NFPA 25 Obstruction Investigations and Beyond

MARK HOPKINS, PE, FSFPE
ENGINEERING DIRECTOR AND INDUSTRY LIAISON

SAN ANTONIO, TX

AFSA American Fire Sprinkler Association

1

Mark Hopkins, PE, FSFPE

Summit Fire Consulting

- B.S. ('92) and M.S. ('96) in Fire Protection Engineering, University of Maryland, College Park
- 35+ years of experience in the fire protection industry.
  - Sprinkler fitter, designer, inspector, contractor, and engineer.
  - VP of Engineering for the National Fire Sprinkler Association (NFSA)
- Registered Fire Protection Engineer (DE, KY, LA, MD, SC, TN, VA, MA (inactive))
- Society of Fire Protection Engineers (SFPE)
  - Fellow (FSFPE)
  - Member-at-Large, SFPE Board of Directors
  - Immediate Past President, SFPE Chesapeake Chapter
- Vice Chair, Maryland State Fire Prevention Commission
- Adjunct Instructor – Fire Protection Engineering, University of Maryland, College Park
  - ENFP 410/610 – Advanced Fire Suppression/Special Hazards
  - ENFP 310 – Water-Based Fire Protection System Design
- NFSA Engineering and Standards Committee, Alternate Member
- NFPA Technical Committee Member
  - NFPA 13 (SSI), NFPA 30B, NFPA 72 (IDS), NFPA 200, NFPA 909 and 914 (Chair)

SUMMIT FIRE CONSULTING

mhopkins1@summitfireconsulting.com | P: 443.761.8385

2

HOUSEKEEPING ITEMS

TO RECEIVE CREDIT FOR THIS SEMINAR, YOU MUST:

1) scan badge upon entry,
2) attend seminar in its entirety, and,
3) submit evaluation within 14 days

No individual or entity - including a presenting author - may electronically record or broadcast any portion of this AFSA training without prior written consent of AFSA. Unauthorized recording (audio, video, still photography, etc.) of this presentation without the express written consent of AFSA is strictly prohibited.

National Fire Protection Association
The authority on fire, electrical, and building safety

DISCLAIMER

This seminar and its content is not a formal interpretation issued pursuant to NFPA regulations.

Any opinion expressed is the personal opinion of the author and presenter and does not necessarily present the official position of the NFPA and its Technical Committees.

3

Learning Objectives

- Learning Objective 1: Identify NFPA 25 Piping Condition and Obstruction Investigation Requirements
- Learning Objective 2: Outline the Basic Framework for Conducting Piping Condition and Obstruction Investigations
- Learning Objective 3: Describe Flushing and Investigation Procedures

4

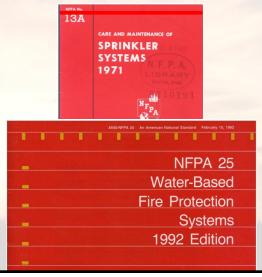
Purpose

To provide information on the importance of obstruction investigations for automatic sprinkler systems.

5

Why are obstruction assessments done?

- Requirements pre-date NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.
- Requirements stem from but also pre-date NFPA 13A, Recommended Practice for the Inspection, Testing, and Maintenance of Sprinkler Systems.

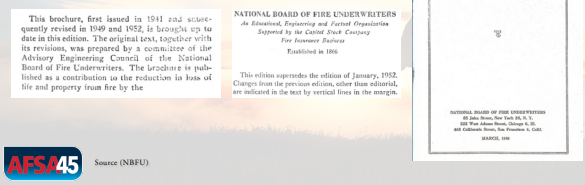


Source (NFPA 25 and 13A)

6

Obstruction Investigations

- Requirements were established in the 1940's or earlier; they were included in the National Board of Fire Underwriters (NBFU) brochure titled, *Internal Cleaning of Sprinkler Piping.*



AFSA45 Source (NBFU)

7

Description of the Problem

- Obstructions can prevent water from reaching the fire:

