

The Inspection Process Fire Protection Systems

Required Inspections, Testing and Reports
(Based upon the 2010 Connecticut State Fire Prevention Code)



Please
Turn off
your cell
phone or set
to vibrate



Program Objectives

- This program will focus on the types of inspection and testing required for each common fire protection system and, the types of reports acceptable for use as documentation of those tests.



How much do you rely on 3rd party life safety system inspections?

Do inspection, maintenance and testing requirements apply to “non-required” systems?

Jurisdiction

- Where a fire protection system is required by Code, the system is required to be maintained in accordance with the applicable standard (ref 13.1.1 CFPC).
 - Water Based Systems – NFPA 25
 - Standpipe Systems (13.2.3.3 CFPC)
 - Sprinkler Systems (13.3.3.2 CFPC)
 - Fire Pumps (13.4.8 CFPC)
 - Backflow Prevention (13.5.3.1 CFPC)
 - Private Fire Service Mains (13.5.4.2 CFPC)

Jurisdiction

- Fire Extinguishers – NFPA 10 (13.6.6.8 CFPC)
- Fire Alarm Systems – NFPA 72 (13.7.3.2.7 CFPC)
- Wet Chemical Extinguishing Systems – NFPA 17A (13.8 CFPC)
- Dry Chemical Extinguishing Systems – NFPA 17 (13.8 CFPC)

Definitions (NFPA 25)



- **Inspection-** A visual examination of a system or portion thereof to verify that it appears to be in operating condition and is free of physical damage.
- **Testing** – A procedure used to determine the status of a system as intended by conducting periodic physical checks on water-based fire protection systems such as water-flow tests, fire pump tests, alarm tests, and trip tests of dry pipe, deluge, or pre-action valves. These tests follow up on the original acceptance test at intervals specified in the appropriate chapter of this standard.
- **Inspection, Testing and Maintenance Service-** A service program provided by a qualified contractor or qualified owner's representative in which all components unique to the property's systems are inspected and tested at the required times and necessary maintenance is provided. This program includes logging and retention of records.

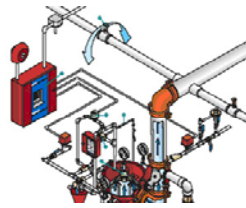
Definitions (NFPA 25)

Qualified – Having knowledge of the installation, construction, or operation of apparatus and the hazards involved.



Sprinkler Systems

NFPA 25 – Inspection, Testing and Maintenance of Water-Based Fire Protection Systems



2002 Edition is referenced by current code.

Sprinkler Systems (NFPA 25)



- Who can perform the required inspections and tests?
 - These tasks shall be performed by personnel **who have developed competence through training and experience** (NFPA 25 - 4.1.2.3)
- Do you have to be a CT licensed Fire Protection Contractor to perform the inspections and tests?
 - Yes, when the test or inspection requires physically opening a valve assembly, piping, removing or replacing sprinkler heads, etc.
 - No, if the inspector is inspecting only, operating valves, etc.

Inspection, Test and Maintenance Frequencies



- Inspections
 - Gauges (dry, pre-action, deluge) Weekly/Monthly
 - Control Valves Weekly/Monthly
 - Alarm Devices Quarterly
 - Gauges (Wet) Monthly
 - Hydraulic Nameplate Quarterly
 - Buildings Annually (prior to freezing weather)
 - Hangar/Seismic Bracing Annually
 - Pipe & Fittings Annually
 - Sprinklers Annually
 - Spare Sprinklers Annually
 - FD Connection Quarterly
 - Valves (all types) Quarterly

Inspection, Test and Maintenance Frequencies



- Tests
 - Alarm Devices Quarterly
 - Vane type Semi-annually
 - Main Drain Annually
 - Anti-freeze Solutions Annually
 - Gauges 5 Years
 - Sprinklers (extra high temp) 5 Years
 - Sprinklers (dry) 10 years, every 10 thereafter
 - Sprinklers (fast response) 20 years, every 10 thereafter
 - Sprinklers 50 years, every 10 thereafter

Inspection, Test and Maintenance Frequencies



- Maintenance
 - Valves (all types) Annually
 - Obstruction Investigation 5 Years, or as needed
 - Low Point Drains (dry systems) Annually, prior to freezing

Must the forms in NFPA 25 be used?



- No. Section 4.3.2 requires only that the records indicate the procedure performed, the organization that performed the work, the results, and the date.

Must the test reports be maintained on site?



- No. Section 4.3.1 requires that the inspection, test, and maintenance records be made available to the AHJ upon request.

