

SANTA ROSA FIRE DEPARTMENT
FIRE PREVENTION BUREAU
PLAN REVIEW CHECKLIST

July 1, 2010



RESIDENTIAL FIRE SPRINKLERS
NFPA 13R

Address:		Permit #:
Inspector:	Date:	Status:
Inspector:	Date:	Status:
A-Approved; AC-Approved w/comments; I-Incomplete; D-Denied		

This Checklist outlines general requirements. Information contained herein applies to typical instances and may not address all circumstances.

FILE REVIEW

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| | Y | N | |
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | SUBDIVISION MAP CONDITIONS - Review subdivision specific conditions and history. Are fire sprinklers conditioned; is there an alternate method request approval? Was a Phase I Environmental Site Assessment required? Add all conditions to approval letter if not included on plans. Significant requirements such as road width, fire sprinklers or a fire hydrant shall be added to the approved plans and will require a re-submittal. |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | ENVIRONMENTAL SITE ASSESSMENT – Submitted and approved? If required, a Phase I Environmental Site Assessment shall be approved prior to issuance of any grading, demolition or construction permits. |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | FEES – Permit fees entered in Permits Plus. 3 rd or greater checks require an hourly fee for the review. |

SITE PLAN

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| 4. | <input type="checkbox"/> | <input type="checkbox"/> | PLANS – Three (3) sets of drawings are provided. The plans declare the design standard is the 2002 edition year of NFPA 13R. |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | LISTING NFPA 13R 3.2.4 - System components are listed for intended use and compatible with the system, and equipment data sheets are provided. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | WATER SUPPLY – SRCC 18- 44. 903.3. Check fire flow information from Utility Map and GIS. Required 1500gpm. 2500gpm required for homes within a VHFSZ. |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | FIRE HYDRANTS – SRCC 18- 44. 903.3.1. Fire hydrants shall be spaced along City streets at 500 ft (300 ft for SFD's within the WUIFA) and along both sides of divided streets. Where flag lots are provided and homes are set back from the street, a fire hydrant must be located within 150ft of all points of the first story as measured by an unobstructed route or an on-site fire hydrant is required. Fire hydrant design and installation is a separate permit. |

DESIGN CRITERIA and HYDRAULIC CALCULATIONS

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| 8. | <input type="checkbox"/> | <input type="checkbox"/> | Pipe diameters match the plans - NFPA 13R 6.1.7. |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | Sprinkler information matches the plans - NFPA 13R 6.7.1.2 |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | Piping shall be sized using hydraulic calculation procedures in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems - NFPA 13R 6.7.4. |
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.5.5 - The domestic water design demand is added to the sprinkler design when there is a single water supply, |
| 12. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.4 - Calculations are correct: static PSI, pipe length, GPM, calculated K-for for riser nipples or drop nipples, elevation data, hose allowance, friction loss, and equivalent pipe length, |
| 13. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.1.1 and 6.7.1.1.2 - Sprinklers without a listed discharge criteria are assigned a discharge criteria in accordance with, 6.7.1.1.1 and 6.7.1.1.2. |
| 14. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.1.2.2 - Sprinklers with a listing discharge criteria: sprinklers comply with the discharge criteria for multiple and single sprinkler operation as required by their listing, 6.7.1.1.2.1, and at the discharge flow complies with 6.7.1.1.2.2. |
| 15. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.2 - Sprinkler design for flat, smooth ceilings are calculated in accordance with Section 6.7.1.2 for the greatest hydraulic demand, |
| 16. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R A.6.7.1.2 - Sprinkler design for sloped, beamed, and pitched ceilings could require special design features such as larger flows or a design of 5 or more sprinklers to operate in the compartment, |
| 17. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.3 - Sprinklers without a listed coverage criteria shall not exceed the area limits for sprinkler coverage area, |
| 18. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.2.1 - Areas outside dwelling unit shall have the design discharge, number of design sprinklers, coverage area, and sprinkler positions designed in accordance with Section 6.7.2.1. |
| 19. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.2.3 - Areas outside dwelling unit: Residential sprinklers can protect building areas with flat smooth ceilings not exceeding 10 ft. as listed in Section 6.7.2.3. |
| 20. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.3.1.- A garage separated from the residential building by fire-resistive construction that qualifies the garage as a separate building is sprinklered in accordance with NFPA 13 criteria, |
| 21. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.3.2.- Garage areas accessible by people from more than 1 dwelling unit and where the area is not constructed like 6.7.3.1 is a part of the building and is protected in accordance with 6.7.2. |
| 22. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.3.3.- A garage that is only accessible from 1 dwelling unit is a part of that dwelling and is sprinklered with residential sprinklers in accordance with NFPA 13R 6.7.1 or quick-response. |
| 23. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 14.1.3 - Hydraulic reference points match the plans. |
| 24. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 14.3.1 - Hydraulic calculations are provided for single sprinkler and multi sprinkler design. |

