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:**
- ✓ = 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, waterproof detection devices, and water flow 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 shut off 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 pendant 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 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.
54. ____ Sprinkler design for flat, smooth ceilings consists of up to 2 sprinklers within the same compartment with the largest water demand, 8.1.2.

**Pipe Support and Hangers**

55. ____ Piping support shall comply with submitted manufacturers instructions and/or listing criteria. The plumbing code will be consulted for piping that does not have support criteria provided. Lateral movement is prevented for pipe laid on joists or rafters and in general, pipe movement is to be supported to restrain movement, 7.4.

**Pipe and Valves**

56. ____ One control valve is provided for both the domestic water and sprinkler, unless a separate control valve is provided for the sprinkler system, 7.1.1 and it is electronically supervised, IFC 903.4

57. ____ A drain and test connection is provided in accordance with 7.2.1.

58. ____ Each portion of trapped dry system piping that is subject to freezing is provided a drain, 7.2.3.

59. ____ A waterflow test connection is provided if a waterflow alarm is provided, 7.2.4.

60. ____ Type and the diameter of pipe is provided. Pipe shall comply with Tables 5.2.1.1 and 5.2.2.2, 5.2.1.

61. ____ At least 1 in. steel pipe or at least ¾ in. for other than steel pipe is used in the sprinkler system, 8.4.3.

62. ____ Network systems are allowed ½ in. nonmetallic pipe or copper pipe with listed special fittings when in compliance with 10 conditions specified in 8.4.3.3.

**Additional Comments:**

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Review Date: ____________  Approved or Disapproved  FD Reviewer: ___________________

Review Date: ____________  Approved or Disapproved  FD Reviewer: ___________________

Review Date: ____________  Approved or Disapproved  FD Reviewer: ___________________
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.

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Approved drawing and certification documents on site.
System is leak tested at normal operating pressure when an FDC is not provided, 4.3.1.
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.
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.

Operate the drain valve on the system side of the control valve.
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.
Sprinkler heads are not painted or covered or blocked.
Proper type and temperature sprinklers are used.
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.
Pendent and upright deflectors in closets can be installed within 12 in. of the ceiling, 8.2.1.3.
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.
Piping layout and pipe size are the same as the plans.
Pipe hangers and supports are per the manufacturer’s requirements.
Pipe laid on open joists is secured to prevent lateral movement and other piping is secured to restrict movement.
Pipes in attics are adequately insulated, 7.7.
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

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-buils 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.