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General Requirements for Fire Sprinkler Systems

The 2025 Edition of NFPA 13 contains 31 Chapters and 6 Annexes covering requirements for the application, design, material selection, installation, testing, maintenance, of automatic fire sprinkler systems, the water supply, and components. The following are basic requirements.

- The sprinkler system shall conform to the requirements of the International Fire Code (IFC, 2024 Edition), International Building Code (IBC, 2024 Edition), *Installation of Sprinkler Systems,* NFPA 13 (2025 Edition), and the listing limitations and manufacturer's installation instructions,

- Sprinklers shall be installed in accordance to their listing. Only new sprinklers shall be installed (13:16.2) ... Sprinklers that have been damaged or painted shall be replaced with new sprinklers. Sprinklers removed from an outlet shall not be reinstalled (13:16.2.1.1).

- A supply of spare sprinklers, and applicable wrenches, corresponding to all types, temperature ratings, and K-factor used shall be provided in accordance with 13:16.2.7.1 through 16.2.7.7.1.

- Hydraulic design information signs shall be placed at the system riser *for each design area.* The sign(s) shall include information listed in 13:28.5.3.

- Valves controlling the water supply and waterflow switches for automatic sprinkler systems must be electrically supervised. **Exceptions** are listed in **IFC:** 903.4.1 (1) through 903.4.1 (8).

- 13:6.11.1 To initiate the underground pipe approval process the installing contractor shall:
  1. Notify the AHJ and owner's representative of the proposed testing time and date;
  2. Perform all required acceptance test;
  3. Complete and sign the Contactor's Material and Test Certificate(s) for Underground Piping 13: Figure 6.10.1. Provide a completed copy of CMTC to the Fire Department.

- In accordance with 13:6.11.2.1.1 through 6.11.2.1.3.1 underground mains**,** lead-in connections to system risers**,** and hydrants shall be completely flushed before connection is made to fire protection system piping. Provide a completed CMTC to the Fire Department.

- Contractors installing underground piping between a public water main and a sprinkler system must be currently registered with the Colorado Division of Fire Prevention and Control (CDFP&C) as a Fire Suppression System Contractor - Underground. CDFP&C enforces *Installation of Private Fire Service Mains and Their Appurtenances*, NFPA 24.

- Per 13**:**6.11.2.5 the backflow prevention assembly shall be forward flow tested to ensure proper operation. The minimum flow rate shall be the system demand, including hose stream allowance where applicable.

- 13:9.5.1.1 sprinklers shall be located, spaced, and positioned in accordance with Section 9.5. Regarding heat systems with diffusers [Table (9.4.2.5(a) Condition 1(c)] sprinklers located, horizontally, within 2 ft. 6 in. in radius in the direction of flow from the edge of pendent diffusers shall have an intermediate degree rating.

- 13:29.1 To initiate the sprinkler system and fire service main approval process the sprinkler system contractor shall: (1) l notify the AHJ and owner's representative of the proposed testing time and date; (2) Perform all required acceptance test (*Section 28.2*); (3) Complete and sign the Contactor's Material and Test Certificate(s) (*Section 28.1*); (4) Remove caps and straps prior to placing sprinkler system in service 13: Figure 28.1

- 13:29.2.1 Unless permitted by 28,2,1,3 through 28,2,1,5 all piping and attached appurtenances shall be hydrostatically tested at 200 psi and shall maintain that pressure without loss for two hours,

- 13**:**29.2.1.8 Piping between the exterior fire department connection (FDC) and the check valve in the FDC inlet pipe shall be hydrostatically tested in the same manner as the balance of the system.

- Per IFC 109.3 It shall be the duty of the permit applicant to cause the work to remain visible and able to be accessed for inspection purposes. Where any installation subject to inspection is covered or concealed without having first been inspected, the fire code official shall have the authority to require that such work be made visible and able to be accessed for inspection.

- Waterflow detecting devices, including associated alarm circuits and supervising station service, will be flow tested through the inspector's test connection(s) and shall result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops. Waterflow switches incorporating a time-delay feature shall be adjusted by the installer, prior to the acceptance test, to alarm between 30 and 45 seconds after fully opening the inspector's test valve.

- Per 13**:**29.2.3.4 A The main drain test shall adhere to 29.2.3.4.1 and 29.2.3.4.2

- Final approval and testing apply to the sprinkler system as a whole even if portions of the system, such as alarm panel or wiring for a flow switch, were provided and/or installed by parties other than the sprinkler system contractor.

- Remote Fire Department Connection shall be installed between 3 and 4 feet above the level of the adjacent grade or access level. The piping shall include an auto ball drip valve that drains to an area with 3/4" crushed rock that is a minimum of 6 cubic feet in volume. This area shall be a minimum of 12" below the frost line and lateral piping should be set at an angle so that the auto drip valve is at the lowest point to self-drain.

All service providers who inspect, test and repair fire protection systems within Thornton's jurisdiction are required to register and submit all test, inspection, and service reports via The Compliance Engine. All reports must be submitted in accordance with the testing schedule and requirements outlined in our adopted fire code.