

# Sprinkler System Inspection, Testing, & Maintenance

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NFPA 25, 2011 edition is a mandatory reference from NFPA 101, 2012 edition of the Life Safety Code.

These standards contain requirements for annual inspections, internal pipe inspections, and obstruction investigations. There has been some confusion as to what is actually required for these various activities.

## Annual Inspections:

Sprinklers shall be inspected from the floor level annually. Sprinklers shall not show signs of leakage; **shall be free of corrosion, foreign materials, paint, and physical damage; and shall be installed in the correct orientation** (e.g., upright, pendent, or sidewall).

Any sprinkler that shows signs of any of the following shall be replaced:

- (1) Leakage
- (2) Corrosion
- (3) Physical damage
- (4) Loss of fluid in the glass bulb heat responsive element
- (5)\*Loading
- (6) Painting unless painted by the sprinkler manufacturer

\*In lieu of replacing sprinklers that are loaded (with coating of dust), it is permitted to clean sprinklers with compressed air or by a vacuum provided that the equipment does not touch the sprinkler.

The supply of spare sprinklers shall be inspected annually for the following:  
(1) The correct number and type of sprinklers. A supply of spare sprinklers (never fewer than six) shall be maintained on the premises with a minimum of two of each type and temperature rating installed so that any sprinklers that have operated or been damaged in any way can be promptly replaced. The sprinklers shall correspond to the types and temperature ratings of the sprinklers in the property.

(2) A special sprinkler wrench shall be provided and kept in the cabinet to be used in the removal and installation of sprinklers. One sprinkler wrench shall be provided for each type of sprinkler installed

## Internal Inspection:

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

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, 2011 edition.

The type of obstruction investigation should be appropriately selected based on the observed condition. For instance, an internal obstruction investigation would be inappropriate where the observed condition was broken **public** mains in the vicinity. On the other hand, such an investigation would be appropriate where foreign materials are observed in the dry pipe valve.

This is not intended to place an additional burden on the property owner by requiring an additional inspection every 5 years. Fire protection contractors and business owners should consider having the internal pipe assessment or inspection conducted at the same time as the 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 NFPA 25, 2011 edition Chapter 14 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.

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## **Obstruction Investigation:**

The obstruction investigation has no time limit and is initiated when any of the below listed 14 conditions in NFPA 25, 2011 edition, Chapter 14 are present.

- (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.

These 14 conditions can show up at any time. When a system does not exhibit any of the 14 conditions listed in NFPA 25, 2011 edition Chapter 14, then only the internal inspection of piping or "visual" inspection discussed earlier shall be completed every 5 years.

If you have any questions or need additional information, please feel free to contact the Facility Fire Safety & Construction Program or via e-mail: [fsb@dhw.idaho.gov](mailto:fsb@dhw.idaho.gov).