For sprinklers to be effective, there must be an unobstructed flow of water

- Although sprinklers have a robust history of being very effective, there have been recorded losses where sprinkler performance was impaired due to plugging of piping or sprinklers with:
  - Pipe scale
  - Corrosion products
  - Stones
  - Mud
  - Other foreign material
- The obstructing material can be broken loose, carried through the pipe, plugging some of the sprinklers or forming obstructions at the fittings

AFSA45 Source: NFPA 25, Appendix D

8

Common Sources of Obstruction

Pipe Scale

Involved in the majority of the obstructed sprinkler fire losses

- Dry pipe systems that have been maintained wet and then dry alternately over a period of years are particularly susceptible
- Dry pipe systems that are continuously dry are also vulnerable due to condensate in the air, which generally occurs at the bottom of the pipe

AFSA45 Source: Jeff Moore and NFPA 25, Appendix D,

9

Common Sources of Obstruction

Careless Installation or Repair

A variety of things have been found in sprinkler system piping:

- Wood
- Paint brushes
- Buckets
- Gravel
- Sand
- Gloves
- Cutout discs/coupons
- Test devices
- Cats

AFSA45 Photos courtesy of Jeffery Moore

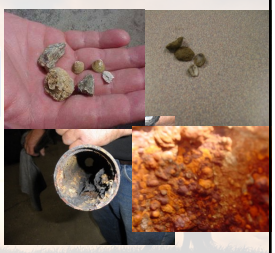
10

Common Sources of Obstruction

Raw Water Sources

Material sucked up from the bottoms of rivers, ponds or open reservoirs by fire pumps with poorly arranged or inadequately screened intakes:

- Rust
- Mud
- Stones
- Cinders
- Salt



AFSA45 Photos courtesy of M. Hopkins and Jeff Moore

11

Common Sources of Obstruction

Calcium Carbonate Deposits

Natural fresh waters contain dissolved calcium and magnesium salts

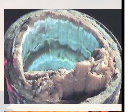
If the concentrations are high the water is considered "hard"

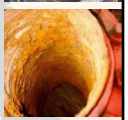
The ability of $CaCO_3$ to precipitate on the metal pipe surface depends on the water's total acidity or alkalinity, the concentration of dissolved solids in the water and its pH.

In sprinkler systems the calcium carbonate scale tends to occur on the more noble metals (copper)

Consequently, scale formation naturally forms on sprinklers, often plugging the orifice

This type of obstruction cannot be detected or corrected by normal flushing and can only be found by inspection/replacement of the sprinklers in suspected areas





AFSA45 Photos courtesy of Bruce Campbell and Jeff Moore

12

Common Sources of Obstruction

Hard Water Areas

- Most public utilities in very hard water areas soften their water, thus the most likely locations for deposits are where sprinklers are not connected to the public utility (wells, etc).
- These areas include the Mississippi basin west of the Mississippi River and North of the Ohio River, the rivers of Texas and the Colorado basin.

NFPA 25 Figure D.2.5(a) provides a map of hard water areas in the United States and emphasizes tuberculation.

- Moderate to severe degrees of tuberculation occur in the following areas:
  - New England
  - Mid-Atlantic
  - Portions of Southeast
  - Coastal Florida
- Slight to moderate degrees of tuberculation occur in the following areas:
  - Pacific Northwest
  - Louisiana
  - Eastern Texas
  - Portions of Southeast

13

Common Sources of Obstruction

Calcium Carbonate Deposits

Areas most likely to have deposits are

- In wet pipe sprinkler systems only
- In high temperature areas, except where water has unusually high pH. These areas include near dryers, ovens and skylights
- Old sprinkler systems that are frequently drained and refilled
- In pendent sprinklers that are located away from air pockets and near convection currents

NFPA 25 Figure D.2.5(b) shows the relationship of scale deposition as a function of the Alkalinity/pH Ratio.

The key characteristics are:

- Uniform deposits form when the pH is ~ in the range of 7.75 to 9.75 and vary based on alkalinity (ppm $CaCO_3$)
- Deposits can be heavier or less and depending on elevated temperature, pH and alkalinity

Photos courtesy of NFPA 25

14

Common Sources of Obstruction

Corrosion

Corrosion is the destructive attack of a material, usually a metal, by chemical or electrochemical reaction with its environment.

