13D Residential Sprinkler System

Plan Review Worksheet

2006 IFC and 2007 NFPA 13D

This worksheet is for jurisdictions that permit the use of the 2007 NFPA 13D in lieu of IFC's referenced 2002 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 worksheet statements represent an NFPA code section unless otherwise specified.

Worksheet Legend: ✓ **or OK** = acceptable, **N** = need to provide, **NA** = not applicable

1. ____ A minimum of three sets of drawings are provided. The plans declare the design is based on the 2007 edition of NFPA 13D.
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, IFC 901.2.
4. ____ Plot plan details illustrate the water supply connection, pipe diameters, lengths, and fittings to the building, IFC 901.2.
5. ____ Building dimensions, cross sectional views, and the location of partitions are provided, IFC 901.2.
6. ____ Type of protection for nonmetallic pipe is provided, IFC 901.2.
7. ____ Dimensions for system piping, type of pipe, and component spacing, IFC 901.2.
8. ____ Equipment symbol legend is detailed, IFC 901.2.
9. ____ Total number of each type of sprinkler is noted on the plans, IFC 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. ____ If a stored water supply is used it shall provide the water demand rate in accordance with 6.1.2 and .3.
18. ____ Is the supply riser in a heated environment?
19. ____ A reliable water supply is provided in accordance with Section 6.2.

Multipurpose Piping Systems:

20. ____ Multipurpose system, without an FDC, that uses nonmetallic fittings, the fittings are designed to an operating pressure in accordance with 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 code official, 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 when the ceiling temperature does not exceed the threshold specified in 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. _____ For skylights exposed to direct sun, unvented concealed spaces under uninsulated roofs or unvented attics, sprinklers when required are provided in accordance with 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, IFC 901.2.
30. _____ Sloped ceiling sprinkler 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 distanced from obstructions e.g. light fixtures, ceiling fans, etc. in accordance with 8.2.5.2. Sprinkler locations for continuous obstructions are in compliance with 8.2.5.4.
33. _____ Sidewall sprinklers are distanced from obstructions e.g. light fixtures, ceiling fans, etc. in accordance with 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 K-factors with corrosion resistant or galvanized coated pipe as specified in 8.3.4.1.2.
37. _____ Dry pipe and preaction systems can use K-factors with other pipe as specified in 5.2.
38. _____ Dry pipe and double interlock preaction systems have calculations showing water delivery at the most remote sprinkler is within 15 seconds or within 15 seconds from an inspectors test outlet that is provided at the furtherest end of the system piping. The test outlet will flow at least the amount of water the system's smallest sprinkler will flow, 8.3.4.3.1 and 8.3.4.3.2.
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. _____ Pipe is sloped at least ¼ in. for each 10 ft. in order to drain dry pipe and preaction systems, 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, clothes closets where the areas, least dimension, and construction methods comply with 8.6. Other building areas not protected are in compliance with the areas listed in 8.6.4 and 8.6.5.

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 is 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 are 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. Calculations include information as specified in 8.4.4.
52. _____ Sprinklers without a listed discharge criteria meet the discharge criteria specified in 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 minimum density complies with 8.1.1.2.2.

54. ____ Sprinkler design for flat, smooth ceilings include the number of sprinklers having the largest water demand as specified in 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.
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:

Review Date: _____ Approved or Disapproved FD Reviewer: _____

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