MOBILE FIRE - RESCUE DEPARTMENT
FIRE CODE ADMINISTRATION

Sprinkler system Plan Review
2012 International Fire Code and NFPA 13R

Date of Review ___/___/_____ **BLD201__ -_____**

Project Address: _____ Project Name: _____

Professional Engineer's Name: _____ Phone: _____

Sprinkler Contractor's Business Name: _____ Phone: _____

Sprinkler Contractors Name: _____ Phone: _____

Sprinkler Contractor's Email Address: _____

Occupancy Classification: _____

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

1._____Two sets of drawings are provided.

2._____System components are listed for intended use and compatible with the system, and specification data product sheets are provided.

Drawings shall detail the following and items listed in 8.1.:
General

3. _____The type of system is noted: __ wet, __ dry, __antifreeze not exceeding 40 gals., __ pre-action, __ dry and type of sprinklers are noted: __pendent, ___upright, ____sidewall, .

4. _____Scale: a common scale shall be used and plan information is legible, .

5. _____ Plot plan showing supply piping and pipe size from the water source to the building, .

6. _____ Building's dimension, location of partitions, and fire walls, .

7. _____ Room dimensions, labeled rooms, occupancy class of each room. If the room label is not descriptive provide the room's type of use, .

8. _____ Full-height cross elevation views and include ceiling construction, .

9. _____ Type of protection for nonmetallic pipe, .

10. _____ Dimensions for system piping, type of pipe, and component spacing, .

11. _____ Equipment symbol legend and the compass point, .

12. _____ A water flow alarm test connection is provided, .

13. _____ **All water supply valves and flow switches are supervised, IFC 903.4.**

14. _____ Exterior flow alarm location is shown and the type identified, if electric, it is listed for outdoor use, ., and it is connected to the building fire alarm, if provided, .

Note: if an electric bell is utilized, it shall be connected to the Fire Alarm Control Panel and listed for outdoor use,

16. _____ Backflow prevention device, when required by state or local regulations, is shown in the pipe schematic, listed specification sheet and pressure loss data are provided,

17. _____ Antifreeze systems are detailed and designed in accordance with NFPA 13:

18. _____ Water supply provides the system demand for at least 30 minutes,

19. _____ If a fire pump is required it is designed and detailed per NFPA 20 and this book's checklist,

20. _____ Pressure gauges for the riser are provided and detailed for supply and system pressure,

21. _____ Riser coverage does not exceed 52,000 sq. ft., .

22. _____ Aboveground water supply pipe is protected against freezing conditions, .

Sprinklers

23. _____ Total number of each type of sprinkler is noted and the number of sprinklers per floor are noted,

24. _____ Sprinkler location is correct, ceiling and roof sectionals are provided for clarification.

25. _____ Type of sprinklers: sprinkler K-factors, temperature rating, and orifice size, .

26. _____ Residential sprinklers are limited for use for wet pipe automatic sprinkler systems unless specifically listed for another use,

27. _____ When listed quick-response sprinklers are used in dwelling units, the dwelling unit shall meet the definition of a compartment and a maximum of four sprinklers are used, sprinkler density complies with 6.2., providing at least 0.1 gpm/ft^2 in the dwelling unit.

28. _____ Sprinklers are rated for ordinary temperature (135°F-175˚F) when ceiling temperature does not exceed 100°F,

29. _____ Sprinklers in areas with a ceiling temperature of 101°F-150°F are equipped with intermediate temperature sprinklers (175°F-225°F),

30. _____ Distance of sprinklers from heat sources complies with Table 6.2..

31. _____ Sprinklers outside the dwelling unit are quick-response, .

32. _____ Each sprinkler coverage area is within its listing limitations, .

33. _____ Sprinkler coverage not required for an architectural area, e.g., bay window, etc., up to 18 sq. ft., dimension up to 2 ft. in depth and up to 9 ft. in length and is within sprinkler's spacing distance, .

34. _____ Sprinkler coverage is not required for shadowed areas in a compartment not exceeding 800 sq. ft., where the area does not exceed 3 sq. ft., the aggregate of the areas do not exceed 12 sq. ft. in a compartment and 30 sq. ft. in a dwelling unit, .

35. _____ Sloped ceiling spacing is in accordance with Section 6.4.