- Corrosion impacts reliability
  - Operational reliability
  - Performance reliability
- Corrosion has a significant cost impact
  - A billion-dollar issue in the US fire protection industry
  - A trillion-dollar issue globally across all industries.

Sources (Uhlig and Revie 1985) and (NACE now AMPP - Association for Materials Protection and Performance))

15

The Shift to NFPA 13A

Recommended Practice

5-1 Flushing
For effective control and extinguishment of fire, automatic sprinklers should receive unobstructed flow of water….

5-2 Types of Obstructive Materials
Obstructions may consist of compacted materials, such as, mud, rust or sand…

5-3 Preventing Entrance of Obstructive Materials
Take care when installing underground mains…

For effective control and extinguishment of fire, automatic sprinklers should receive unobstructed flow of water….

Source (NFPA 13A))

16

Shift Again to NFPA 25

Standard of Practice

5-1 Flushing
For effective control and extinguishment of fire, automatic sprinklers should receive unobstructed flow of water….

5-2 Types of Obstructive Materials
Obstructions may consist of compacted materials, such as, mud, rust or sand…

5-3 Preventing Entrance of Obstructive Materials
Take care when installing underground mains…

For effective control and extinguishment of fire, automatic sprinklers should receive unobstructed flow of water….

Source (NFPA 13A))

17

NFPA 25 –Requirements

Ch. 14* – Internal Piping Condition and Obstruction Investigation

14.1 * General.
This chapter shall provide the minimum requirements for…

A.14.1
For obstruction investigation and prevention, see Annex D.

The guidance from NFPA 13A and its predecessor are now found in Chapter 14 and Annex D.

*Notable Change in the 2014 edition:

The Chapter Title changed from:

"Obstruction Investigation"

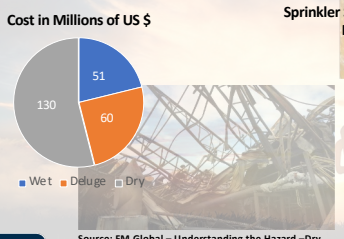
to

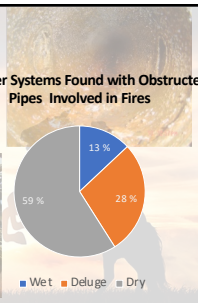
"Internal Piping Condition and Obstruction Investigation"

Source (NFPA 25, 2023 edition)

18

Obstructed Pipes





Source: FM Global – Understanding the Hazard –Dry Pipe Sprinkler Systems Flushing Investigations (reported to FM Global 1982-2001)

19

NFPA 25 –Requirements

14.2 Assessment of Internal Condition of Piping.

14.2.1 *
An assessment of the internal condition of piping shall be conducted:

A. At a minimum of every 5 years, or
B. On a frequency based on an approved risk analysis

The intent of conducting internal conditions assessments is to provide a *reasonable assurance* that the system is void of corrosion and obstructions

Source (NFPA 25, 2023 edition, NFPA 13A, 1987 edition)

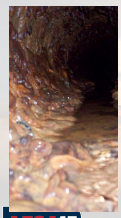
20

Learning Objectives

- ✓ Learning Objective 1: Identify NFPA 25 Piping Conditions and Obstruction Investigation Requirements
- ❑ Learning Objective 2: Outline the Basic Framework for Conducting Piping Condition and Obstruction Investigations

21

Pipe Condition and Obstruction Investigations



When are we conducting piping condition and obstruction investigations?

- Usually after a problem has been found

What is wrong with this approach?

