



TOWN OF BRIGHTON

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## *Internal Pipe Inspections and Obstruction Investigations*

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*This guideline is to help outline the requirements of National Fire Protection Association – Chapter 25 - Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems as it relates to the required 5 year internal pipe inspections and obstruction investigations of fire sprinkler systems.*

### **Purpose**

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To outline the requirements of National Fire Protection Association – Chapter 25 - Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems as it relates to the internal pipe inspections and obstruction investigations of fire sprinkler systems.

### **Applicable Codes & Standards**

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2010 Fire Code of New York State (2006 International Fire Code)

National Fire Protection Association – Chapter 25 - Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems (2008 edition).

### **Background**

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The Office of the Fire Marshal has recently received questions and concerns from commercial business property owners / managers regarding the nuances of the NFPA 25 fire protection standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

Concerns have been voiced that suddenly fire protection contractors have been suggesting and in some case mandating, that their client and or customers submit to costly “teardowns” or “dismantling” of portions of the building automatic fire sprinkler system to remain in compliance with the National Fire Protection Association – Chapter 25 – 2007 Edition Section 13 - Obstruction Investigation.

It appears that there may be some confusion or misinterpretation regarding the intent of Chapter 13 and the word ***“investigation”*** as it is used in that chapter.

In researching the matter, it has been determined that New York State adopted by reference, NFPA 25 on January 1, 2003 when the Fire Code of New York State (International Fire Code – 2003) was adopted and placed into regulations. Therefore, the initial inspection to implement a five year obstruction investigation cycle does not need to begin until January 2008 and or additional / next inspection would become due sometime in 2013.

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Furthermore, on December 28, 2010, New York State adopted the 2010 Fire Code of New York State and placed by reference, NFPA 25 – 2008 Edition into regulation and is now the most recent edition used for inspection, testing and enforcement.

## **Internal Inspections vs. Obstruction Investigation**

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The internal pipe inspections and obstruction investigations are two separate tasks.

The internal inspection of piping has a frequency of every 5 years as indicated in NFPA 25 (2008 edition), Section 14.2.1.

However, the obstruction investigation has no time limit and is initiated only when any of the listed 14 conditions in NFPA 25 (2008 edition), Section 14.2.2 are present.

## **Internal Inspection of Piping**

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An internal inspection of piping and branch line conditions shall be conducted every 5 years.

This “internal inspection of piping” is a “visual” inspection, completed every 5 years, on one main and one branch line.

The purpose of this inspection is to check for the presence of sufficient corrosion or foreign material capable of obstructing sprinklers and rendering the system ineffective in the event of a fire. Internal inspections are important if there is reason to believe that foreign material exists in the water supply or if the supply is from a stored or raw water source. These internal inspections are especially critical for dry-pipe and pre-action sprinkler systems.

### ***(2014 Edition of NFPA 25 - NOT YET ADOPTED)***

*The 2014 Edition of NFPA 25 further clarified this section by changing the word “inspection” to “assessment” and excludes nonmetallic pipe from the assessment. The purpose of this assessment is to look for the presence of foreign material (both organic and inorganic). A substantial amount of explanatory information was placed in Annex A of NFPA 25 (2014 edition) to clarify the intent and actual requirements.*

If no such material is seen, then the system is returned to service.

If there is slime or turbercules, Section 14.2.1.2 states it must be tested for indication of microbiological influenced corrosion (MIC).

**Note:** it does not say it has to be treated for MIC since one option in NFPA 13 is simply to monitor the situation.

The NFPA 25 Handbook explains that the inspection “is not intended to place an additional burden on the property owner by requiring an additional inspection every 5 years. Rather, the inspection required by 14.2.1 should be coordinated with the internal inspection requirement of system valves, such as is required by 13.4.1.2 for alarm valves.”

Fire protection contractors and business owners should consider having the internal pipe assessment or inspection conducted at the same time as an annual inspection or when the fire sprinkler system is undergoing any alterations, additions, renovations, or repairs to save the cost of separate inspections.

Guidance is explicitly indicated in Section 14.2.1 that an inspection of piping is completed by opening a flushing connection at the end of one main (most likely the cross main) and by removing a sprinkler toward the end of one branch line to look for any type of foreign material. When this section says a flushing connection and a sprinkler it does indeed mean just one of each.

## **Obstruction Investigation**

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An obstruction investigation is conducted when any of the 14 conditions identified in Section 14.2.2 is found to exist. For example, there were some systems installed for only a few years that have experienced pinhole leaks. This is a condition listed to initiate an obstruction investigation and obstruction prevention program. These 14 conditions can show up at any time.

When a system does not exhibit any of the 14 conditions listed under Section 14.2.2, then only the internal inspection of piping or “visual” inspection discussed earlier shall be completed every 5 years.

