

# 2021 Virginia Construction Code

## CHAPTER 9 FIRE PROTECTION AND LIFE SAFETY SYSTEMS

### SECTION 905 STANDPIPE SYSTEMS

#### [F] 905.1 General.

Standpipe systems shall be provided in new buildings and structures in accordance with Sections 905.2 through 905.11. In buildings used for high-piled combustible storage, fire protection shall be in accordance with the [International Fire Code](#).

#### [F] 905.2 Installation standard.

Standpipe systems shall be installed in accordance with this section and NFPA 14. Fire department connections for standpipe systems shall be in accordance with Section 912.

#### [F] 905.3 Required installations.

Standpipe systems shall be installed where required by Sections 905.3.1 through 905.3.8. Standpipe systems are allowed to be combined with *automatic sprinkler systems*.

**Exception:** Standpipe systems are not required in Group R-3 occupancies.

#### 905.3.1 Height.

Class III standpipe systems shall be installed throughout buildings where four or more stories are above or below grade plane, the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.

##### Exceptions:

1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Class I manual wet standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1 or Section 903.3.2 and where the highest floor is located not more than 150 feet (45 720 mm) above the lowest level of fire department vehicle access.
3. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45,720 mm) above the lowest level of fire department vehicle access.
4. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.
5. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.
6. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following:
  - 6.1. Recessed loading docks for four vehicles or less.
  - 6.2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

#### [F] 905.3.2 Group A.

Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an *occupant load* exceeding 1,000 persons.

##### Exceptions:

1. Open-air-seating spaces without enclosed spaces.
2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.

#### [F] 905.3.3 Covered and open mall buildings.

Covered mall and *open mall buildings* shall be equipped throughout with a standpipe system where required by Section 905.3.1. Mall buildings not required to be equipped with a standpipe system by Section 905.3.1 shall be equipped with Class I hose connections connected to the *automatic sprinkler system* sized to deliver water at 250 gallons per minute (946.4 L/min) at the hydraulically most remote hose connection while concurrently supplying the automatic sprinkler system demand. The standpipe system shall be designed to not exceed a 50 pounds per square inch (psi) (345 kPa) residual pressure loss with a flow of 250 gallons per minute (946.4 L/min) from the fire department connection to the hydraulically most remote hose connection. Hose connections shall be provided at each of the following locations:

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1. Within the mall at the entrance to each *exit passageway* or *corridor*.
2. At each floor-level landing within *interior exit stairways* opening directly on the mall.
3. At exterior public entrances to the mall of a *covered mall building*.
4. At public entrances at the perimeter line of an *open mall building*.
5. At other locations as necessary so that the distance to reach all portions of a tenant space does not exceed 200 feet (60 960 mm) from a hose connection.

#### [F] 905.3.4 Stages.

Stages greater than 1,000 square feet in area (93 m<sup>2</sup>) shall be equipped with a Class III wet standpipe system with 1½-inch and 2½-inch (38 mm and 64 mm) hose connections on each side of the stage.

**Exception:** Where the building or area is equipped throughout with an *automatic sprinkler system*, a 1½-inch (38 mm) hose connection shall be installed in accordance with [NFPA 13](#) or in accordance with [NFPA 14](#) for Class II or III standpipes.

#### [F] 905.3.4.1 Hose and cabinet.

The 1½-inch (38 mm) hose connections shall be equipped with sufficient lengths of 1½-inch (38 mm) hose to provide fire protection for the stage area. Hose connections shall be equipped with an *approved* adjustable fog nozzle and be mounted in a cabinet or on a rack.

#### [F] 905.3.5 Underground buildings.

Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.

#### [F] 905.3.6 Helistops and heliports.

Buildings with a rooftop *helistop* or *heliport* shall be equipped with a Class I or III standpipe system extended to the roof level on which the *helistop* or *heliport* is located in accordance with [Section 2007.5](#) of the *International Fire Code*.

#### [F] 905.3.7 Marinas and boatyards.

Standpipes in *marinas* and boatyards shall comply with [Chapter 36](#) of the *International Fire Code*.

#### [F] 905.3.8 Landscaped roofs.

Buildings or structures that have landscaped roofs and that are equipped with a standpipe system shall have the standpipe system extended to the roof level on which the landscaped roof is located.

#### [F] 905.4 Location of Class I standpipe hose connections.

Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required *interior exit stairway*, a hose connection shall be provided for each story above and below *grade plane*. Hose connections shall be located at the main floor landing unless otherwise *approved* by the fire code official.

**Exception:** A single hose connection shall be permitted to be installed in the open corridor or open breezeway between open *stairs* that are not greater than 75 feet (22 860 mm) apart.