- It is reactive not proactive

Source: M. Hopkins

22

Reasons for Conducting Investigations

Triggers

- one or more leaks
- abnormal system performance
- obstructions or blockages
- solid particulates in water flow during testing or maintenance
- corrosion staining and discoloration on piping
- stains on floor or surface below piping
- indication at monitoring station

Source: M. Hopkins

23

Conditions Showing a Need for Investigation

Triggers

- one or more leaks
- abnormal system performance
- obstructions or blockages
- solid particulates in water flow during testing or maintenance
- corrosion staining and discoloration on piping
- stains on floor or surface below piping
- indication at monitoring station

Source: M. Hopkins

24

Obstruction Investigation and Prevention

Internal examination shall be performed at the following minimum five points:

(1) System valve or water control valve, where provided
(2) Cross main – most remote end of remote cross main
(3) Branch line near the most remote line at connection to cross main
(4) Branch line near the most remote line at end of branch line
(5) Branch line piping directly connected to the most remote low point drain

Prior to 2023 Edition
- System valve
- Riser
- Cross-main
- Branch line

Additional guidance is in the annex:

The indicated locations are presented as the minimum basis for determining the need for the initiation of a more extensive obstruction investigation effort. Additional points of examination can be …

Source (NFPA 25)

25

Pipe Condition and Obstruction Investigations

Questions

Can the system be salvaged?

How much of the system be salvaged?

- It depends on the findings of the investigation

What is involved in the investigation?

- Let's see…

Source: M. Hopkins

26

Obstruction Investigation and Prevention

Conduct an obstruction investigation, if any of the follow exist:

(1) Defective intake for fire pumps taking suction from open bodies of water
(2) Discharge of obstructive material during routine water tests
(3) Foreign materials in fire pumps, dry pipe valves, or check valves
(4) Foreign material in water during drain tests or plugging of inspector's test connection(s)
(5) Unknown materials heard in the system piping during draining, refilling, or otherwise flowing water through the system
(6) Plugged sprinklers
(7) Foreign organic or inorganic material with the potential to obstruct pipe or sprinklers found in the pipe
(8) Failure to flush yard piping or surrounding public mains following new installations or repairs
(9) Record of broken public mains in the vicinity
(10) Abnormally frequent false tripping of a dry pipe valve(s)
(11) System returned to service after an extended shutdown (i.e., greater than 1 year)
(12) Reason to believe that the sprinkler system contains sodium silicate or highly corrosive fluxes in copper system

Continues…

Source (NFPA 25)

27

Pipe Condition and Obstruction Investigations

What's Involved?

- Work plan
- Field investigation
- Analysis
- Reporting
- Remediation

Source: M. Hopkins

28

Work Plan

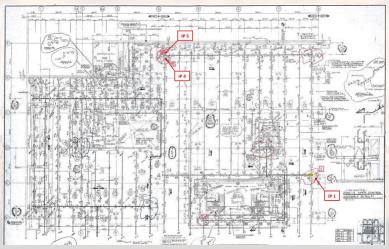
- Project team and roles
- Background and scope of work
- Pre-investigation visit and kickoff meeting
- Investigation procedures
- Required support and equipment
- Field inspection locations
- Needs from facility

Source: M. Hopkins

29

Planning

- Selection of inspection points
- Review with facility
- Minimize the impact



Source: M. Hopkins

30

Field Investigations

What's Involved?

- Pipe internal inspection
- Water analysis
- Metallurgical examination
- Ultrasonic scanning
- Other

Source: M. Hopkins

31

Pipe Internal Inspections

- Pipe is opened at each inspection point
- Observations should be documented
- Photos should be taken before and after opening the pipe
- Scoping of pipe using a push camera
- Reassemble piping

Source: M. Hopkins

32

Pipe Internal Inspections

Source: M. Hopkins

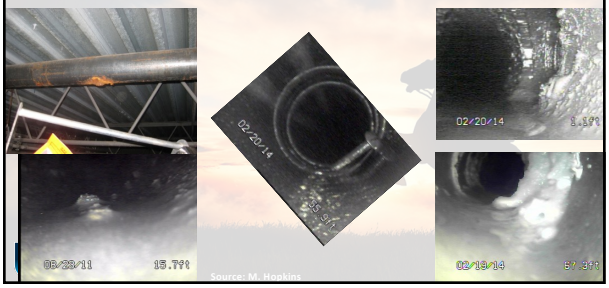
33

Obstruction Investigation and Prevention

Source (NFPA 25, 2023 edition)

34

Pipe Internal Inspections



35

Ultrasonic Scanning

- Non-destructive analysis
- Requires access to piping
- Provides data for individual pipe sections
- Costly