36. _____ Sidewall sprinklers are 4 in. to 6 in. from the ceiling unless listing permits otherwise, .

37. _____ Closets and storage areas not exceeding 400 cu. ft. a single sprinkler provides coverage and is located at the highest ceiling level, .

38. _____ Pendent sprinkler are at least 3 ft. form obstructions, e.g., light fixtures, ceiling fans, etc., or in accordance with 6.4.. Sprinkler locations for continuous obstructions are in compliance with 6.4.,

39. _____ Sidewall sprinklers are at least 5 ft. form obstructions, e.g., light fixtures, ceiling fans, etc., Sprinkler locations for continuous obstructions are in compliance with 6.4.,

40. _____ Soffits and cabinets are provided sprinkler coverage in accordance with 6.4..

41. _____ Ceiling pockets are sprinkled unless the pocket volume is 100 sq. ft. or less, its depth is 1 ft. or less, the fall below is protected, it is separated from other pockets by at least 10 ft., and the finish material is noncombustible or limited combustible, .

42._____ Sprinklers are not required in dwelling unit bathrooms less than 55 sq. ft.,.

43. _____ Sprinklers are not required in dwelling unit clothes closets, pantries, or linen closets less than 24 sq. ft. with the least dimension being 3 ft. or less, and walls and ceilings have noncombustible or limited-combustible surface materials, .

44. _____ Sprinklers are provided in closets containing heating or air-conditioning equipment, .

45. _____ Sprinklers on balconies and decks on buildings of Type V construction shall comply with Section 903..

46. _____ Sprinklers are not required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces used exclusively for dwelling unit ventilation equipment, crawl spaces, floor/ceiling spaces, elevator shafts, and other non-used concealed areas, .

47. _____ Areas outside dwelling unit: Residential sprinklers can protect these spaces with flat smooth ceilings: (1) lobbies not in hotels or motels, (2) foyers, (3) corridors, (4) halls, (5) lounges, (6) other areas with fire loads similar to residential, .

48. _____ Garage separated from the residential building by fire-resistive construction, which qualifies the garage as a separate building is sprinkled in accordance with NFPA 13, NFPA 13R.

49. _____ Garage accessible by people from more than 1 dwelling unit and not constructed like 7.3 is part of the building and is protected in accordance with 7.2,.

50. _____ Garages only accessible from one dwelling unit is protected in accordance with 7.3.

Drains and Test Connection

51. _____ At least a 1 in. nominal diameter drain with a valve is detailed on the system side of the control valve,

52. _____ A ½ in. drain is provided for each trapped portion of a dry system subject to freezing,

53. _____ At least a 1 in. test connection with a valve is detailed,

Pipe and Valves

54. _____ One control valve is provided for both the domestic water and sprinkler, unless a separate control valve is provided for the sprinkler system and it is **electronically supervised or locked open,**

Pipe Support and Hangers Are in Accordance with NFPA 13, 13R 6.13.

55. _____ Type and locations of hangers, sleeves, braces, and methods of securing pipe are shown and the manufacturer's installation manual for plastic pipe is provided,

56. _____ Steel pipe hanger spacing is not greater than 12 ft. for 1 in. to 1¼ in. not greater than 15 ft. for 1½ in. to 8 in.,

57. _____ Light wall steel pipe hanger spacing is not greater than 12 ft. for 1 in. to 3 in. pipe,

58. _____ Branch lines are provided with one hanger per section of pipe,
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59. _____ Mains are provided with one hanger between each branch line unless Sections 9.2. . are met,

60. _____ Cross mains are provided with one hanger between each two branch lines or in compliance 9.2.

61. _____ Risers in multistory buildings are provided with supports at the lowest level, each alternate level, below offsets, and at the top,

62. _____ The maximum span distance between riser supports not to exceed 25 ft.,

Seismic Protection in Accordance with NFPA 13 below, (13R 6.13)

63. _____ Flexible couplings may be used for pipe 2½ in. or larger at structural separations or within 2 ft. of expansion joints, within 2 ft. of the top and bottom of all risers, within 1 ft. above and below a floor penetration in multistory buildings, and on both sides of and within 1 ft. of concrete or masonry wall penetrations unless pipe clearance is provided,