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| 25. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 14.3.3 - A legend for calculation abbreviations is provided. |
| 26. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 16.5 - Water flow information is provided; static PSI, residual PSI, GPM at 20 PSI residual with graphed results. |
| 27. | <input type="checkbox"/> | <input type="checkbox"/> | Title 24 CFC 903.3.5.1.2 - A single combination water supply shall be allowed provided that the domestic demand is tied to the sprinkler demand as required by NFPA 13R. |

GENERAL

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| 28. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 5.3.- The type of system is noted: ___ wet, ___ dry, ___antifreeze not exceeding 40 gals., ___ pre-action, and <ul style="list-style-type: none">o type of sprinklers are noted: ___pendent, ___upright, ___sidewall, |
| 29. | <input type="checkbox"/> | <input type="checkbox"/> | 6.1.5 Sprinkler plans shall provide a plan of each floor. |
| 30. | <input type="checkbox"/> | <input type="checkbox"/> | 6.1.6 Sprinkler plans shall be capable of being easily duplicated. |
| 31. | <input type="checkbox"/> | <input type="checkbox"/> | 6.1.7 Sprinkler plans shall indicate the following: <ul style="list-style-type: none"><input type="checkbox"/> <input type="checkbox"/> Name of owner and occupant<input type="checkbox"/> <input type="checkbox"/> Location, including street address<input type="checkbox"/> <input type="checkbox"/> Point of compass<input type="checkbox"/> <input type="checkbox"/> Ceiling construction<input type="checkbox"/> <input type="checkbox"/> Full height cross section<input type="checkbox"/> <input type="checkbox"/> Location of fire walls<input type="checkbox"/> <input type="checkbox"/> Location of partitions<input type="checkbox"/> <input type="checkbox"/> Occupancy of each area or room<input type="checkbox"/> <input type="checkbox"/> Location and size of concealed spaces, attics, closets, and bathrooms<input type="checkbox"/> <input type="checkbox"/> Any small enclosures in which no sprinklers are to be installed<input type="checkbox"/> <input type="checkbox"/> Size of the city main in the street, pressure, whether dead-end or circulating and, if dead-end, the direction and distance to the nearest circulating main, and the city main test results including elevation of the test hydrant<input type="checkbox"/> <input type="checkbox"/> Make, manufacturer, type, heat-response element, temperature rating, and nominal orifice size of the sprinkler<input type="checkbox"/> <input type="checkbox"/> Temperature rating and location of high-temperature sprinklers<input type="checkbox"/> <input type="checkbox"/> Number of sprinklers on each riser, per floor<input type="checkbox"/> <input type="checkbox"/> Kind and location of alarm bells<input type="checkbox"/> <input type="checkbox"/> Type of pipe and fittings<input type="checkbox"/> <input type="checkbox"/> Type of protection for nonmetallic pipe |