36

Example Ultrasonic Scanning Results

Summary of findings

Region	Date Gathered	Signatures Gathered	Water/Sludge pockets Identified	Areas of concern RED Areas only
Building 1	09/16/20	6	None	6
Building 2	09/16/20	4	7	7, 10
Building 3	09/16/20	5	None	13, 15
Building 4	09/17/20	3	None	42, 43, 44
Building 5	09/17/20	7	None	16, 17, 18, 45, 46, 47, 48
Building 6	09/17/20	5	None	32, 34, 35, 36
Building 7	09/17/20	1	None	41
Building 8	09/17/20	7	21	20, 21
Building 9	09/17/20	6	None	30, 31
Building 10	09/17/20	4	None	37, 38, 39, 40
	Total	48	2 locations with water	28 locations flagged RED

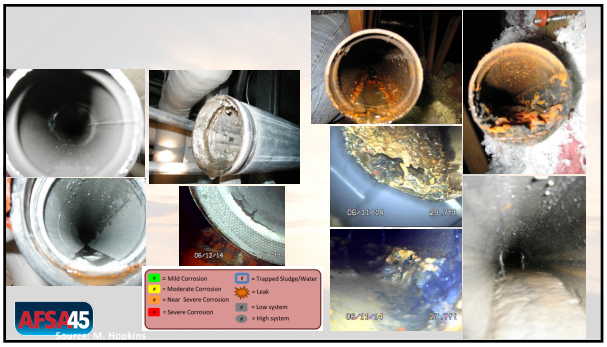
Location	#	# Moderate - Severe	%
High mains	18	13	72.2
Low mains	16	13	81.25

Building #	Scan Location	Condition	Size (inches)
1 (Q3)	1	Green	2.5
	2	Orange	2.5
	3	Yellow	1
	4	Yellow	1
	5	Yellow	1
	6	Red	2.5
	7	Red	3
2 (Q1)	8	Green	1.25
	9	Yellow	1
	10	Red	2.5
	11	Orange	1
	12	Yellow	4
3 (AC1)	13	Red	3
	14	Yellow	3
	15	Red	3
	42	Red	3
4 (AC1)	43	Red	3
	44	Red	3

= Mild Corrosion
= Moderate Corrosion
= Near Severe Corrosion
= Severe Corrosion
= Trapped Sludge/Water
= Leak
= Low system
= High system

Source: M. Hopkins

37



38

Water Analysis

Water is collected

Water is tested for pH

Water is tested for chlorides, dissolved oxygen, iron, zinc, and other chemicals

Water is tested for bacteria

39

Example Water Analysis

	Sample 14 (IP 17)	Sample 15 (IP 22)	Sample 16 (IP24)
pH	7.08	7.5	7.4
Conductivity (µS/cm)	317	419	375
Total Dissolved Solids (TDS) (ppm)	159	209	188
Total Hardness (as $CaCO_3$) (mg/L)	92	132	114
Total Alkalinity (mg/L)	30	72	54
Chloride (ppm)	39	47	46
Sulfate (ppm)	53	46	47

Source: M. Hopkins

40

Example Water Analysis

Test	System and Location	pH	Oxygen	Chloride	Carbonates	Sulfide	Iron
1	First Floor System IP #5	6.5	N/A	320 ppm	positive	negative	5 mg/L
2	First Floor System IP #7	8	N/A	277 ppm	positive	negative	5 mg/L
3	First Floor System IP #10	3.5	11 ppm	325 ppm	positive	negative	> 100 mg/L
4	First Floor System IP #11	9	> 12 ppm	250 ppm	negative	negative	2 mg/L
5	First Floor System IP #12	7	10 ppm	310 ppm	negative	negative	10 mg/L
6	First Floor System IP #15	9	N/A	320 ppm	negative	negative	2 mg/L
7	Ground Floor System IP #21	5	N/A	239 ppm	positive	positive	80 mg/L