64. _____ A 6 ell seismic separation assembly or listed flexible piping with four-way bracing within 6 ft., for any pipe, is provided and detailed at building seismic joints,

65. _____ Proper pipe clearance is noted on the plans for pipe penetrations, 9.3.4. Minimum clearance around pipes: 2 in. for 1 in. to 3½ in., 4 in. for 4 in. and larger, refer to the 3 spacing variations,

66. _____ Lateral sway bracing is required at a maximum spacing of 40 ft. for all mains, cross mains, and branch lines 2½ in. and larger,

67. _____ Lateral sway bracing is designed not to exceed the maximum zone of influence loading provided for its spacing,

68. _____ Bracing is provided for the last length of pipe of the end of a feed or cross main,

69. _____ Bracing is required unless all the pipe is supported by rods less than 6 in. or by 30˚ wrap-around U-hooks for any size pipe,

70. _____ Longitudinal sway bracing is a maximum of 80 ft. for mains and cross mains and within 40 ft. of the end of the line,

71. _____ A four-way sway brace is provided at least every 25 ft. and at the top of the riser if the top of the riser exceeds 3 ft. in length,

72. _____ Seismic bracing calculations and the zones of influence are detailed and provided for each brace to be used as shown in NFPA Figure A.9.3.5 (b) and the design should be in compliance with IBC 16 and ASCE 7, 9.3.5.6 through 9.3.5.8. Supplementing the calculations will be justification for the specific selection of the seismic coefficient

73. _____ Longitudinal and lateral bracing is provided for each run of pipe between the changes of direction unless the run is less than 12 ft. and supported by adjacent pipe run bracing,

74. _____ Branch lines are restrained at the end sprinkler of each line and restrained against vertical and lateral movement,

75. _____ Branch line method of restraint is in accordance with Section 9.3..

76. _____ Restraints for branch lines shall be at intervals not greater than specified in Table 9.3. and justification for selection of the seismic coefficient is provided,

77. _____ Detailed are restraints for sprigs 4 ft. long or greater against lateral movement,

Fire Department Connection

78. _____ Detail local water flow alarm location is shown above the FDC.

79. _____ An FDC is provided for a building exceeding 2,000 sq. ft. or more than 1 story,

80. _____ The FDC location with a check valve is detailed on the street side or response side of building.

81. _____ FDC is 2½ in. connection and 18 in. to 48 in. above grade, .

Design Criteria and Hydraulic Calculations

82. _____ Reference points match with plans.

83. _____ Pipe size references match the plans.

84. _____ Sprinkler information matches the plans.

85. _____ Water flow information is provided; static psi, residual psi, gpm at 20 psi residual with graphed results.

86. _____ Calculations are correct: static psi, pipe length, gpm, K for drops or branch, elevation data, hose allowance, friction loss, and equivalent pipe length. Minimum sprinkler pressure is that specified by the listing or 7 psi, whichever is greater,

87. _____ Domestic demand calculation are provided and added to the sprinkler system demand where both systems share a common water supply main, .

88. _____ The system provides at least the flow required for multiple and single sprinkler operation as specified by the listing,, and at the flow must produce a minimum density of .05 gpm/ft^2 to the design sprinklers,.

89. _____ Sprinkler design for flat, smooth ceilings consists of up to 4 sprinklers within the same compartment with the largest flow and pressure demand, .

90. _____ Areas outside dwelling unit are designed in accordance with NFPA 13 or as a compartmented area with a demand of no greater than 4 sprinklers when all the following are met: (1) Is compartmented into areas 500 sq. ft. or less by 30 minute fire construction, (2) Area is protected by quick-response or residential sprinklers not exceeding 130 sq. ft. for ordinary hazard occupancies, 225 sq. ft. for light hazard occupancies or in accordance with the sprinkler listing, (3) Openings have a lintel of at least 8 in. in depth, (4) Total area of openings does not exceed 50 sq. ft. per compartment, (5) Design densities are per 7.2.

91. _____ Garages that are only accessible from 1 dwelling unit are part of that dwelling and are sprinkled with residential sprinklers in accordance with 7.3 or quick-response sprinklers with a density of .05 gpm/ft^2 over the area of the garage up to 4 sprinklers, .

92. _____ A legend for calculation abbreviations is provided.

Review/Inspection Date ___ / ___ / 20___ **Reviewer:** _____