evaluation needs to determine if the shop air system is reliable enough to use. If it has unreliable parts, it should not be used. But an inferior shop air system should not be used as justification for an inferior hose.

Finally, we need to comment on the use of the word "pipe" in the standard. First, we need to remind our readers that these interpretations that we provide to our members are our individual opinions as to what the intent of the standards are based on our experience with the subject. In this case, the person that made this interpretation has 25 years of employment at the NFSA and almost as many years of service as a member of the relevant technical committee(s) responsible for NFPA 13, including a term as Secretary of the Committee. During that time, whenever the rules for dry-pipe systems were discussed, including connections for compressors, there was never any indication that the requirements could be met with rubber tube.

In our opinion, generic rubber tube does not provide the level of performance that is necessary for this piece of equipment. There are at least two concerns regarding the use of hose. The first

is a concern that the hose be supported properly. We know how to support pipe. We have tables that tell us how many hangers we need and how far apart then need to be. But we don't know how to support hose. If a hose would be used, how far apart would the hangers need to be?

The second concern would be arranging the hose so that it does not kink. NFPA 13 expects the opening in the pipe to stay at a ½ inch diameter. If hose is used, how would there be assurance that it would not get kinked and prevent the full cross sectional area from decreasing?

In conclusion, we welcome additional dialog with our members on issues like these or any others that come up. Please let us know if you have additional questions.

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***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.*