Source: M. Hopkins

41

Example Water Analysis

Summary of MIC Test Results – After 1 week

Inspection Point 6 Type of Bacteria	1	2	3	4	Comments
Anaerobic	Yes	Yes	Yes	No	1,000->10,000 bacteria per mL
Acid-producing	Yes	Yes	No	No	100->1,000 bacteria per mL
Sulfate-reducing	Yes	Yes	Yes	Yes	≥100,000 bacteria per mL
Iron-related	No	No	No	No	
Low nutrient	Yes	Yes	No	No	100->1,000 bacteria per mL

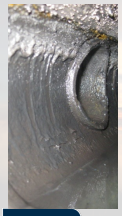
Summary of MIC Test Results – After 2 weeks

Inspection Point 6 Type of Bacteria	1	2	3	4	Comments
Anaerobic	Yes	Yes	Yes	No	1,000->10,000 bacteria per mL
Acid-producing	Yes	Yes	No	No	100->1,000 bacteria per mL
Sulfate-reducing	Yes	Yes	Yes	Yes	≥100,000 bacteria per mL
Iron-related	Yes	No	No	No	1->10 bacteria per mL
Low nutrient	Yes	Yes	Yes	Yes	≥100,000 bacteria per mL

Source: M. Hopkins

42

Metallurgical Examinations



- Metallurgical examination should be used discretely
- Pipe samples collected can be evaluated for different purposes
- SEM/EDS analysis will identify composition
- Microscopic evaluations
- Pit depth measurements
- Chemical analysis
- Genetic testing

Source: M. Hopkins

43

Sample	Inspection Point (IP)	Sample Description	Starting Min Wall Thickness (inches)	Max Wall Loss		Sample #
				Inches	(%)	
Low pressure pipe samples						
1	9	2 ½" Sch. 10 pipe	0.120	0.0098	8.2	29283-10
2	10	1 ¼" XL pipe	0.104	0.0125	12.0	29283-8
3	16	3" Sch. 10 pipe	0.120	0.0098	8.2	29283-11
4	22	1" XL pipe	0.1055	.0051	4.8	29283-9
5	23	2 ½" Sch. 10 pipe	0.120	0.0098	8.2	29283-12
6	25	2" XL pipe	0.1105	0.0142	12.9	29283-3
7	33	1 ¼" XL pipe	0.104	0.0095	9.1	29283-13
High pressure pipe samples						
8	35	6" Sch. 40 pipe*	0.280	0.172	61.3	29283-4
9	38	6" Sch.10 pipe	0.134	0.0198	14.8	29283-6
10	39	4" Sch. 10 pipe	0.120	0.120	100	29283-2
11	NA	2 ½" Sch. 40 pipe from Fire Pump Room	0.203	0.0534	26.3	29283-15
12	NA	8" 40 Sch. pipe previously removed	0.322	0.0858	26.6	29283-1
13	NA	6" Sch. 10 pipe previously removed	0.134	0.0238	17.8	29283-17

Pipe Wall Thickness Measurements

Source: M. Hopkins

44

Obstruction Investigation and Prevention

14.3.3 *

A.14.3.3

14.3.4

Source: NFPA 25 (2023 edition)

45

Learning Objectives

- ✓ Learning Objective 1: Identify NFPA 25 Piping Conditions and Obstruction Investigation Requirements
- ✓ Learning Objective 2: Outline the Basic Framework for Conducting Piping Condition and Obstruction Investigations
- ❑ Learning Objective 3: Describe Flushing and Investigation Procedures

46

Investigation Procedures – Sprinkler Systems

- Investigate dry systems first, representative systems are usually sufficient
- If obstructive material is found, investigate all systems
- System can be considered ok if
  - Less than ½ cup of scale is washed from the cross mains
  - Scale fragments are not large enough to plug a sprinkler orifice
  - A full, unobstructed flow is obtained from each branchline
- When selecting systems or branch lines for investigation, consider lines found obstructed during a fire and/or systems adjacent to points of recent repair to yard mains
- Tests should include flows through 2 ½ inch fire hose directly from cross mains and flows through 1 ½ inch fire hose for branch lines
- Two or three branch lines is considered representative for each sprinkler system

47

Investigation Procedures – Yard Mains

- Investigate yard mains first
- Flow through yard hydrants, preferably near the extremes
- Use burlap bags to catch debris
- If obstructive material is found, all mains should be flushed

