Clark-Cowlitz FIRE RESCUE	Fire Code Standard 13D Fire Sprinkler System Installation	
	Date: 9/22/2021	**Number: 9-3**

This standard is intended to detail the application process, installation requirements and inspection procedures for the installation of NFPA 13D Automatic Fire Sprinkler Systems in one and two-family dwellings.

References

Chapter 9, Washington State Fire Code

Standard 13D, National Fire Protection Association.

Application

Note: CCFR does not require detailed installation plans or hydraulic calculations during the application. The contractor shall be responsible to ensure the system is designed per NFPA 13D and installed so as to pass a visible inspection and a water flow test.

Contractor may submit plans and calculations at their option if they would like an official plan review from CCFR.

Contractor shall submit an online application and pay all fees prior to starting work.

The design professional shall submit an online application to Clark-Cowlitz Fire Rescue (CCFR) at www.clarkfr.idtplans.com/secure and pay applicable fees. The submittal shall contain the following information:

- Fill out basic permit applicant information.
- Provide one application for each dwelling unit. (i.e.: a duplex would require two applications)
- Cut sheets for each type of fire sprinkler head installed in the project.
- Explain any unique or challenging design aspects to the project if any, that may require our inspectors to perform code research prior to any inspections.

Contractors

All contractors and their on-site employees shall have the appropriate certification and identification (as prescribed by the State of Washington) available upon request.

Installation

1. Installation shall meet the edition of the NFPA 13D Standard (as adopted by the State of Washington).

2. The meter set shall be a minimum of 1-inch in size in the Cities of Ridgefield and Woodland. Clark Public Utility shall determine the meter size in the city of La Center.

3. All supply piping, from the meter to the connection to the fire sprinkler piping, shall be a minimum 1 inch inside diameter in size. Piping may be increased in size depending on the design of the system to meet the minimum two-head flow test.

4. Avoid running piping in outside walls and near bird/ventilation blocking in eaves, to lessen the chance of freeze exposure. Installing the riser in a "warm wall" is strongly encouraged. **** (a "warm wall" is a wall within the conditioned space of the home--an area, room or space normally occupied and being heated or cooled by any equipment for human habitation)***.

5. A pressure gauge is not required unless the system has a pump/tank water supply or is a dry-pipe system.

6. Only one Premise Isolation Valve shall be allowed in the water supply to the house and this valve will shut off the fire sprinkler system and also shut off the domestic water. If the valve is aboveground, in the house, it shall be located upstream of where the domestic and fire sprinkler water piping splits off the main supply. It is recommended to minimize 90-degree fittings in the supply piping and at the Premise Isolation Valve. ***(See an example in Figure 1)***

7. Fire sprinkler piping shall not be in direct contact with gas piping, electrical wiring, communication cables, domestic water piping and other building systems. Wood or sections of round foam semi-split pipe insulation may be used as a protection barrier. Hanging any objects off the fire sprinkler piping is prohibited.

8. The fire sprinkler piping, in Passive Purge Sprinkler Systems, shall be connected to a single toilet in the remote portion of the system.