- Nominal pipe size with lengths shown to scale
 - Location and size of riser nipples
 - Types of fittings and joints and the locations of all welds and bends
 - Types and locations of hangers, sleeves, and braces, and methods of securing sprinklers, where applicable
 - All control valves, check valves, drain pipes, and test connections
 - Underground pipe size, length, location, weight, material, and point of connection to the city main; type of valves, meters, and valve pits; and depth at which the top of the pipe is laid below grade
 - In the case of hydraulically designed systems, the material to be included on the hydraulic data nameplate
 - Name and address of the contractor
- Y N**
- 32. NFPA 13R 6.4.3 and 6.6.8 - A water flow alarm and test connection are provided,
 - 33. NFPA 13R 6.5.2 - The system demand has at least 30 minutes of water supply,.
 - 34. NFPA 13R 6.5.4 - If a fire pump is required it is designed and detailed in accordance with NFPA 20 and this book's worksheet,
 - 35. NFPA 13R 6.6.5 - Pressure gauges are provided and detailed for supply and system pressure
 - 36. NFPA 13: 7.5 - Antifreeze systems are detailed and designed in accordance with NFPA 13.
 - 37. Title 24 CFC 903.4- All water supply valves and flow switches are supervised,.
 - 38. Title 24 CFC 903.4.2 and NFPA 13R 6.6.8 - Exterior flow alarm location is shown and the type identified, if electric, it is listed for outdoor use, and connected to the building fire alarm, if provided,.
 - 39. Title 24 CFC 903.3.5.- Backflow prevention device, when required, is shown in the pipe schematic, listed specification sheet and pressure loss data is provided.

PIPE SUPPORT and HANGERS

- 40. NFPA 13R 6.1.7 - Type and locations of hangers, sleeves, braces, and methods of securing pipe are shown,
- 41. NFPA 13R 6.6.6- Pipe Support and Hangers are in Accordance with NFPA 13.
- 42. NFPA 13R 6.6.6 - Pipe hanger spacing is in compliance with NFPA 13 Table 9.2.2.1.
- 43. NFPA 13 9.2.3.2 - Branch lines show one hanger per section of pipe, exceptions are listed,
- 44. NFPA 13 9.2.4 - Mains show one hanger between each branch line unless the requirements in NFPA 13 9.2.4.2 through 9.2.4.5. are met.
- 45. NFPA 13 9.2.4 - Cross mains show one hanger between each two branch lines, exceptions are listed,
- 46. NFPA 13 9.2.5.3 - Risers in multistory buildings show supports at the lowest level, each alternate

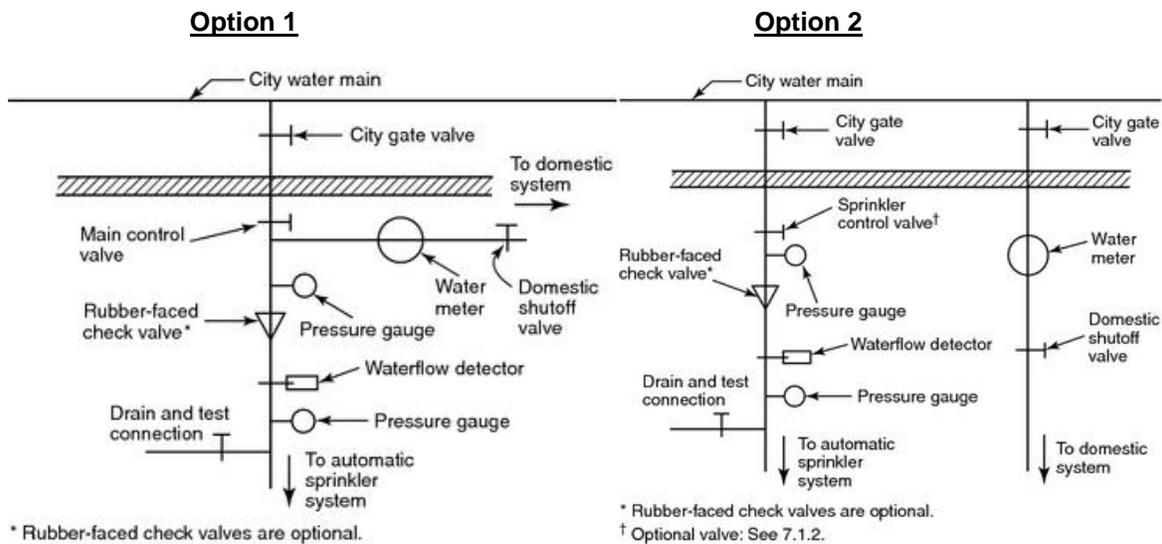
47. **Y** **N** NFPA 13 9.2.5.4 - Risers have a distance between supports not to exceed 25 ft.

