



DIVISION OF  
FIRE AND LIFE SAFETY

**CITY OF SCOTTSDALE**

**SCOTTSDALE FIRE DEPARTMENT**

**Interpretations  
and  
Applications  
of  
NFPA 13 (2022 edition)**

**EFFECTIVE: January 1, 2023**

## **ORIGIN & DEVELOPMENT OF THE FIRE SPRINKLER ORDINANCE IN THE CITY OF SCOTTSDALE**

The City of Scottsdale and Rural/Metro Fire Department held extensive fire sprinkler tests in 1982. The resulting tests demonstrated the reliability of listed residential quick response sprinklers to significantly reduce the potential for loss of life and property damage that can result from a fire.

On June 4<sup>th</sup>, 1985, the Scottsdale City Council passed an ordinance requiring all new building permits obtained for commercial and multi-family structures to be provided with an approved automatic fire sprinkler system.

New building permits obtained after January 1, 1986, for single family dwellings require the installation of an approved automatic residential fire sprinkler system.

\*Sprinklers typically reduce the chances of dying in a home fire by one half to two thirds in any kind of property where they are used. Together with smoke alarms, sprinklers cut the risk of dying in a home fire 82 percent, relative to having neither.

The Interpretations and Applications Manual describes the requirements for the installation of automatic fire sprinkler systems for the current adopted standards of NFPA 13, 13R and 13D.

For additional requirements, see City of Scottsdale Amendments to the 2021 International Fire Code, Chapter 9. COS Amendments can be found at [www.scottsdaleaz.gov/codes.asp](http://www.scottsdaleaz.gov/codes.asp)

\*NFPA Link: <http://www.nfpa.org>

## TABLE OF CONTENTS

<b>Chapter 4</b>	<b>GENERAL REQUIREMENTS</b>
4.5.1.1	Water Supply Information
4.5.1.2	Safety Factor
<b>Chapter 6</b>	<b>INSTALLATION UNDERGROUND PIPING</b>
6.1.1.1.1	Underground Piping
6.4.3.1	Private Fire Service Mains Under Buildings
<b>Chapter 9</b>	<b>SPRINKLER LOCATION REQUIREMENTS</b>
9.2.3.5	Fabric Awnings and Canopies
9.2.4.1.1	No Sprinkler Omissions in Bathrooms
9.4.3.1.1	Thermal Sensitivity in Tenant Improvements
<b>Chapter 16</b>	<b>INSTALLATION OF PIPING, VALVES AND APPURTENANCES</b>
16.4.1.3.1	Protection of Piping Against Freezing
16.9.3.1.1.1	Fire Riser Details
16.9.3.3.6	Sectional Control Valves Per Floor
16.9.3.4.1	Fire Riser Clearance
16.9.3.4.2	Interior Fire Riser Locations
16.9.3.4.3	Exterior Fire Riser Locations
16.9.3.4.4	Manifold Fire Riser Locations
16.9.3.4.5	Fire Riser Directional Signage
16.9.3.5.1	Control Valve Identification
16.11.1.1	Alarm Bell Requirement
16.12.5.1.2.1	Fire Department Connection
16.14.5.2	Backflow Devices
16.15.2.1.1	Hose Connections for Fire Department Use
<b>Chapter 19</b>	<b>DESIGN APPROACHES</b>
19.2.1	General Design Approaches
19.2.1.1	Pipe Schedule
19.2.3.3.1	Room Design Method Restriction
<b>Chapter 27</b>	<b>SPECIAL OCCUPANCY REQUIREMENTS</b>
27.36	Manufactured and Modular Buildings
27.37	Tents and Membrane Structures
<b>Chapter 28</b>	<b>PLANS AND CALCULATIONS</b>
28.1.1.1.1	Submittal Requirements
28.1.3	Working Plans
28.5	Pipe Schedules
<b>Chapter 29</b>	<b>SYSTEMS ACCEPTANCE</b>
29.2.1.12	Rough Inspection
29.2.1.13	Final Inspection
29.2.1.14	Reinspection Fees and Cancellations
29.2.1.15	Cancellation Calls to Scheduler
<b>Chapter 30</b>	<b>EXISTING SYSTEM MODIFICATIONS</b>
30.8.1	Existing System Modifications
30.8.1.1	More Than 20 Sprinklers
30.8.1.2	Modifications Cannot Be Isolated

CITY OF SCOTTSDALE FIRE DEPARTMENT  
PLANNING & DEVELOPMENT SERVICES DEPARTMENT

**INTERPRETATIONS & APPLICATIONS**  
**OF THE 2022 MODIFIED NFPA 13**

**The following are additions and amendments to NFPA 13**



**CHAPTER 4 – GENERAL REQUIREMENTS**

**4.5.1.1 WATER SUPPLY INFORMATION *amended***

A fire hydrant flow test shall be used for the purposes of system design. The flow test shall be permitted and witnessed by the City of Scottsdale no more than 12 months prior to working plan submittal, unless otherwise approved by the Fire Code Official. Results shall be recorded on the Fire Hydrant Flow Test Summary Form.

