



DIVISION OF
FIRE AND LIFE SAFETY

CITY OF SCOTTSDALE

SCOTTSDALE FIRE DEPARTMENT

**Interpretations
and
Applications
of
NFPA 13R (2016 edition)**

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CONTENTS

Chapter 4	GENERAL REQUIREMENTS
4.6	5 Sprinklers or Less Addition or Alteration
Chapter 5	SYSTEM COMPONENTS
5.2.14.5.1	Backflow
5.3	Underground Pipe
5.5	Fire Riser Components and Location
Chapter 6	INSTALLATION
6.6	Location of Sprinklers
6.7.2.6	Protection of Piping
6.8.1	Tampered Control Valve and Flow Switch
6.11.2	Fire Department Connection
6.16.4	Alarms
6.17	Alarms
Chapter 7	DISCHARGE CRITERIA
7.4.1	Flow Switch Loss
7.4.2	Pressure Safety Margin
Chapter 8	PLANS AND CALCULATIONS
8.1.1.1	Submittal Requirements
8.1.7	Working Plans
Chapter 10	SYSTEM ACCEPTANCE
10.2.2.1	Tests and Inspections
10.2.2.2	Rough Inspection
10.2.2.3	Final Inspection
10.2.2.4	Reinspection Fees
10.3	CPVC Certification

INTERPRETATIONS & APPLICATIONS
OF THE 2016 MODIFIED NFPA 13R

The following are additions and amendments to NFPA 13R



CHAPTER 4 – GENERAL REQUIREMENTS

4.6 5 SPRINKLERS OR LESS ADDITION OR ALTERATION *added*

No submittal required for adding or altering a total of 5 sprinklers or less as long as all the following are met:

- (1) Shall not be in calculated area
- (2) Shall not make a new remote area requiring calculations
- (3) Field inspection shall be required

CHAPTER 5 – SYSTEM COMPONENTS

5.2.14.5.1 BACKFLOW *amended*

All fire sprinkler risers shall incorporate a UL listed or FM approved vertical double check backflow prevention assembly.

5.3 UNDERGROUND PIPE *amended*

A separate fire line shall be required to supply each fire riser assembly. Hydraulic calculations shall determine pipe size.

5.5 FIRE RISER COMPONENTS AND LOCATION *added*

- (1) Fire riser shall be at an accessible location from a fire access road or driveway
- (2) Fire riser shall be constructed within a cabinet or other secured location
- (3) An access panel or door suitable for access to all riser components shall be provided.
- (4) CPVC systems shall be protected from damage up to 7 feet from floor level
- (5) Building number identification shall be provided at riser location
- (6) Hydraulic calculation placard shall be required

CHAPTER 6 – INSTALLATION

6.6 LOCATION OF SPRINKLERS

6.6.1 Sprinklers shall be installed in all areas except where omission is permitted by 6.6.2 through 6.6.7 as amended. **amended**

6.6.2 Sprinklers are required in all bathrooms. **amended**

6.6.5 Sprinklers shall be required beneath all projections including porches, balconies, decks, and corridors. **amended**

Exception: Sprinklers may be omitted from non-combustible porches, balconies, decks, and corridors less than 4 feet in width

6.6.6 Sprinklers shall not be required in penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, crawl spaces, floor/ceiling spaces, noncombustible elevator shafts where the elevator cars comply with ANSI A17.1, *Safety Code for Elevators and Escalators*, and other concealed spaces that are not used or intended for living purposes or storage and do not contain fuel-fired equipment. **amended**

- (1) Attics shall be required to be sprinklered
- (2) Attics shall be hydraulically calculated using a 900 sq.ft. design area in accordance with NFPA 13.

6.7.2.6 PROTECTION OF PIPING **amended**

Copper or steel sprig-ups are permitted with CPVC piping in 13R installations. CPVC sprig-ups are not permitted unless installed with sprinklers specifically listed to protect CPVC in concealed space applications.

6.8.1 TAMPERED CONTROL VALVE AND FLOW SWITCH **amended**

A separate tampered control valve and flow switch shall be required for each floor when sprinkler monitoring or a fire alarm system is required. Tampered control valves shall be zoned separately for each building and/or floor.

Exception: When a single dwelling unit occupies multiple floors, separate tampered control valves and flow switches may not be required. Written approval from Fire Code Official shall be obtained for this exception.

6.11.2 FIRE DEPARTMENT CONNECTION **amended**

Fire department connections shall be at least 1 ½-inches in diameter; National Standard Thread (male).

6.16.4 ALARMS *amended*

Where a building fire alarm or sprinkler monitoring system is provided, the building fire sprinkler system shall be required to be zoned per floor.

