

13D Residential Sprinkler System

Plan Review Checklist

2010 OFC and 2007 NFPA 13D

Date of Review: _____ Permit Number: _____

Business/Building Name: _____ Address of Project: _____

Designer Name: _____ Designer's Phone: _____

Contractor: _____ Contractor's Phone: _____

No. of Sprinklers: _____ Occupancy Classification: _____

Reference numbers following checklist statements represent an NFPA code section unless otherwise specified.

Checklist Legend: **v** or **OK** = acceptable, **N** = need to provide, **NA** = not applicable

1. _____ A minimum of three sets of drawings are provided.
2. _____ System components are listed for intended use, specification data sheets are provided, 5.1.2. Nonlisted items that are permitted by the standard can be tanks, pumps, hangers, waterflow detection devices, and waterflow valves, 5.1.3.

Drawings shall show the following:

General

3. _____ Scale: a common scale shall be used and information shall be legible.
4. _____ Plot plan details illustrate the water supply connection, pipe diameters, lengths, and fittings to the building, OFC 901.2.
5. _____ Building dimensions, cross sectional views, and the location of partitions are provided, OFC 901.2.
6. _____ Type of protection for nonmetallic pipe is provided, OFC 901.2.
7. _____ Dimensions for system piping, type of pipe, and component spacing, OFC 901.2.
8. _____ Equipment symbol legend and the compass point are detailed, OFC 901.2.
9. _____ Total number of each type of sprinkler is noted on the plans, OFC 901.2.
10. _____ Type of sprinklers, K factors, temperature rating, coverage area, minimum operating pressure, and orifice size are provided, 8.1.1.
11. _____ Dry systems are not permitted unless all components are approved and listed and it serves unheated areas, 8.3.2.
12. _____ For a dry system, or a system using a pressurized tank as a water supply source, a pressure gauge is detailed 7.3.
13. _____ Wet pipe system is used when not subject to freezing, 8.3.1.
14. _____ Type of antifreeze solution and percentage is noted on the plans, 8.3.3.2.
15. _____ Systems in areas subject to freezing shall be well insulated or shall be a dry pipe or antifreeze system, 8.3.1 and 8.3.2.
16. _____ When required, the antifreeze system is designed in accordance with Figure 8.3.3.3.1.1, and local plumbing codes, 8.3.3 and 8.3.3.1, and IFC 903.3.5.
17. _____ Stored water supply shall provide the water demand rate for 10 minutes, 7 minutes if dwelling unit is one story and less than 2,000 sq. ft., 6.1.2 and .3. Is the supply riser in a heated environment?
18. _____ A reliable water supply is provided in accordance with section 6.2.
19. _____ Is the supply riser in a heated environment?

Multipurpose Piping Systems

20. _____ Multipurpose system, without an FDC, that uses nonmetallic fittings, the fittings are designed to an operating pressure of 130 psi or greater, 5.2.5.3.
21. _____ The piping system serving both sprinkler and domestic needs is acceptable if: 1) The common water supply is serving more than 1 dwelling unit, 5 gpm is added to the sprinkler demand, 2) All pipe used is listed, 3) Pipe connected to the system serving plumbing fixtures need not be listed, 4) Permitted by the plumbing AHJ, 5) A sign adjacent to the main shutoff indicates it serves the fire sprinkler system with verbiage per the code section, 6) Devices that restrict the flow shall not be added and water treatment and filtering systems shall be bypassed, 6.3

Sprinklers

22. _____ Sprinkler location is correct according to listing criteria and sections 8.1.3 and 8.2.
23. _____ Only residential sprinklers are specified for wet systems unless listed for other uses, 7.5.2.
24. _____ Dry pendent or sidewall sprinklers are permitted to be used in unheated areas not used for living, 7.5.3.
25. _____ Sprinklers are ordinary temperature (135°F-175°F) when the ceiling does not exceed 100°F, 7.5.5.1.