See [City of Scottsdale - Fire Hydrant Flow Test Permit Application \(scottsdaleaz.gov\)](http://scottsdaleaz.gov/City_of_Scottsdale_-_Fire_Hydrant_Flow_Test_Permit_Application)

See [FlowTestFinal.pdf \(scottsdaleaz.gov\)](http://scottsdaleaz.gov/FlowTestFinal.pdf)

**4.5.1.2 SAFETY FACTOR *added***

The available water supply used in hydraulic calculations shall maintain a 10% safety margin from the observed fire hydrant flow test results. The adjusted flow test curve shall maintain the same slope. *The hydraulically calculated system demand shall not exceed the adjusted flow test results, and in no case shall the required demand exceed 72 psi at the source.*

**CHAPTER 6 – INSTALLATION UNDERGROUND PIPING**

**6.1.1.1.1 UNDERGROUND PIPING *added***

All fire service lines shall be and installed in accordance with NFPA 13 and the City of Scottsdale Design Standards and Policy Manual.

See [DSPM+2018.pdf \(scottsdaleaz.gov\)](http://scottsdaleaz.gov/DSPM+2018.pdf)

**6.4.3.1 PRIVATE FIRE SERVICE MAINS UNDER BUILDINGS *amended***

Private fire service mains supplying fire protection systems within the building shall be permitted to extend no more than 3 ft cumulatively, as measured from the outside of the building to the riser location.

## CHAPTER 9 – SPRINKLER LOCATION REQUIREMENTS

### 9.2.3.5 FABRIC AWNINGS AND CANOPIES *added*

Sprinklers shall be permitted to be omitted where the canopies are constructed utilizing a noncombustible frame, limited combustibles, or fire retardant-treated wood. The fabric shade cloth shall have a flame spread index of 25 or less when tested in accordance with ASTM E84 or UL 723, Standard Test Method for Surface Burning Characteristics of Building Materials.

### 9.2.4.1.1 NO SPRINKLER OMISSIONS IN BATHROOMS *amended*

There shall be no sprinkler omissions in bathrooms.

### 9.4.3.1.1 THERMAL SENSITIVITY IN TENANT IMPROVEMENTS *added*

In tenant improvement spaces with existing standard response sprinklers, all sprinklers within the tenant improvement space shall be changed to quick response type sprinklers when more than 50% are added or altered, unless allowed by section 9.4.3.3. See sections 9.4.3.2, 9.4.3.4, 9.4.3.5, and 9.4.3.6.

## CHAPTER 16 – INSTALLATION OF PIPING, VALVES AND APPURTENANCES

### 16.4.1.3.1 PROTECTION OF PIPING AGAINST FREEZING *added*

A minimum of 2-inch diameter pipe is an acceptable method of freeze protection.

### 16.9.3.1.1.1 FIRE RISER DETAILS *added*

Fire risers shall be installed in accordance with City of Scottsdale Standard Detail 2368 or 2369. See [2020-Details-Combined.pdf \(scottsdaleaz.gov\)](https://www.scottsdaleaz.gov/2020-Details-Combined.pdf)

### 16.9.3.3.6 SECTIONAL CONTROL VALVES PER FLOOR *added*

- (1) A sprinkler system that serves two or more levels shall incorporate tampered sectional floor control valves.

### 16.9.3.4.1 FIRE RISER CLEARANCE *added*

- (1) Provide and maintain 12-inch clear in back to walls or any other obstruction, 18-inch clear on each side, and 36 inches clear in front of all riser piping, equipment, and appurtenances.
- (2) Riser assemblies within riser rooms may be provided with alternate double doors or sliding doors that provide a minimum of 36 inches of clear working space with doors in the open position.

