

SECTION 12:
ONE- AND TWO-FAMILY DWELLINGS AND MANUFACTURED HOMES
FIRE PROTECTION SYSTEMS

- 12.1 **General.** This section shall apply to all fire extinguishing systems installed in detached one- and two-family dwellings, including townhouses. Fire protection and life safety systems shall comply with the most current adopted edition of the IFC, as amended, and be designed, installed, and maintained in accordance with this guide, the most current edition of NFPA 13D, and other nationally recognized standards. P2904 systems shall be allowed. Occupant notification shall be required for buildings containing fire sprinkler systems.
- 12.1.1 **Re-inspections.** Any failed inspection or test may be subject to a re-inspection fee per the District's Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.
- 12.2 **Submittals.** See Section 1 for submittal requirements for Residential Sprinkler Systems.
- 12.3 **Required Systems.** Required fire protection and life safety systems shall meet the requirements of the adopted edition of the IFC, as amended or as approved by the AHJ.
- 12.3.1 **Water Supply.** The quantity of water required for NFPA 13D systems that use stored water as the sole source of supply shall be based on the following:
- Water demand for the system plus drive time for the fire department to reach the home;
 - The water supply shall not be less than ten (10) minutes; and
 - The design area shall be a minimum of three (3) heads or as required by the AHJ.
- 12.3.2 **Garages.** Sprinkler protection shall be required within all attached garages.
- 12.3.3 **Design Area.** The hydraulic design criteria for an NFPA 13D system shall be a minimum of three (3) flowing sprinkler heads. The system shall provide a minimum of 13 gallons per minute (GPM) per sprinkler head. The discharge shall not be less than the listing for the sprinkler head.
- 12.3.4 **Design Safety Factor.** The hydraulic calculation method shall provide at least ten (10) percent or ten (10) psi safety factor (whichever is greater) between the system demand curve and the water supply curve. The AHJ shall approve the hydrant data source.
- 12.3.5 **System Components.** Sprinkler system components that are expected to be maintained, including, but not limited to, the riser, tanks, and pumps, shall not be in areas with limited access. This includes crawl spaces and other areas as determined by the AHJ.

- 12.3.6 **Pumps and Compressors.** Sprinkler system pumps and compressors shall be located at least four inches (4") above the floor or as required by the National Electric Code, whichever is greater. All materials used to construct the mounting platform shall be waterproof or pressure-treated wood. The pump and compressor shall be securely mounted to the platform. The platform shall be securely mounted to the floor.
- 12.3.7 **Anti-Freeze.** All new fire sprinkler system designs submitted after 3/31/2023 shall comply with the current anti-freeze requirements published by the National Fire Protection Association. Sprinkler systems should be designed to protect all piping from freezing without using an anti-freeze solution.
- Existing buildings shall have anti-freeze installed in concentrations required to meet the freeze protection design of the system at the time the system was approved.
- 12.3.8 **Anti-freeze Test Ports.** A remote test port (auxiliary drain) shall be installed in an accessible location. A placard noting the location of the drain shall be attached to the sprinkler riser.
- 12.3.9 **Roof Pitches.** The system design for ceiling slopes greater than 8:12 shall follow the sprinkler head manufacturer's design criteria.
- 12.4 **Key Box.** Structures with a life safety system shall be accessible. A Knox™ key box shall be installed in an **approved location**. The Knox™ Home Box shall not be allowed.
- 12.5 **Alarm Audibility.** All fire extinguishing systems shall meet the audibility requirements in Sections 11.11 and 11.12.
- 12.6 **Fire Department Connection (FDC).** NFPA 13D systems may require an approved single 2½" hose connection. The hose connection shall be the National Hose Thread type. The FDC shall be located between 36" and 48" above finished grade. FDCs shall be accessible as required in Section 4.11. See AHJ for specific exceptions.
- 12.7 **Flush Tests.** The installer shall flush the underground piping for the underground main before connecting the sprinkler system riser to the water service line. The installer shall be registered to perform this test, as required by the State of Colorado and NFPA. The AHJ, or a designee approved by the AHJ, shall witness the flushing of the underground piping. A State licensed contractor shall fill out a "Contractor's Material and Test Certificate for Underground Piping."
- 12.8 **Hydrostatic Tests.** Hydrostatic testing shall comply with the most current edition of NFPA 13D.
- 12.9 **Insulation.** Installation of insulation shall meet the requirements of NFPA 13D and be approved by the AHJ.

12.10 **Tests and Inspections.** See Section 14 for details on tests and inspections.