



Stafford County Fire and Rescue Department Office of the Fire Marshal

1225 Courthouse Road, PO BOX 339, Stafford, VA 22555
(540) 658-8648 · www.staffordfireandrescue.com/fm



Guidelines and Specifications For: **Sprinkler and Standpipe Systems**

Applicable Codes and Standards:

VSFPC - Virginia Statewide Fire Prevention Code (2018)

VCC – Virginia Construction Code (2018)

NFPA 13 – Standard for the Installation of Sprinkler Systems (2016)

NFPA 14 – Standard for the Installation of Standpipes and Hose Systems (2016)

General	Code Section
Sprinkler control valves and backflow prevention devices should NOT be located in underground vaults but rather in a designated room or area with an exterior door directly to the outside for immediate access. Where a sprinkler room is not able to be provided, a Post-Indicating-Valve (PIV) shall be provided and monitored by the fire alarm system. These requirements do not apply to systems supplied by the domestic water supply.	NFPA 13, 8.16.1 VCC 901.4.6
Sprinkler rooms shall be provided with adequate heating, lighting, drainage and should not contain other equipment or waste material that would obstruct immediate access.	VSFPC 509.1 VCC 901.4.6
The underground fire line piping supplying a sprinkler system shall be installed per NFPA 24 and the approved site plan. Underground piping is not permitted to enter more than 5ft under the slab of the building unless otherwise approved. These requirements do not apply to systems supplied by the domestic water supply.	NFPA 13, 10.6.1
Sprinkler system design documents shall be signed/stamped by a licensed NICET III, IV, P.E. or equivalent certified design professional. A minimum NICET III designer is required for all sprinkler companies licensed by the Virginia Department of Occupational and Professional Regulation.	VCC 111.1 DOPR Regs
All sprinkler systems shall have a backflow prevention device approved by the Stafford County Utilities Department. A means shall also be provided for forward flow testing this device at system demand. If forward flow testing cannot be accommodated by the main drain, an FDC bypass or exterior test header with signage is required.	NFPA 13, 8.17.4.6

Sprinkler Systems – NFPA 13	Code Section
Sprinkler and Fire Alarm system zoning shall be coordinated such that waterflow switches are annunciated properly and that each floor greater than 5,000 square feet can be independently isolated. Typical floor control valve assemblies are recommended for isolation and monitoring within multiple story buildings.	NFPA 13, 8.15.21 VCC 907.6.3
Water supply information used to design a sprinkler system shall not be more than 12 months old. Although a safety factor is not required by the current edition of NFPA 13, however a 10% or 10psi (whichever is greater) is should be used to accommodate future layout or water supply changes.	NFPA 13, 22.2.1.1 NFPA 13, 23.2.1.2
All sprinkler systems should be wet systems unless specifically approved otherwise. Other systems are typically only approved for portions of a building (attics, server rooms, etc.).	NFPA 13, 7.1
All systems shall include General Information plate data on the plans and riser in addition to hydraulic calculation plates.	NFPA 13, 24.6
Valves shall be accessible with sprinkler isolation valves located in the riser room or stairwells and drains discharge to outside	NFPA 13, 8.16.1.1.7
Pre-action systems, unless installed in an area subject to freezing, should be single interlock not double interlock unless otherwise approved.	NFPA 13, 7.3.2.1
The “exposed barrel length” (portion of pipe exposed to heated air) of dry sidewall or pendant head should be in accordance with manufacture specs and NO LESS THAN 4 inches long.	NFPA 13 (2016) 8.4.9.1



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Residential Sprinkler Systems – NFPA 13R	Code Section
Control valves shall be provided in accessible, common area locations and are not permitted to be installed within dwelling units. Systems are STRONGLY recommended to be controlled by floor.	NFPA 13R, 4.6
Sprinkler protection shall be provided for deck and balconies (including breezeways) where the building is of Type V construction and there is a roof/deck above.	VCC 903.3.1.2.1
Where a fire pump and/or a water tank is required, they must meet the requirements of NFPA 20 and NFPA 22.	NFPA 13R, 9.4
Intermediate temperature sprinklers are required in bathrooms, mechanical rooms or other rooms where the normal temperature could exceed 100°F.	NFPA 13R, 5.1.1.5
Adequate insulation shall be provided around piping and secured to prevent movement. Insulation is not permitted to be compressed or otherwise reduced below the minimum R-value.	NFPA 13R, 6.7.2
Underground piping within the building is not permitted unless the piping is specifically listed for that use, limited in arrangement (breezeway), and protected from building movement.	NFPA 13R, 5.1.2

One-and-Two Family Dwelling Systems – NFPA 13D	Code Section
Sprinklers are not required in garages, open attached porches, carports, and concealed spaces such as attics (even with a limited access hatch for maintenance purposes). Where attached outdoor rooms are more than 50% enclosed, sprinkler protection should be provided.	NFPA 13D, 8.6.4
Where sprinklers are supplied by the domestic water supply, a warning sign is required to be posted at the main shut-off valve in addition to the required control valve sign.	NFPA 13D, 6.5.3
An approved system gauge, and test/drain connection shall be provided on all systems.	NFPA 13D, 7.2
Intermediate temperature sprinklers are required in bathrooms, mechanical rooms or other rooms where the normal temperature could exceed 100°F.	NFPA 13D, 7.5.5
Adequate insulation shall be provided around piping and secured to prevent movement. Insulation is not permitted to be compressed or otherwise reduced below the minimum R-value.	NFPA 13D, 8.3.1
NFPA 13D systems do not require spare sprinklers, annual NFPA 25 test/inspections, and are not required to be monitored by a fire alarm system.	VCC 903.4 NFPA 13D, 12.3

Standpipe Systems – NFPA 14	Code Section
Standpipe systems are required in all new buildings that are 4 or more stories in height	VCC 905.3.1
Standpipe systems are strongly recommended to be combination wet risers (sprinkler and standpipe). Manual dry standpipes are only permitted in open parking garages.	VCC 905.3.1
Although a building fire pump may not be required to achieve minimum flows/pressures, hydraulic calculations shall be approved for ALL standpipe systems. Standpipe risers should be at least 6" in diameter unless calculations illustrate that smaller pipe size is still adequate to deliver the NFPA 14 requirements with a fire department pumper providing the following flows and pressures at the FDC: 200psi@0 gpm and 150psi at 1250gpm.	VCC 905.2 NFPA 14, 7.6.3 NFPA 14, 7.7.4
Any FDCs supplying standpipe systems must be 2 ½" diameter NST hose connections, be interconnected with the sprinkler system and have at least one connection for every 250GPM. Due to operational concerns with hose line pressures and redundancy, FDCs with 4" Storz connections or similar arrangements are not permitted when they supply a standpipe system.	NFPA 14, 7.12.3
Hose valves shall have 2 ½" outlets along with a 1 ½" reducer and cap. Hose valves located in cabinets shall be arranged such that a gloved hand is able to completely operate the valve and the firefighting hose will not be kinked when attached and charged.	VCC 905.1 NFPA 14, 7.3.4.1 NFPA 14, 7.3.1
Intermediate landing - visible in corner when viewing from upper landing - marking	
Hose valve cabinets should be provided with approved signage typically visible from multiple directions such as from both directions in a hallway. Hose valves and hose valve cabinets should not be locked unless secured by an APPROVED frangible material that is easily broken.	VCC 905.7 NFPA 14, 6.3.8.5