#### **16.9.3.4.2 INTERIOR FIRE RISER LOCATIONS *added***

- (1) Interior fire risers are to be located a maximum of 3 feet inside of an exterior wall. May be in a riser room or,
- (2) Installed in a readily accessible (within 25 feet) and visible location from an exterior door.
- (3) Risers may be installed in an underground parking garage with prior written approval from the Fire Code Official. When in an underground garage, riser(s) shall be no lower than the first level below grade in the vicinity of (within 25 feet) and clearly visible from a stair or ramp.
- (4) Storage and mercantile areas with commodities exceeding 12 feet in height and hazardous uses shall require riser immediately adjacent (within 5 feet) to an exterior door and secured within a room or other enclosure as approved by the Fire Code Official.
- (5) A dedicated riser room with an exterior door may be required for higher hazard occupancies as determined by the Fire Code Official.

#### **16.9.3.4.3 EXTERIOR FIRE RISER LOCATIONS *added***

Exterior fire riser locations require approval from the Planning Department and must be enclosed in a maintenance yard or other enclosure that shields the riser from view.

#### **16.9.3.4.4 MANIFOLD FIRE RISER LOCATIONS *added***

Where multiple fire risers are required, all risers shall be manifolded from one location.

#### **16.9.3.4.5 FIRE RISER DIRECTIONAL SIGNAGE *added***

Clearly visible and legible signage directing responding personnel to riser locations shall be provided. See 16.9.3.5. for details.

#### **16.9.3.5.1 CONTROL VALVE IDENTIFICATION *added***

Identification signs shall have minimum 3-inch-high white block letters with 3/4-inch stroke on red background.

#### **16.11.1.1 ALARM BELL REQUIREMENT *amended***

The alarm unit shall be a red, listed, 10-inch DIA electric alarm bell. The bell shall be fully visible and recognizable from street or nearest point of fire department vehicle access.

#### **16.12.5.1.2.1 FIRE DEPARTMENT CONNECTION *added***

Fire department connections shall be installed in accordance with City of Scottsdale Standard Detail 2367, 2368 or 2369.

See [2020-Details-Combined.pdf \(scottsdaleaz.gov\)](https://www.scottsdaleaz.gov/2020-Details-Combined.pdf)

#### **16.14.5.2 BACKFLOW DEVICES *added***

Fire service lines require an approved backflow prevention device on the vertical riser. Where fire service lines supply multiple buildings, a single backflow preventer located at the property line may be installed. Prior approval from the Fire Code Official and the Planning Department is required. Backflow prevention devices shall be installed in accordance with City of Scottsdale Standard Details 2351 through 2369. See [2020-Details-Combined.pdf \(scottsdaleaz.gov\)](#)

#### **16.15.2.1.1 HOSE CONNECTIONS FOR FIRE DEPARTMENT USE *added***

Buildings exceeding 10,000 square feet in area per story not otherwise required to be equipped with a standpipe system by section 905.3 of the 2021 IFC, shall be equipped with class I manual hose connections (2-1/2" NST) for fire department use. See Section 905.12 [2015+IFC+Amendments.pdf \(scottsdaleaz.gov\)](#).

### **CHAPTER 19 – DESIGN APPROACHES**

#### **19.2.1 GENERAL DESIGN APPROACHES *amended***

A building or portion thereof shall be permitted to be protected in accordance with any applicable design approach in NFPA 13 at the discretion of designer, unless other specific criteria is prescribed by Scottsdale Revised Code or these Interpretation's and Application's.

Owner elected design criteria or criteria required by insurance organizations such as UL or FM may vary from NFPA standards, Scottsdale Revised Code, and these Interpretation's and Application's. However, in no case will the Fire Code Official accept criteria that is less than that prescribed by NFPA 13 or Scottsdale Ordinance.

#### **19.2.1.1 PIPE SCHEDULE *amended***

The water demand requirements shall be determined in accordance with the hydraulic calculation method in accordance with [19.2.3](#). Pipe schedule sizing provisions are prohibited and shall not be used.

#### **19.2.3.3.1 ROOM DESIGN METHOD RESTRICTION *amended***

Room design method shall not be used.

## CHAPTER 27 – SPECIAL OCCUPANCY REQUIREMENTS

### 27.36 MANUFACTURED AND MODULAR BUILDINGS *added*

Manufactured and modular buildings used for sales and construction offices require an automatic fire sprinkler system to be installed if the building is erected for a period of more than 180 days within a 12-month period on a single premise. The fire sprinkler system may be pre-installed by the manufacturer and may be fed from the domestic water supply or an on-site water tank. Design criteria shall be a light hazard design area flowing two sprinklers in accordance with NFPA 13D. Plans and hydraulic calculations are required.

