

## Construction Inspections:

### Fire Sprinklers:

#### Required to be provided by the contractor:

1. Copy of Approved Plans (Sprinkler Shop Drawings) shall be on job site.
2. Equipment needed to accomplish test. (Gauges, valves, ladders, stopwatch, compressors, other tools, etc.)
  - A. Valves shall be able to be sealed in the closed position for hydrostatic tests.
  - B. Gauges shall be less than 5 years old or documented calibration done within past 5 years.
3. Representative to operate Fire Alarm (where interconnected.)
4. Copy of dry systems calculations for water delivery IAW 13:7.2.3.6 where used.
5. The backflow prevention assembly (where installed) shall be forward flow tested and completed calculations provided to the City of Dade City indicating the flow rate of the backflow prevention device compared to flow rate(s) required by sprinkler system(s)
6. Copy of the "Contractor's Material and Test Certificate for Aboveground Piping." (Copies for AHJ, Customer and Installer at minimum.)

#### The installing contractor shall:

1. Notify the AHJ and the property owner or the property owner representative of the time and date testing will be performed.
2. Perform all required acceptance Tests.
3. Complete and sign the appropriate contractor's material and test certificate.
4. Remove all caps and straps prior to placing the sprinkler system in service. [13:25.1]

#### Acceptance Test List (NFPA 13):

1. Hydrostatic Test
2. Air Test (Dry Pipe, Pre-Action and Deluge Systems)
3. Operational Test

### NFPA 13 Systems:

#### **NFPA 13:25.2: Acceptance Requirements:**

##### **Definitions:**

**System Working Pressure<sup>1</sup>:** The maximum anticipated static (non-flowing) or flowing pressure applied to sprinkler system components exclusive of surge pressures and exclusive of pressure from the fire department connection. [13:3.3.23]

**AHJ:** Authority Having Jurisdiction.

**IAW:** In accordance with.

1. **Hydrostatic Test** – Unless permitted by 13:25.2.1.2 through 25:2.1.8, all piping and attached appurtenances subjected to *system working pressure<sup>1</sup>* shall be hydrostatically tested at 200 psi and shall maintain that pressure for 2 hours. [13:25.2.1.1]
  - A. Portions of systems normally subjected to system working pressures in excess of 150 psi shall be tested as described in 13:25.2.1.1 (above) at a pressure of 50 psi in excess of system working pressure. [13:25.2.1.2]
  - B. Where cold weather will not permit testing with water, an interim air test shall be permitted to be conducted as described in 13:25.2.2. This provision shall not remove or replace the requirement for conducting the hydrostatic test as described in 13:25.2.1.1. [13:25.2.1.3]

- C. Modifications affecting 20 or fewer sprinklers shall not require testing in excess of working pressure. [13:25.2.1.4]
- D. Where addition or modification is made to an existing system affecting more than 20 sprinklers the new portion shall be isolated and tested at not less than 200 psi for 2 hours. [13:25.2.1.5]
- E. Modifications that cannot be isolated, such as relocated drops, shall not require testing in excess of system working pressure. [13:25.2.1.6]
- F. Loss shall be determined by a drop in gauge pressure or visible leaks. [13:25.2.1.7]
- G. The test pressure shall be read from a gauge located at the low elevation point of the system or portion being tested. [13:25.2.1.8]
- H. Additives, corrosive chemicals or derivatives of sodium silicate, brine, or similar acting chemicals shall not be used. [13:25.2.1.9\*]
- I. Piping between the exterior Fire Department Connection (FDC) and the check valve in the Fire Department inlet pipe shall be hydrostatically tested in the same manner as the balance of the system. After repair or replacement work affecting the exterior and the check valve in the fire department inlet pipe shall be isolated and hydrostatically tested at 150 psi. [13:25.2.1.10]
- J. When systems are being hydrostatically tested, tests shall be permitted to be conducted with pendent or horizontal sidewall sprinklers or plugs installed in fittings. Any plugs shall be replaced with pendent or horizontal sidewall sprinklers after the test is completed. [13:25.2.1.11]
- K. When deluge systems are being hydrostatically tested plugs shall be installed in fittings and replaced with open sprinklers after the test is completed, or the operating elements of automatic sprinklers shall be removed after the test is complete. [13:25.2.1.12]