6.17 ALARMS *added*

Local water flow alarm bell shall be provided on all sprinkler systems as follows:

- (1) A 110-volt AC 6-inch minimum diameter alarm bell
- (2) The bell shall be mounted on the exterior of the structure, visible from the street, and mounted directly above the fire department connection.
- (3) The bell must be no higher than the plane made by the bottom of eaves
- (4) The alarm bell shall receive its signal from a UL listed water flow switch
- (5) The alarm bell color shall be red

CHAPTER 7 – DISCHARGE CRITERIA

7.4.1 FLOW SWITCH LOSS *added*

Pipe sizes 2-inch or less shall include 3 psi fixed loss for the flow switch, or per manufacturer specifications.

7.4.2 PRESSURE SAFETY MARGIN *added*

- (1) Calculations shall maintain a 10% pressure safety margin from hydrant flow test. The slope of flow test curve shall be used.
- (2) Calculated system demand shall not exceed 72 psi
- (3) When additional fittings have been installed in a sprinkler system, not accounted for in design, revised drawings may be required with new calculations.

CHAPTER 8 – PLANS AND CALCULATIONS

8.1.1.1 SUBMITTAL REQUIREMENTS *added*

New construction and remodel plans submitted to the City shall comply with the following:

- (1) Submittals shall be digital format only (PDF), minimum scale 3/16" = 1'-0"
- (2) Submit hydraulic calculations and manufacturer data sheets for all equipment including sprinklers and backflow prevention assembly.
- (3) Acceptable template size shall be limited to 24" x 36" or 30" x 42"
- (4) All submittals shall bear a dated review certification and expiration date and signature of a minimum level III NICET Certified Engineering Technician (CET) automatic sprinkler systems or an Arizona Registered Professional Engineer (PE).

Exception: Installation or relocation of five 5 sprinklers or less shall not require plan submittal. Field inspection will be required.

For digital plan submittals, see the City of Scottsdale website at:
<https://eservices.scottsdaleaz.gov/bldgresources/Plans>

8.1.7 **WORKING PLANS** *amended*

- (38) Hydraulic calculation data placard
- (39) Ceiling heights; ceiling height changes
- (40) Sloped ceilings exceeding 2:12. Indicate “no slope” if applicable
- (41) Beam sizes and soffit depths
- (42) Dimensioning of sprinklers as necessary for determining proper sprinkler spacing
- (43) Clearly identified calculated areas (on plans and calculations)
- (44) Inspector’s test location
- (45) Riser location
- (46) Riser detail
- (47) General notes as required
- (48) City of Scottsdale Flow Test Summary Form at:
<https://www.scottsdaleaz.gov/codes/fire-code>

CHAPTER 10 – SYSTEM ACCEPTANCE

10.2.2.1 **TEST AND INSPECTIONS** *amended*

Systems shall pass a hydrostatic pressure test performed for the underground and aboveground piping system in accordance with NFPA 13.

10.2.2.2 **ROUGH INSPECTION** *amended*

- (1) All components of system shall be in place, secured, and connected to the permanent water supply source for the project at time of test.
- (2) Approved fire sprinkler system plans shall be on-site at the time of inspection.
- (3) All fire penetrations shall be filled with approved material and nail plates shall be in place at the time of pressure test. Where metal studs are used, piping shall be protected with either a sleeve or grommet.
- (4) All CPVC piping systems shall be tested using plugs in place of sprinklers. Ceilings greater than 16 feet in height may have sprinklers installed at time of rough inspection.
- (5) All new systems shall be tested using a cold water test / minimum of 200 psi for 2 hours. System must show adequate pressure per approved plans. No visible leakage or pressure reduction is permitted.

10.2.2.3 FINAL INSPECTION *added*

- (1) At final inspection, all sprinkler system components shall be in place and the system shall be flowed to verify activation of the flow switch and alarm bell.
- (2) All risers shall have a hydraulic data placard in accordance with NFPA 13
- (3) Spare sprinklers shall be in a spare sprinkler cabinet with sprinkler wrench at an approved location.
- (4) Fire department inspection form from rough inspection must be on the job site at time of test if there was a stipulation for rough approval.
- (5) Activation of alarm notification appliances by flow test and tamper switch
- (6) Verify manufacturers sprinkler tolerance with the escutcheon in place and check for paint, obstructions, plaster, etc.
- (7) Labels for inspector's test, auxiliary control valves, etc. shall be in place
- (8) Dwelling unit identification and/or building diagram shall be in place at each riser

10.2.2.4 REINSPECTION FEES *added*

A fee may be assessed for each reinspection, including but not limited to the following:

- (1) When approved and SFD stamped set of plans are not on-site during inspection
- (2) When installation is not complete
- (3) When corrections from previous inspection are not complete
- (4) When two or more appointments have been cancelled at the same address
- (5) Late notice of cancellation (less than 2 hrs prior)

10.3 CPVC CERTIFICATION *added*

When installing CPVC piping, the factory issued certification card must be carried by pipe fitter during installation and is to be made available to Fire Code Official upon request.