48

Investigation Procedures – Sprinkler Systems

- Fire pumps should be used to ensure sufficient large flows
- Burlap bags should be used to collect dislodged material
- Each flow should be continued until the water clears (minimum of 2 of 3 minutes)

49

Investigation Procedures – Sprinkler Systems

- Dry pipe systems should be flooded (made wet) one or two days prior to the examination
- Restore the system and trip the system as a simulation of normal action and flow the water through the 1 ½ inch hose lines into a burlap bag
- After the branch lines are examined and cleared, test the cross mains by discharging water through a 2 ½ inch fire hose and collect material in a burlap bag

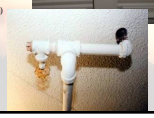
50

Investigation Procedures – Sprinkler Systems

Replacement of elbow at end of cross main with flushing connection consisting of a 2 inch nipple and cap

Courtesy of NFPA 25, Appendix D, Figure D.3.2(a)

Connection of 2½ inch hose gate valve with 2 inch bushing and elbow to 2 inch cross main



Courtesy of NFPA 25, Appendix D, Figure D.3.2(b)

51

Flushing Procedures – Yard Mains

- Yard mains should be thoroughly flushed before interior piping
- Flush at dead ends of the system of through blow-off valves
- Run water until clear
- If looped system, close divisional valves to produce a high velocity flow through each single line
- A velocity of at least 10 ft/sec is necessary to flush foreign material (see Table D.5.1 of NFPA 25 for the flow rate per pipe size to accomplish this velocity)
- Connections from the yard mains to sprinkler risers also need flushing (easy to forget)
  - 2-inch drain generally not sufficient
  - Can use FDC with clappers removed

Courtesy of NFPA 25, Appendix D, Figure D.5.1 and Table D.5.1

52

Flushing Procedures – Sprinkler Systems

Two methods

- Hydraulic method
- Hydro-pneumatic method

Choice of method depends on conditions

- If examination indicates the presence of loose sand, mud or moderate pipe scale they hydraulic method is generally effective
- Where the material is more difficult to remove and available water pressures are too low, the hydro-pneumatic method should be used
- The hydro-pneumatic method should not be used with CPVC piping

Hydraulic Method

- Forward flow - flowing water from yard mains, a sprinkler riser, feed mains, cross mains and branch lines in the same direction as in a fire
- Typically, trying to get a minimum 10 ft/s

Hydro-pneumatic method

- High Pressure Reverse flow - using special equipment and compressed air to blow a charge of about 30 gallons of water from the ends of the branch lines back to the feed mains and down the riser, washing material out of an opening at the base of the riser

Courtesy of NFPA 25, Appendix D, Figure D.5.4(a)

53

Learning Objectives

- ✓ Learning Objective 1: Identify NFPA 25 Piping Conditions and Obstruction Investigation Requirements
- ✓ Learning Objective 2: Outline the Basic Framework for Conducting Piping Condition and Obstruction Investigations
- ❑ Learning Objective 3: Describe Flushing and Investigation Procedures

54

Learning Objectives
✓ Learning Objective 1: Identify NFPA 25 Piping Conditions and Obstruction Investigation Requirements
✓ Learning Objective 2: Outline the Basic Framework for Conducting Piping Condition and Obstruction Investigations
✓ Learning Objective 3: Describe Flushing and Investigation Procedures
AFSA45

55

REQUIRED
FOR CEU CREDIT:
✓ Badge scanned at start of seminar
✓ Attend full seminar
✓ Complete survey 1 of 2 ways:
✓ Survey link is emailed to attendees with scanned badges
✓ Event app by EventsAir
• Login to app
• Navigate to seminar survey
✓ Surveys close 10/31/26
Thank you!
Mark Hopkins, PE, FSFPE
Summit Fire Consulting
(443) 761-8385
mhopkins1@summitfireconsulting.com
SUMMIT
FIRE CONSULTING
AFSA45
Scan QR code to submit questions for Ask the Experts!