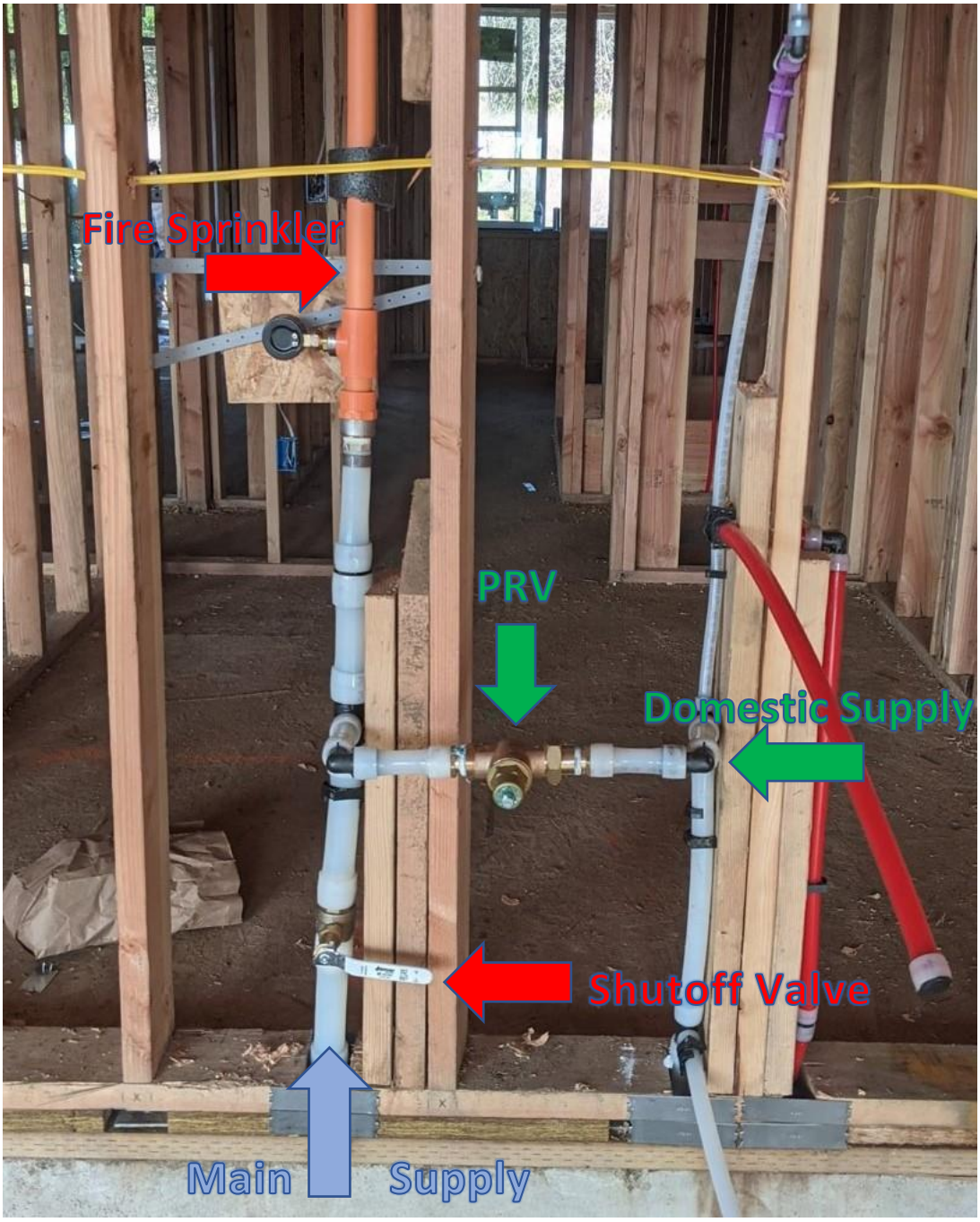


Figure 1

9. Ceiling obstructions: such as beams, light fixtures and ceiling fans may need special design considerations. Contractors shall be sure to space fire sprinklers properly in these areas. These obstructions may not be seen during a rough-in inspection, and they may be identified only at final inspection.

10. Provide a warning sign (minimum ¼ inch letters) **near the control shut-off valve** that reads:

Warning: The water system for this home supplies fire sprinklers that require certain flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure or automatically shut off the water to the fire sprinkler system, such as water softeners, filtration systems and automatic shut-off valves, shall not be added to this system without review of the fire sprinkler system by a fire protection specialist. Do not remove this sign.