When one of the 14 conditions identified in 14.2.2 exists; then Section 14.2.3 initiates an investigation. This section has four specified locations for the visual inspections: (1) System NFPA 25 valve, (2) Riser, (3) Cross main, and (4) Branch line. This section doesn't specify how many branch lines should be opened, but the Handbook commentary indicates that the intent is to open a representative number of branch lines as opposed to every branch line in the system.

If this investigation identifies conditions that could cause obstructions, then Section 14.2.4 dictates that a complete flushing program shall be conducted. Although it is not stated, it certainly is reasonable to allow one to first determine the extent of the problem by further visual inspections completed according to Section 14.2.3.2 and modify the flushing process accordingly. Section 14.2.4 of NFPA 25 (2008 edition) erroneously references Section 14.2.1 which covers internal inspection.

***(This was corrected in the 2011 edition of NFPA 25 by removing this section reference.)***

Additional information in regard to Obstruction Investigation is located in Annex D. In Annex Section D.3.2 it states, “Generally a system can be considered reasonably free of obstructing material, provided the following conditions apply:

- (1) Less than ½ cup of scale is washed from the cross mains.
- (2) Scale fragments are not large enough to plug a sprinkler orifice.
- (3) A full, unobstructed flow is obtained from each branch line checked.”

It is the decision of Office of the Fire Marshal that non-compliance or failure of any of the above three conditions outlined in Annex Section D.3.2 triggers the establishment of a flushing program.

Once again, it is important to note that this information applies to the obstruction investigation as dictated by Section 14.2.2 and not the internal inspection required every 5 years per Section 14.2.1.

As such, it requires one of the 14 conditions identified in 14.2.2 to exist to initiate an obstruction investigation and possibly a subsequent flushing program.

## **Chapter 14 Obstruction Investigation**

### **14.1 General.**

This chapter shall provide the minimum requirements for conducting investigations of fire protection system piping for possible sources of materials that could cause pipe blockage.

### **14.2\* Obstruction Investigation and Prevention.**

**14.2.1** An inspection of piping and branch line conditions shall be conducted every 5 years by opening a flushing connection at the end of one main and by removing a sprinkler toward the end of one branch line for the purpose of inspecting for the presence of foreign organic and inorganic material.

**14.2.1.1** Alternative nondestructive examination methods shall be permitted.

**14.2.1.2** Tubercles or slime, if found, shall be tested for indications of microbiologically influenced corrosion (MIC).

**14.2.2\*** An obstruction investigation shall be conducted for system or yard main piping wherever any of the following conditions exist:

- (1) Defective intake for fire pumps taking suction from open bodies of water
- (2) The discharge of obstructive material during routine water tests
- (3) Foreign materials in fire pumps, in dry pipe valves, or in check valves
- (4) Foreign material in water during drain tests or plugging of inspector's test connection(s)
- (5) Plugged sprinklers
- (6) Plugged piping in sprinkler systems dismantled during building alterations
- (7) Failure to flush yard piping or surrounding public mains following new installations or repairs
- (8) A record of broken public mains in the vicinity
- (9) Abnormally frequent false tripping of a dry pipe valve(s)
- (10) A system that is returned to service after an extended shutdown (greater than 1 year)
- (11) There is reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper systems
- (12) A system has been supplied with raw water via the fire department connection
- (13) Pinhole leaks
- (14) A 50 percent increase in the time it takes water to travel to the inspector's test connection from the time the valve trips during a full flow trip test of a dry pipe sprinkler system when compared to the original system acceptance test

**14.2.3\*** Systems shall be examined for internal obstructions where conditions exist that could cause obstructed piping.

**14.2.3.1** If the condition has not been corrected or the condition is one that could result in obstruction of the piping despite any previous flushing procedures that have been performed, the system shall be examined for internal obstructions every 5 years.

**14.2.3.2** Internal inspections shall be accomplished by examining the interior of the following four points:

- (1) System valve
- (2) Riser
- (3) Cross main
- (4) Branch line

**14.2.3.3** Alternative nondestructive examination methods shall be permitted.

**14.2.4\*** If an obstruction investigation carried out in accordance with [14.2.1](#) indicates the presence of sufficient material to obstruct sprinklers, a complete flushing program shall be conducted by qualified personnel.

**14.3 Ice Obstruction.**

Dry pipe or preaction sprinkler system piping that protects or passes through freezers or cold storage rooms shall be inspected internally on an annual basis for ice obstructions at the point where the piping enters the refrigerated area.

**14.3.1** Alternative nondestructive examinations shall be permitted.

**14.3.2** All penetrations into the cold storage areas shall be inspected and, if an ice obstruction is found, additional pipe shall be examined to ensure no ice blockage exists.