2. **Dry Pipe and Double Interlock Pre-Action System(s) Air Test:**

- A. In addition to the standard hydrostatic test, an air pressure leakage test at 40 PSI shall be conducted for 24 hours. Any leakage that results in a loss of pressure in excess of 1 ½ psi for the 24 hours shall be corrected. [13:25.2.2.1]
- B. Where systems are installed in spaces that are capable of being operated at temperatures below 32° F, air or nitrogen gas pressure leakage tests required by 13:25.2.2 shall be conducted at the lowest nominal temperature in the space. [13:25.2.2.2]

3. **System Operational Tests:**

- A. **Waterflow detecting devices:** including associated alarm circuits shall be flow tested through the inspector's test connection and shall result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops. [13:25.2.3.1]
- B. **Dry Pipe System:**
  - I. A working test of the dry pipe valve alone with a quick-opening device, if installed, shall be made by opening the inspectors test connection. [13:25.2.3.2.1]
  - II. Test shall measure time to trip the valve and the time for water to be discharged from the inspector's test connection. All times shall be measured from the time the inspector's test connection is completely opened. [13:25.2.3.2.2\*]
  - III. Dry systems calculated for water delivery IAW 13:7.2.3.6, "Dry Pipe System Water Delivery" shall be exempt from any specific delivery time requirement. [13:25.2.3.2.2.1]
  - IV. The results shall be recorded using the contractor's material and test certificate for above ground piping (see figure 13:25.1.) [13:25.2.3.2.3]
- C. **Deluge and Pre-action Systems:**
  - I. The automatic operation of a deluge or pre-action valve shall be tested IAW the manufacturer's instructions. [13:25.2.3.3.1]
  - II. The manual and remote control operation, where present, shall also be tested. [13:25.2.3.3.2]
- D. **Main Drain Valves:**

- I. The main drain valve shall be opened and remain open until the system pressure stabilizes. [13:25.2.3.4.1]
- II. The Static and residual pressures shall be recorded on the contractor's material test certificate (see figure 13:25.1) [13:25.2.3.4.2] Pressures shall be recorded with indelible ink / marker on each riser.

**E. Operational Test for Control Valves:**

- I. All control valves shall be fully closed and opened under system water pressure to ensure proper operation. [13:25.2.3.5]

**4. Pressure-Reducing Valves:**

- A. Each pressure-reducing valve shall be tested upon completion of installation to ensure proper operation under flow and no-flow conditions. [13:25.2.4.1]
- B. The minimum flow rate shall be the system demand, including hose stream allowance where applicable. [13:25.2.5.2]
- C. The results of the flow test of each pressure-reducing valve shall be recorded on the contractor's material and test certificate. [13:25.2.4.3]
- D. The results shall include the static and residual inlet pressures, static and residual outlet pressures, and the flow rate. [13:25.2.4.4]

**5. Backflow Prevention Assemblies Acceptance:**

- A. The backflow prevention assembly shall be forward flow tested to ensure proper operation. [13:25.2.5.1]
- B. The minimum flow rate shall be the system demand, including the hose stream allowance where applicable. [13:25.2.5.2]

**6. Exposure Systems:**

- A. Operating tests shall be made of exposure protection systems upon completion of the installation, where such tests do not risk water damage to the building on which they are installed or to adjacent buildings. [13:25.2.6]