YOU MUST READ THE REPORTS



- Simply checking the report to note the date of the inspection is not enough.
- The report should contain a deficiency section. If deficiencies are noted, ask what the status is. Put eyes on the deficiency and cite them in your inspection report if they are not corrected.
- Look for exclusions in the testing procedure.

What should your inspection entail?



- 1. Outside of the building
 - FD Connection accessible? Missing Caps? Free of debris?
 - PIV on, locked and supervised
 - Private hydrant in good repair
- 2. Interior (during your building inspection)
 - Obstructed heads
 - Items hanging from piping
 - Coverage in all required areas
 - Loose or damaged hangars or seismic bracing
 - Painted or damaged sprinkler heads
 - Valves opened and locked or supervised

- 3. At the Riser
 - Are all normally open control valves open, supervised
 - Required signs including hydraulic tag
 - Pressure on gages
 - Spare head box with heads and wrench
- 4. Reports
 - View previous 4 reports
 - Deficiencies?



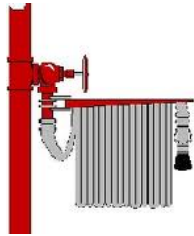
Typical Report Issues



- Reports not available.
 - Citation: Provide inspection and test reports for the past 12 months.
- Reports do not provide sufficient information.
 - Citation: Provide test and inspection reports that contain information required by Section 4.3.2 of NFPA 25.
- Inspection and tests not be done.
 - Citation: Inspection and testing not being conducted in compliance with NFPA 25.
- Inspection or tests not being done at the required frequencies.
 - Citation: Inspection and testing not being conducted in accordance with NFPA 25.

Standpipe Systems

- System components to be inspected quarterly except as otherwise designated (6.2.1)
- Test shall be conducted by qualified personnel (6.3)
- Flow tests shall be conducted every 5 years (6.3.1.1)



Inspection, Test and Maintenance Frequencies



- Inspections
 - Control Valves Weekly/Monthly
 - Pressure Regulators Quarterly
 - Piping Quarterly
 - Hose Connections Quarterly
 - Cabinet Annually
 - Hose Annually
 - Hose Storage Device Annually

Inspection, Test and Maintenance Frequencies



- Tests
 - Alarm Device Quarterly
 - Hose Nozzle Annually
 - Hose Storage Device Annually
 - Hose 5 years/3 years
 - Pressure Control Valve 5 years
 - Pressure Reducing Valve 5 years
 - Hydrostatic Test 5 years
 - Flow Test 5 years
 - Main Drain Annually

Inspection, Test and Maintenance Frequencies



- Maintenance
 - Hose Connections Annually
 - Valves (all types) Annually/as needed

Report

Records of inspections, tests, and maintenance of the system and its components shall be made available to the AHJ upon request NFPA 25-4.3.1).

Records shall be retained for a period of 1 year after the next required test, inspection or maintenance (NFPA 25-4.3.5)



The Importance of Inspection and Testing



This view shows the female end of the pipe, which was attached to the riser at an upper floor. It is almost completely obstructed with rust, scale, and debris

What should your inspection entail?



1. Outside of the building
 - FD Connection accessible? Missing Caps? Free of debris
2. Interior (during your building inspection)
 - Valves in good repair
 - Hose & nozzle provided? In good repair and properly hung
 - Visible signs of leaking or damage
3. Reports
 - Required testing being performed
 - Any deficiencies noted

Commercial Kitchen Fire Suppression

Wet Chemical Systems: NFPA 17A

Requires:

Owner's monthly inspection

Semi-annual Maintenance

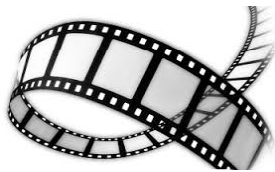
Who can do the work?

"Trained person who has undergone instructions necessary to perform maintenance and recharge service reliably and has the applicable manufacturer's listed installation and maintenance manual and service bulletins."

Service required every 6 months.



Maintaining Your Fire Suppression System (Ansul)



What should your inspection entail?



- Fire Suppression System Inspection Report
 - Check the last two inspection reports
 - System is required to be tested every 6 months (CFPC 50.5.2.1)
 - Any deficiencies noted?
 - Have they been repaired?
 - Are the fusible links being replaced at least annually (CFPC 50.5.2.4)
 - Is the system red tagged?

