



## Tuesday e-Tech Alert March 8, 2005

### System Requirements Questions

As noted below, the NFSA is currently conducting a 10-part internet-based seminar series focusing on the 2002 edition of NFPA 13. This edition of the Tuesday e-Tech Alert shares some of the questions raised by participants during the third seminar in the series, which addressed Chapter 7 – System Requirements:

#### 1. Backflow Preventers and Pressure Gauges

Q: Pressure gauges required above and below the riser check valve or alarm check valve in a wet pipe system by Section 7.1.1.2 of NFPA 13. If a backflow preventer is provided ahead of the alarm check, should the supply gage be moved to the supply side of the backflow preventer?

A: Yes. Section 8.15.1.1.3.2 of the 2002 edition allows the backflow preventer to serve as the required check valve, so it is appropriate to treat it as such. The intent is to be able to view supply pressures as well as the pressure trapped in the system.

#### 2. Location of Wet Grid Relief Valves

Q: Are there restrictions as to where the relief valves can be located for wet gridded systems? Can they be located at the inspector's test connection?

A: There are no restrictions on location, meaning that they can be installed on any part of the system subject to system pressure.

#### 3. Piping Below 40°F Not Subject to Freezing

Q: If a pipe feeding a wet pipe system is exposed to 35 to 40 degree F temperatures over a short length, is this acceptable since the exposing temperature is above freezing?

A: The traditional wording of the standard, now contained as Section 8.15.3.1.1, required dry pipe, preaction, or antifreeze systems “where portions are subject to freezing and temperatures cannot be reliably maintained at or above 40°F.” The use of “and” instead of “or” in the wording suggested it did not apply where the portions were not actually subject to freezing. Similarly, the wording of what is now Section 8.15.3.1.3 required that water-filled aboveground piping subject to freezing be protected. This wording was modified in the 2002 edition to require protection for water-filled piping subject to “freezing temperatures” rather than “freezing”, changing the intent. The wording now requires that aboveground water-filled piping subject to freezing temperatures be protected against freezing by maintaining a minimum temperature of 40°F. Nevertheless, the standard also contains Annex Section A.7.2.1, which states that it is not the intent to require a valve room so as to protect a dry valve against occasional exposures to short durations of freezing temperatures that would not lead to freezing of the valve. In any event, if it can be guaranteed that freezing will not take place, the equivalency statement of Section 1.5

could be invoked with the AHJ to allow wet pipe systems. It should be kept in mind, however, that air discharging from mechanical cooling equipment can be of a temperature lower than the space it conditions, creating the potential for spot freezing within coolers.

#### 4. Restrictions on Single-Interlock Preaction Systems

Q: Is a single interlock preaction system considered a dry pipe system, requiring a 30% increase in operating area for hydraulic calculations, and precluding the use of gridded systems?

A: No. The only type of preaction system treated like a dry system (See Sections 7.3.2.5, 11.2.3.2.5 and 12.2.2.2.2.1) is the double-interlock preaction system.

#### 5. Antifreeze Loop Requirement for Pumped Antifreeze

Q: Is an antifreeze loop (drop) required where no fill cup is used, in other words where the antifreeze is pumped in?

Answer: Yes. The drop is required to allow evaluation of the antifreeze solution at the levels of test valves A and B as shown in Figure 7.5.3.1. The figure specifies that valve B must be a minimum 5 ft below the supply piping. As the note to the figure indicates, the check valve can be omitted if the downstream (antifreeze-filled) piping and sprinklers are below the level of valve A. In such case there is no need for the piping to complete the loop upward. The manner in which antifreeze is put into the system is not a factor.

#### 6. Expansion Chamber Requirement for Antifreeze Systems

Q: When is an expansion chamber not required in an antifreeze system?

A: Sections 7.5.3.2 and 7.5.3.3 both state that a listed expansion chamber is required where the connection between the antifreeze system/solution and the wet pipe system incorporates a backflow prevention device. An expansion chamber is therefore not required where the backflow preventer is upstream of that point. The backflow preventer could be at the service entrance or elsewhere within the wet pipe system serving the antifreeze loop. The antifreeze loop would be conventionally arranged with a hole drilled through the clapper to allow residual air trapped within the wet system to absorb pressure increases. Although relief valves are not appropriate for antifreeze systems on the basis that the antifreeze solution would be diluted, a relief valve could be placed on a portion of the wet pipe system within a heated area of the building in order to ensure against excessive pressure build-up.

#### 7. Multiple Backflow Preventers for Antifreeze Systems

Q: Is it appropriate to have two backflow preventers installed, one at the main supply and one at the connection to the antifreeze system?

A: Not usually. This would only be appropriate where a higher level of backflow protection, the reduced pressure zone (RPZ) type preventer, is required for the antifreeze system, with a larger double-check valve assembly required for the system as a whole. In such a case, it might well be more economical to use a single larger RPZ on the incoming supply.

Upcoming NFSA Technical Tuesday Online Seminars:

**NFPA 13 Chapter 8A - Sprinkler Installation Requirements**

**Instructor: Kenneth E. Isman, P.E.**

**Date: March 15, 2005**

The first part of Chapter 8 deals mainly with requirements for installation of sprinklers. Following a discussion of protection area limitations, rules are discussed affecting the use of sprinklers of different types. The rules include aspects of position, location, spacing and obstruction criteria.

**NFPA 13 Chapter 8B – System Installation Requirements**

**Instructor: Russell P. Fleming, P.E.**

**Date: March 22, 2005**

The second part of Chapter 8 deals with a variety of special situations that complicate sprinkler installation requirements. Concealed spaces are particular concerns, with special rules also applicable to shafts and stairways, exterior canopies, dwelling units, library stack rooms, and stages. Issues of piping installation such as drainage, protection against freezing and corrosion are also addresses.

These are the fourth and fifth in the series of ten seminars dedicated to an in-depth review of the 2002 edition of NFPA 13. Participants will develop an appreciation for the way in which the material is organized in the 2002 edition while learning more about the background of the rules themselves. The level of all seminar topics is considered intermediate. These seminars are being offered as a complete program on NFPA 13 - a 15% discount is available if signing up for all eight remaining seminars in the series.

Information and registration for these seminars are available at [www.nfsa.org](http://www.nfsa.org).

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