26. _____ Sprinklers that are in areas with ceiling temperatures of 101°F-150°F are intermediate temperature (175°F-225°F), 7.5.5.2.
27. _____ Intermediate temperature sprinklers are used in skylights exposed to direct sun, in unvented concealed spaces under uninsulated roofs or in unvented attics, and near heat sources, Table 7.5.5.3, 7.5.5.3.
28. _____ Ceiling pockets are sprinklered unless the pocket volume is 100 sq. ft. or less, its depth is 1 ft. or less, the floor below is protected, it is separated from other pockets by at least 10 ft., and the finish material is non-combustible or limited-combustible, 8.6.7
29. _____ Each sprinkler coverage area is within its listing limitation, OFC 901.2.
30. _____ Sloped ceiling spacing is in accordance with Figure 8.1.3.1.3.1 and section 8.1.3.1.3.
31. _____ Closets, which may include mechanical equipment, that is limited to 400 cu. ft., a single sprinkler is provided and is located at the highest ceiling height, 8.2.5.1.
32. _____ Pendent sprinklers are at least 3 ft. from obstructions e.g. light fixtures, ceiling fans, etc. or in accordance with Table 8.2.5.4.2 and section 8.2.5.2. Sprinkler locations for continuous obstructions are in compliance with 8.2.5.4.
33. _____ Sidewall sprinklers are at least 5 ft. from obstructions e.g. light fixtures, ceiling fans, etc. or in accordance with Table 8.2.5.5.2 and section 8.2.5.3. Sprinkler locations for continuous obstructions are in compliance with 8.2.5.5.
34. _____ Soffits and cabinets are provided sprinkler coverage in accordance with 8.2.5.6.
35. _____ Dry pipe and preaction systems can use only listed sprinklers which are installed in accordance with 8.3.4.1.1.
36. _____ Dry pipe and preaction systems can use K-factors exceeding 4.0 and less than 5.6 with corrosion resistant or galvanized coated pipe, 8.3.4.1.2.
37. _____ Dry pipe and preaction systems can use K-factors 5.6 or greater with pipe in compliance with section 5.2.
38. _____ Dry pipe and double interlock preaction systems have calculations showing water delivery at the most remote sprinkler is within 15 seconds, 8.3.4.3.1.
39. _____ Dry pipe and preaction systems riser is in a location that is protected from freezing conditions, 8.3.4.4.
40. _____ Dry pipe and preaction systems detection is provided in all sprinkler protected compartments and the detection system plans are provided, 8.3.4.5.
41. _____ Dry pipe and preaction systems piping details have pipe pitched at least ¼ in. for each 10 ft. for drainage, 8.3.4.7.
42. _____ Dry pipe and preaction systems air maintenance system is detailed and equipment data sheets are provided, 8.3.4.9.
43. _____ Sprinklers are in all areas except bathrooms 55 sq. ft. or less; clothes closets 24 sq. ft. or less with noncombustible or limited-combustible surface materials, and the least dimension does not exceed 3 ft.; garages, open attached porches, and carports; attics, crawl spaces, and concealed spaces not used; covered unheated projections from buildings at entrances/exits as long as there is another means of egress from the dwelling unit, 8.6.

Alarms

44. _____ Local flow alarm location and inspector's test connection are provided and detailed, except if the dwelling has smoke detectors in compliance with the building code, 7.6.

Hydraulic Calculations or Design Discharge

45. _____ Reference points match with plans.
46. _____ Pipe size references match the plans and size is determined by hydraulic calculations based on one of the following methods in section 8.4.4 or 8.4.5, or using the calculation methods in NFPA 13.
47. _____ Hydraulic calculations are also required when a system is gridded, looped, or connected to a city main less than 4 in., 8.4.7-8.4.9.
48. _____ Legend for calculation abbreviations are provided.
49. _____ Sprinkler specification matches what is on the plans and hydraulic calculations.
50. _____ Water flow information such as static psi, residual psi, and available gpm at 20 psi residual is provided.
51. _____ Hydraulic calculations can be provided using one of three methods described in section 8.4.4 when the system is connected to a city main of at least 4 in. in size and typical calculations include include static psi, pipe length, discharge gpm, K for drops, elevation data, friction loss, friction loss data for gate valve and backflow prevention device and equivalent pipe length, 8.4.4.
52. _____ Sprinklers without a listed discharge criteria: a single sprinkler discharge is not less than 18 gpm and a multi-sprinkler discharge design is not less than 13 gpm, 8.1.1.1.1, and .2.
53. _____ Sprinkler with a listing discharge criteria: the system provides at least the flow required for multiple and single sprinkler operation as specified by the listing, 8.1.1.2.1, and the flow must produce a minimum density of .05 gpm/ft² to the design sprinklers, 8.1.1.2.2.

NFPA 13D Sprinkler System Acceptance Inspection

2010 OFC and 2007 NFPA 13D

Date of Inspection: _____ Permit Number: _____

Business/Building Name: _____ Address of Project: _____

Contractor: _____ Contractor's Phone: _____

Reference numbers following checklist statements represent an NFPA code section unless otherwise specified.