Exhaust System Inspection Report



- Is the system being inspected as required (CFPC 50.5.3)?
 - Solid Fuel Cooking Operation: Monthly
 - High Volume Operations: Quarterly
 - Moderate Volume Operations: Semi-annually
 - Low Volume Operations: Annually
- Is the system being cleaned as required?
 - When inspection discloses grease build-up, the exhaust system must be cleaned by properly trained, qualified and certified personnel (CFPC 50.5.4.1)
- How can inspect the system?
 - Properly trained, qualified and certified company or person(s) (CFPC 50.5.3)
- Physical Inspection:

Typical Report Issues



- Reports not available.
 - Citation: Provide inspection and test reports for the past 12 months.
- Inspection and tests not be done or not being done at the required frequency.
 - Citation: Inspection and testing not being conducted in compliance with CFPC Section 50.5.2.1.
- System is Red-Tagged.

Has there been any changes in the cook line?

- Any changes in the cook line must be evaluated for proper suppression system coverage (CFPC 50.6.1.2.2).
- Are deep fat fryers installed at least 16 inches space between the fryer and surface flames of adjacent appliance.
 - 8 inch clearance acceptable where steel or tempered glass baffle provided.



Has the exhaust system been cleaned?

The code requires that the system be cleaned to the bare metal surfaces when inspection discloses grease build-up (CFPC 50.5.4.1).



Check behind the grease extractors.

Grease build-up on nozzles and fusible link will impact the discharge of the fire suppression system (CFPC 50.5.4.2)



Is the manual activation device unobstructed?

- The manual activation devices (Pull Stations) must be accessible and unobstructed.
- The device must be mounted 42 to 48 inches above the floor.
- The device must be located along the path of egress travel and clearly identify the hazard protected (CFPC 50.4.7.1)



Is a K Class Extinguisher in the cook area?

- Is the extinguisher tag current?
 - Is it properly located and identified?
- *Note: Class B gas type extinguishers are not permitted in the cooking area (50.4.12.3)*



Are the nozzle caps in place and approved for such use?

Grease can migrate into the pipe causing obstruction.



Are the initiation devices in good repair?



Fire Alarm Systems

NFPA 72 – National Fire Alarm Code

2002 Edition is referenced by current code.



Who can do the testing?

Qualified personnel who have been trained and certified to perform the testing and maintenance.


- Factory trained and certified
- NICET, Fire Alarm Certified
- Int'l Municipal Signal Assoc Certified
- Certified by state or local authority
- Trained and qualified personnel employed by a listed organization for testing fire alarms.




Can the owner of the system test the system?

What does the inspection and test entail? 

- Visual inspection of components (See Table 10.3.1, NFPA 72)
 - Device orientation
 - Obstruction
 - Damage
 - Cleanliness
 - Improper installation
 - Changes in building or system

 • Note: The fire inspector should also note these items during a code compliance inspection.

Testing: Required in accordance with the schedules of Table 10.4.3, NFPA 72. 

- Most components require only annual testing
- Some components require monthly or quarterly
- Smoke detector sensitivity testing required with 1 year of installation and every alternate year thereafter.
 - After the second test, if there is no decrease in the listed sensitivity range, test period can be extended to 5 years.

Must the NFPA 72 forms be used to document testing?

Test Records



- Records shall be retained until the next test and for 1 year thereafter (10.6.2.1)
- Test record shall include (10.6.2.3):
 - Date
 - Test Frequency
 - Name of property
 - Address
 - Name of person performing the test, affiliation, business address and telephone number
 - Name, address and representative of approving agency

- Designation of the detectors tested
- Functional test of detectors
- Functional test of required sequence of operations
- Check of all smoke detectors
- Loop resistance for all fixed temperature, line type heat detectors
- Other tests as required by the equipment Mfg
- Other tests as required by the AHJ
- Signature of testr
- Disposition of problems identified during the test.



What should your inspection entail?



- Is the FACP in a normal condition?
- Visual inspection of components (See Table 10.3.1, NFPA 72)
 - Device orientation
 - Obstruction
 - Damage
 - Cleanliness
 - Improper installation
 - Changes in building or system

- Review the 3rd party inspection reports
 - Inspection/test conducted within the past year?
 - Does the test report include the proper information?
 - Any issues noted during the test resolved?
 - Where there any required items excluded from the test?
 - "Notification appliances not tested at the request of the manager"
 - "Sprinkler water flow devices not tested"
 - "Kitchen Hood system alarm connection not tested"



Conclusion

- 3rd party testing is important to insure the continued operation of a life safety system.
- Trust but verify.
- Carefully review the test reports
 - Ask to see the correction documentation for any issues noted
 - Do not accept the system as being tested if components have not be tested as required.



Important
Always check the status of important life safety systems before you leave the building and note the status on your inspection report.