2. On each side of the wall adjacent to the exit opening of a *horizontal exit*.

**Exception:** Where floor areas adjacent to a *horizontal exit* are reachable from an *interior exit stairway* hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the *horizontal exit*.

3. In every *exit passageway*, at the entrance from the *exit passageway* to other areas of a building.

**Exception:** Where floor areas adjacent to an *exit passageway* are reachable from an *interior exit stairway* hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the *exit passageway* to other areas of the building.

4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall. In *open mall buildings*, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall.

5. Where the roof has a slope less than 4 units vertical in 12 units horizontal (33.3-percent slope), a hose connection shall be located to serve the roof or at the highest landing of an *interior exit stairway* with access to the roof provided in accordance with [Section 1011.12](#).

6. Where the most remote portion of a nonsprinklered floor or *story* is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or *story* is more than 200 feet (60 960 mm) from a hose connection, the fire code official is authorized to require that additional hose connections be provided in *approved* locations.

#### [F] 905.4.1 Protection.

Risers and laterals of Class I standpipe systems not located within an *interior exit stairway* shall be protected by a degree

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of fire resistance equal to that required for vertical enclosures in the building in which they are located.

**Exception:** In buildings equipped throughout with an *approved automatic sprinkler system*, laterals that are not located within an *interior exit stairway* are not required to be enclosed within fire-resistance-rated construction.

**[F] 905.4.2 Interconnection.**

In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with [NFPA 14](#).

**[F] 905.5 Location of Class II standpipe hose connections.**

Class II standpipe hose connections located so that all portions of the building are within 30 feet (9144 mm) of a nozzle attached to 100 feet (30 480 mm) of hose. Class II standpipe hose connections shall be located where they will have *ready access*.

**[F] 905.5.1 Groups A-1 and A-2.**

In Group A-1 and A-2 occupancies having *occupant loads* exceeding 1,000 persons, hose connections shall be located on each side of any stage, on each side of the rear of the auditorium, on each side of the balcony and on each tier of dressing rooms.

**[F] 905.5.2 Protection.**

Fire-resistance-rated protection of risers and laterals of Class II standpipe systems is not required.

**[F] 905.5.3 Class II system 1-inch hose.**

A minimum 1-inch (25 mm) hose shall be allowed to be used for hose stations in light-hazard occupancies where investigated and *listed* for this service and where *approved* by the fire code official.

**[F] 905.6 Location of Class III standpipe hose connections.**

Class III standpipe systems shall have hose connections located as required for Class I standpipes in [Section 905.4](#) and shall have Class II hose connections as required in [Section 905.5](#).

**[F] 905.6.1 Protection.**

Risers and laterals of Class III standpipe systems shall be protected as required for Class I systems in accordance with [Section 905.4.1](#).

**[F] 905.6.2 Interconnection.**

In buildings where more than one Class III standpipe is provided, the standpipes shall be interconnected in accordance with [NFPA 14](#).

**[F] 905.7 Cabinets.**

Cabinets containing fire-fighting equipment such as standpipes, fire hoses, fire extinguishers or fire department valves shall not be blocked from use or obscured from view.

**[F] 905.7.1 Cabinet equipment identification.**

Cabinets shall be identified in an *approved* manner by a permanently attached sign with letters not less than 2 inches (51 mm) high in a color that contrasts with the background color, indicating the equipment contained therein.

**Exceptions:**

1. Doors not large enough to accommodate a written sign shall be marked with a permanently attached pictogram of the equipment contained therein.
2. Doors that have either an *approved* visual identification clear glass panel or a complete glass door panel are not required to be marked.

**[F] 905.7.2 Locking cabinet doors.**

Cabinets shall be unlocked.

**Exceptions:**

1. Visual identification panels of glass or other *approved* transparent frangible material that is easily broken and allows access.
2. *Approved* locking arrangements.
3. Group I-3 occupancies.

**[F] 905.8 Dry standpipes.**

Dry standpipes shall not be installed.

**Exception:** Where subject to freezing and in accordance with [NFPA 14](#).

**[F] 905.9 Valve supervision.**

Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the

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valve will generate a supervisory signal at the supervising station required by [Section 903.4](#). Where a fire alarm system is provided, a signal shall be transmitted to the control unit.

**Exceptions:**

1. Valves to underground key or hub valves in roadway boxes do not require supervision.
2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

**[F] 905.10 During construction.**

Standpipe systems required during construction and demolition operations shall be provided in accordance with [Section 3311](#).

**[F] 905.11 Locking standpipe outlet caps.**

The *fire code official* is authorized to require locking caps on the outlets on standpipes where the responding fire department carries key wrenches for the removal that are compatible with locking FDC connection caps.