**7. Circulating Closed Loop Systems:** For sprinkler systems with non-fire protection connections see 13:25.3.1.

**NFPA 13R Systems:**

- 1. The installer shall perform all required acceptance tests (see 13R:10.2 A to D below) prior to asking for approval of the installation. [13R:10.1.1]
  - A. Underground mains and lead in connections to system risers shall be flushed before a connection is made to the sprinkler piping. [13R:10.2.1.1]
  - B. The flushing operation shall be continued until the water issuing from the main is clear. [13R:10.2.1.2]
  - C. The flushing operation shall be performed at the hydraulically calculated water demand rate for the system. [13R:10.2.1.3]
  - D. The flushing operation shall be performed such that the disposal of the water issuing from the test outlets does not damage the property. [13R:10.2.1.4]
- 2. The installer shall complete the contractors' material and test certificate(s) as shown in NFPA 13R Figure 10.1.2 prior to asking for approval of the installation. [13R:10.1.2]
- 3. The installer shall forward the certificates identified in NFPA 13R Figure 10.1.2 to the AHJ prior to asking for approval of the installation. [13R:10.1.3]

4. The AHJ is required to be present when acceptance tests are conducted, the installer shall provide advance notification of the time and date the testing will be performed. [13R:10.1.4]
5. **Hydrostatic Pressure Tests:**
  - A) Systems having more than 20 sprinklers or having a fire department connection shall pass a hydrostatic pressure test performed for aboveground piping system IAW NFPA 13. [13R:10.2.2.1]
  - B) Systems having both fewer than 20 sprinklers and no fire department connection shall pass a hydrostatic pressure test performed for the aboveground piping system at 50 psi higher than the maximum system pressure, using the hydrostatic test procedure specified in NFPA 13. [13R:10.2.2.2]

**NFPA 13D Systems:**

1. The installer shall perform all required acceptance tests (see 13D:11.2.1 through 13D:11.2.3 below) prior to asking for approval of the installation. [13D:11.1.1]
  - A. **Hydrostatic Tests:**
    - I. Where a fire department pumper connection is not provided, the system shall be hydrostatically tested at normal system operating pressure without evidence of leakage. [13D:11.2.1.1]
    - II. Where a fire department pumper connection
    - III. is provided, the system shall pass a hydrostatic test IAW NFPA 13. [13D:11.2.1.2]
    - IV. Evidence of leakage shall be determined by a drop in pressure at a gauge over a period of 2 hours or by visually checking the piping system for leakage. [13D:11.2.1.3]
    - V. When systems are being hydrostatically tested, the test shall be permitted to be conducted with sprinklers or plugs installed in the fittings. [13D:11.2.1.4]
      - a. Any plugs used during the hydrostatic testing shall be replaced with sprinklers after the hydrostatic test is complete. [13D:11.2.1.4.1]
      - b. No additional hydrostatic testing shall be required after the sprinklers are installed. [13D:11.2.1.4.2]
  - B. **Pump Tests:**
    - I. Prior to system acceptance, a system utilizing a pump shall be tested by opening the drain/test connection. [13D:11.2.2.1]
    - II. The pump shall sense the flow, turn on, and flow water for the required duration of 13D:6.1.2 or 13D:6.1.3 without interruption. [13D:11.2.2.1.1\*]
  - C. **System Operational Tests:**
    - I. **Waterflow Devices:** Where waterflow detection devices are installed, these devices, including associated alarm circuits, shall be tested through the inspectors test connection and shall result in an audible alarm on the premises. [13D:11.2.3.1]
    - II. **Preaction Systems:** The operation of the preaction system shall be tested IAW the manufacturer's instructions. [13D11.2.3.2]
    - III. **Dry Pipe and Double-Interlock Preaction Systems:** A test shall be conducted IAW the valve manufacturers instructions to measure the time to trip the valve and the time for water to be discharged from the inspectors test connection. [13D:11.2.3.3]
      - a. All times shall be measured from the time the inspectors test connection is completely open. [13D:11.2.3.3.1]
2. The AHJ is required to be present during the acceptance tests, the installer shall coordinate the time and date of the testing with the AHJ and other interested parties. [13D: 11.1.2]