56

2027 Training Schedule

WEBINARS

1/6	Updates to NFPA 20
1/20	Calculating Pressure Reducing Hose Valves
2/3	Consumer Alert: Nitrogen in Sprinkler Systems
2/17	Reviewing Hydraulic Calculations
3/3	Updates to NFPA 13, 2028 Ed.
3/17	Updates to NFPA 13R & 13D, 2028 Eds.
4/7	Topic Coming Soon
4/21	NFPA 25: Roles & Responsibilities
5/5	Standpipe Flow Test Procedures
5/19	Storage 101
6/2	NFPA Technical Meeting - Voting Guide
6/16	Topic Coming Soon
6/30	Topic Coming Soon
7/7	Updates to NFPA 14, 2027 Edition
7/21	Adjacent Hazards & Design Methods
8/4	Acceptance Testing
8/18	Modifications to Existing Systems
9/22	Topic Coming Soon
10/6	Seismic 101
10/20	Proposed Updates to NFPA 25, 2029 Ed.
11/3	Evaluating Fire Pump Flow Tests
11/17	Top 10 Tech Reviews
12/1	Designing Water Storage Tanks
12/15	Pump Room Layout

PROGRAMS

Feb 9 - Mar 5 Apr 20 - May 14 Aug 3 - Aug 27** Oct 26 - Nov 19	Beginning Design School*
Apr 26 - May 7 Nov 1 - 12	Intermediate Design School*
Feb 8 - 10** Apr 12 - 14 Jul 12 - 14 Oct 11 - 13	Sprinkler Hydraulics Calculations Workshop
Apr 19 - 21 Oct 18 - 20	Advanced Hydraulics Calculations Workshop
Feb 11** Apr 30 Jul 23 Sep 24	Introduction to the Fire Sprinkler Industry
Mar 1 - 3 May 17 - 19 Aug 16 - 18 Oct 18 - 20**	NFPA 25 Essentials Workshop
Jun 7 - 10 Sep 20 - 23	Experienced Inspector Skills Lab
Mar 4 - 5 May 20 - 21 Aug 19 - 20 Oct 21 - 22**	NFPA 25 Fire Pump Workshop
Spring Summer Fall	ITM Inspector Development Program* *This program is 20 months.*

** Hybrid course **At General Air Products Lab, Exton, PA*

AFSA46

September 8-11	Manchester Grand Hyatt San Diego, CA

For More Details Visit:
firesprinkler.org

AFSA
American Fire Sprinkler Association

Dates subject to change. Programs subject to minimum registrations.

rev 9/14/2026

Virtual Instruction Path (VIP)

for Sprinkler Fitting Apprentices

Level 1 - Begins January 2027

Level 2 - Begins February 2027

Level 3 - Begins January 2027

Level 4 - Begins March 2027

www.firesprinkler.org/VIP

AFSA
American Fire Sprinkler Association

HANDS-ON WORKSHOPS FOR 2027

FEATURING AFSA'S TRAINING LAB

NFPA 25 Essentials Workshop

Mar | May | Aug | Oct

Description: Understand roles, responsibilities, and NFPA 25 ITM procedures through hands-on testing of wet systems, dry systems, and fire pumps.

NFPA 25 Fire Pump Workshop

Mar | May | Aug | Oct

Description: Develop practical NFPA 25 fire pump ITM skills, including no-flow and full-flow testing, water supply graphing, and performance evaluation.

Introduction to the Fire Sprinkler Industry

Feb | Apr | Jul | Sep

Description: This course is designed for those new to the industry. An introductory, wide-ranging 8-hour course that provides a broad overview of core fire sprinkler industry concepts for those new to the field.

Experienced Inspector Skills Lab NEW

Mar | Sep

Description: Take your ITM expertise beyond the basics. Designed for experienced technicians, this course combines focused classroom instruction with hands-on system lab training to strengthen your application of current NFPA 25 inspection, testing, and maintenance requirements. Refine fire sprinkler testing practices, improve documentation, deliver more consistent service, and help reduce liability while reinforcing knowledge commonly covered on certification exams.

Learn more about AFSA's fire sprinkler lab featuring functional risers, a spray room, fire pumps, and an interactive classroom.

firesprinkler.org/lab