11. When piping is installed through framing studs, joists or raftering, and piping is within 1 ¼ inches from the edge of the stud, joist or rafter, the piping shall be protected from damage by installation of a metal nailing plate

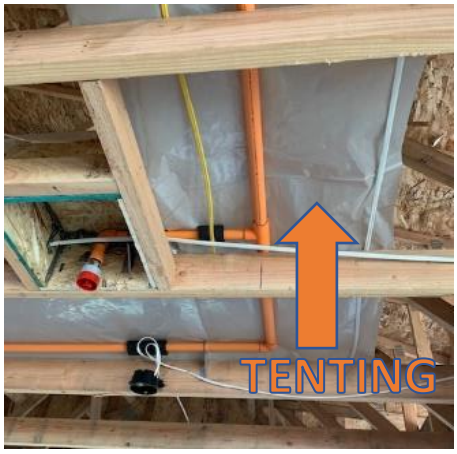
12. If a Pressure Relief Valve (PRV) is installed, it shall only be installed on the domestic water supply and not reduce the pressure to the fire sprinkler piping. In a Passive Purge fire sprinkler design, a PRV may be needed on the remote domestic water fixture connected to the fire sprinkler system.

Protection from Freezing/Insulation

All aboveground piping shall be protected from freezing and should be installed in warm spaces when possible. It is understood that not all piping can be installed in warm locations, so insulation shall be appropriately installed to protect piping. The following shall guide the installation of insulation:

1. Piping located on top of ceiling joists and exposed to the attic space shall be protected by insulation on the attic side. Plastic tenting is required over piping in attic spaces where blown or batt insulation is used.

   Tenting requires frequent support/staples with no loose or flapping plastic. It shall be secure and remain in place. Tenting shall be a minimum 24 inches wide and made of full lengths of plastic (no narrow strips). Plastic shall extend past the end of the piping by a minimum of 12 inches.



2. Any vertical piping in “cold walls” shall be protected by batt insulation on the cold side of the piping and be installed at time of the Rough-in/Bucket Test (RBT) inspection.

   No insulation shall be placed on the warm side of piping.

Inspections

Rough-in/Bucket Test (RBT)

Schedule the RBT prior to insulation and drywall installation *(batting insulation may be needed in a “cold wall” at the time of the RBT)*. All work shall be subject to field inspection(s) and any deficiencies will be required to be corrected; additional re-inspections may be needed.

Ensure the following is completed prior to requesting the RBT:

1. **Contractor shall pre-test the system** to ensure that the system is installed per NFPA 13D and has adequate flow to pass the “bucket test” from the two most remote fire sprinkler heads. Failure to do this, may result in multiple inspections by CCFR along with additional re-inspection fees.

2. All materials shall be installed per manufactures requirements/recommendations and “cut sheets” provided.

3. Verify there are no obstructions to the pertinent coverage and hanger locations and piping protection.

4. All insulation tenting is completed and in place per NFPA 13D Standard.

5. Batt insulation installed as applicable in all locations with vertical piping in cold walls.

6. Protective nailing plates are installed where needed.

7. Perform a two-hour hydrostatic test at normal operating.

8. Flow two remote fire sprinkler heads for 60 seconds into separate buckets in order to measure flow. CCFR will provide water flow meters, with the appropriate K Factor for the residential fire sprinkler head installed, to test the minimum fire sprinkler demand flow. Contractor shall provide two ¼ turn shutoff valves at the point of the remote fire sprinkler heads. Valves shall have ½ inch NPT female outlet to connect the flow meter to.

Final Inspection

Prior to scheduling a Final inspection for the installation of the fire sprinkler system, please ensure the following are completed. The following items will be inspected and passed, or the City's Building Department's job card will not be signed-off.

1. Verify with the builder that all interior painting, lighting, and ceiling fan installation is complete.

2. The Building Department's job card is on-site and available for signatures.

3. Sheetrock gaps around fire sprinkler heads shall be repaired and sprinkler escutcheons/cover plates are in place and tight fitting against the ceiling.

4. Permanent address is posted.

5. The fire sprinkler system "warning" sign is in place next to the supply control valve.

6. Sprinkler heads are not blocked or misspaced due to ceiling obstructions, lighting fixtures and/or ceiling fans.

7. Smoke Alarms are installed, operational and available for testing.

8. If installed, the pressure gauge is accessible and has a working cover.

9. The system is open and has functional pressure and is operational.