Pass | Fail | NA

- | | | | |
|----------|-------|-------|---|
| 1. _____ | _____ | _____ | Approved drawing and certification documents on site. |
| 2. _____ | _____ | _____ | System is leak tested at normal operating pressure when an FDC is not provided, 4.3.1. |
| 3. _____ | _____ | _____ | The one system control valve for both the sprinkler and domestic systems is on. If the sprinkler system has its own control valve, the valve is supervised by one of the three approved methods, 7.1.2 |
| 4. _____ | _____ | _____ | Signage is adjacent to the main water shut-off valve: Warning, the water system for this house supplies a fire sprinkler system that depends on certain flows and pressures being available to fight a fire...Don't remove this sign., 6.3. |

Riser Room

- | | | | |
|----------|-------|-------|--|
| 5. _____ | _____ | _____ | Operate the drain valve on the system side of the control valve. |
|----------|-------|-------|--|

Sprinklers

- | | | | |
|-----------|-------|-------|---|
| 6. _____ | _____ | _____ | Spacing between sprinklers does not exceed 12 ft., sprinklers are not greater than 6 ft. from a wall, and sprinklers are not within 8 ft. of each other unless listing allows it and consult the plans 8.1.3. |
| 7. _____ | _____ | _____ | Sprinkler heads are not painted or covered or blocked. |
| 8. _____ | _____ | _____ | Proper type and temperature sprinklers are used. |
| 9. _____ | _____ | _____ | Escutcheon plates are installed and pendent/upright deflectors are within 1 in. to 4 in. from the ceiling, sidewalls are within 4 in. to 6 in. from the ceiling or all are per their listing. |
| 10. _____ | _____ | _____ | Pendent and upright deflectors in closets can be installed within 12 in. of the ceiling, 8.2.1.3. |
| 11. _____ | _____ | _____ | Sprinklers are in all areas except bathrooms 55 sq. ft. or less; clothes closets 24 sq. ft. or less with noncombustible or limited-combustible surface materials, and the least dimension does not exceed 3 ft.; garages, open attached porches, and carports; attics, crawl spaces, and concealed spaces not used; covered unheated projections from buildings at entrances/exits as long as there is another means of egress from the dwelling unit, 8.6. |

Pipe and Support

- | | | | |
|-----------|-------|-------|---|
| 12. _____ | _____ | _____ | Piping layout and pipe size are the same as the plans. |
| 13. _____ | _____ | _____ | Pipe hangers and supports are per the manufacturer's requirements. |
| 14. _____ | _____ | _____ | Pipe laid on open joists is secured to prevent lateral movement and other piping is secured to restrict movement. |
| 15. _____ | _____ | _____ | Pipes in attics are adequately insulated, 7.7. |
| 16. _____ | _____ | _____ | Antifreeze (AF) system has a 5 ft. drop U-loop at the interface of the supply water and the antifreeze system. If AF sprinklers are above the interface, the U-loop has check valve, a water control valve, and two solution test valves or it meets design details on plans. The local plumbing may require a backflow prevention device, check the plans. |

Additional Comments

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Inspection Date: _____ Approved or Disapproved _____ FD Inspector: _____

Inspection Date: _____ Approved or Disapproved _____ FD Inspector: _____

NFPA 13D Sprinkler Installation Certification

Permit #: _____ Date: _____

	Property Protected	System Installer	System Supplier
Business Name:	_____	_____	_____
Address:	_____	_____	_____
Representative:	_____	_____	_____
Telephone:	_____	_____	_____

Location of Plans: _____

Location of Owner's Manual: _____

- 1. Certification of System Installation:** Complete this section after system is installed, but prior to conducting operational acceptance tests.

This system installation was inspected and found to comply with the installation requirements of:

NFPA 13D
 IFC and IBC
 Manufacturer's Instructions
 Other (specify; FM, UL, etc.) _____

Print Name: _____

Signed: _____ Date: _____

Organization: _____

- 2. Certification of System Operation:** All operational features and functions of this system were tested and found to be operating properly in accordance with the requirements of:

NFPA 13D
 IFC and IBC
 Manufacturer's Instructions
 Other (specify) _____

Print Name: _____

Signed: _____ Date: _____

Organization: _____

**Pre-Final and Certificate of Occupancy Inspection
Requirements For Contractors
Contractors Checklist**

Sprinkler System Test Requirements

1. All certification forms and documents are required to be on the site for review:
 - Plans
 - Permit
 - A system hydrostatic test is required before calling for an inspection as well as the completion of with the items on this pretest form. Use the Acceptance Inspection checklist for the pretest.
 - Installation certification is completed, use the form contained in this book.
2. A person familiar with installation must be present to perform the test.
3. Owner's representative approval is needed for the time and date of testing.
4. All areas are accessible.
5. Hydrostatic testing and the flow test should be done during the same inspection.
6. If items 1-5 are incomplete, the inspection will be cancelled and another inspection request is required. A reinspection fee may be assessed.

Prior to the next approval test:

7. When there are device additions, contractor must provide:
 - As-builts and new calculations shall be submitted for review and approval.
 - Note: New plan review will be submitted as "supplemental information" and proof of the additional review fee payment is required.
8. A reinspection fee may be assessed if the system and paperwork are not ready.