### 27.37 TENTS AND MEMBRANE STRUCTURES *added*

Tents and membrane structures exceeding 400 square feet or tents open on all sides exceeding 700 square feet require an automatic fire sprinkler system to be installed if the structure is erected for a period of more than 180 days within a 12-month period on a single premise. The fire sprinkler system shall have a separate dedicated water supply or an on-site water tank. Design criteria shall be in accordance with NFPA 13. Plans and hydraulic calculations are required.

## CHAPTER 28 – PLANS AND CALCULATIONS

### 28.1.1.1.1 SUBMITTAL REQUIREMENTS *added*

Fire sprinkler plans submitted to the City shall comply with the following:

- (1) All plans, calculations, and data sheets shall be digital format only (PDF).
- (2) Hydraulic calculations shall include all information required by NFPA 13 - 28.4.
- (3) Include product data for all system components.
- (4) All submittals shall be signed and sealed with review and expiration date by a minimum level III NICET Certified Engineering Technician (CET) automatic sprinkler systems or an Arizona Registered Professional Engineer (PE).

**Exception:** Addition or alteration of five (5) or less fire sprinklers to existing approved fire sprinkler systems shall not require plan submittal. Fire inspection is required.

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



### 28.1.3 WORKING PLANS *added*

- (24) A complete site plan including all applicable notes and case details.
- (25) A copy of the approved civil fire line plan.
- (26) A current Flow Test Summary Form.
- (27) Phone number of contractor and/or designer on plans.
- (28) For light steel construction, a hangar analysis from a structural engineer.
- (29) Owner's Information Certificate, where required.

### 28.5 PIPE SCHEDULES *amended*

Pipe schedule sizing provisions are prohibited and shall not be used.

## CHAPTER 29 - SYSTEMS ACCEPTANCE

### 29.2.1.12 ROUGH INSPECTION *added*

- (1) All tests shall be witnessed by Scottsdale Fire Department.
- (2) All components of system shall be in place and secured.
- (3) The system shall be connected to the permanent water supply source.
- (4) Approved fire sprinkler system plans shall be on-site.
- (5) Concealed fire sprinkler cover plates shall not be installed.
- (6) When CPVC piping systems are hydrostatically tested, plugs shall be installed in fittings. Ceilings greater than 16 feet in height may have sprinklers installed at time of hydrostatic test.
- (7) Installation of CPVC pipe requires factory issued certification card to be carried by pipe fitter during installation and is to be made available to an inspector upon request. Installer shall follow all manufacturer guidelines for installation.

### 29.2.1.13 FINAL INSPECTION *added*

- (1) All sprinkler system components shall be in place and the system shall be flowed to verify activation of the flow switch and bell.
- (2) All risers shall have a Hydraulic Design Information Sign.
- (3) Spare fire sprinklers shall be in the riser compartment.
- (4) Fire Department Inspection form from rough inspections must be on job site at time of test if there were any stipulations for rough approval.
- (5) Verify manufacturers sprinkler tolerance with escutcheon in place and check for paint, obstructions, plaster, etc.
- (6) Concealed fire sprinkler cover plates shall not be installed.
- (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.

#### **28.2.1.14 REINSPECTION FEES AND CANCELLATIONS *added***

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

- (1) Approved plans with SFD approval stamp not on-site during inspection.
- (2) Installation is not complete.
- (3) Corrections from previous inspections not complete
- (4) Two or more inspection cancellations.
- (5) Late notice of cancellation (less than 2 hrs. prior)

#### **28.2.1.15 CANCELLATION CALLS TO SCHEDULER *added***

Cancellations shall be called into scheduler, not inspector. Call 480-312-1855

### **CHAPTER 30 - EXISTING SYSTEM MODIFICATIONS**

#### **30.8.1 EXISTING SYSTEM MODIFICATIONS *amended***

Modifications to existing piping systems shall require testing at not less than 150 psi for 2 hours.

##### **30.8.1.1 MORE THAN 20 SPRINKLERS *amended***

Where modification is made to an existing system affecting more than 20 sprinklers, or where modification includes the addition of 2-inch or greater branch lines or mains, the new portion shall be isolated and tested at not less than 200 psi for 2 hours.

##### **30.8.1.2 MODIFICATIONS CANNOT BE ISOLATED *amended***

Modifications that cannot be isolated, such as relocated drops, shall require testing at not less than 150 psi for 2 hours.