DRAINS AND TEST CONNECTIONS

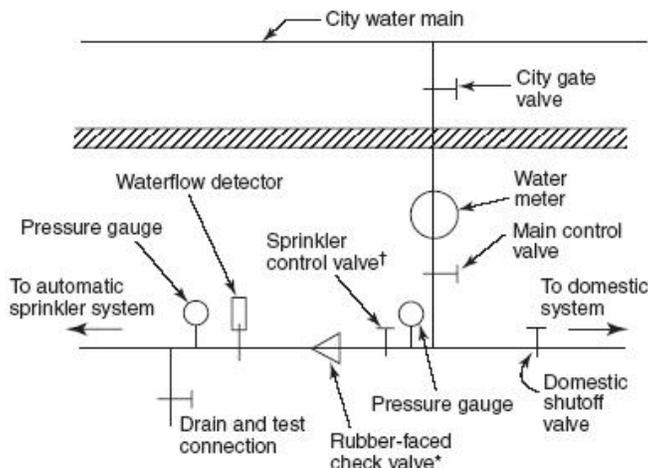
48. NFPA 13R 6.6.2.1 and 6.6.2.2 - At least a 1 in. nominal diameter drain with a valve is detailed as being on the system side of the control valve,
 49. NFPA 13R 6.6.2.4 - Each portion of trapped dry system piping that is subject to freezing is provided a ½ in. drain,
 50. NFPA 13R 6.6.3.1 - The location and size of a test connection with a valve is detailed and complies with 6.6.3.1.

PIPE AND VALVES

51. Title 23 CFC 903.4 - One control valve is provided for both the domestic water and sprinkler, unless a separate control valve is provided for the sprinkler system, 6.6.1.1 and it is electronically supervised,



Option 3



* Rubber-faced check valves are optional.
 † Optional valve: See 7.1.2.

SEISMIC BRACING

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| 52. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.6- Seismic Bracing in accordance with NFPA 13 Chapter 9. |
| 53. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.2.2 and 9.3.2.3 - Flexible couplings may be used for pipe 2½ in. or larger in accordance with NFPA 13 Sections 9.3.2.2 and 9.3.2.3. |
| 54. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.3 - A seismic separation assembly for piping is provided at building seismic joints. |
| 55. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.4.2 – 9.3.4.5 - Proper pipe clearance is noted on the plans for pipe penetrations in walls, floors, platforms or foundations, 9.3.4. Minimum clearance is in accordance with section NFPA 13 9.3.4.2 – 9.3.4.5. |
| 56. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.3.1 - Lateral sway bracing is required at a maximum spacing of 40 ft. for all feed and cross mains, and branch lines 2½ in. and larger, |
| 57. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.3.3 - Lateral sway bracing can be spaced up to 50 ft. if the design is in compliance with NFPA 13 9.3.5.3.3. |
| 58. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.3.2 - Lateral sway bracing is within 20 ft. of the end of the pipe, |
| 59. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.3.4 - A lateral sway brace is provided on the last pipe of a feed or cross main, |
| 60. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.3.7 and 9.3.5.3.8 - Lateral sway bracing is required unless all the pipes are supported by rods less than 6 in. or by 300 wraparound U-hooks for any size pipe, |
| 61. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.4 - Longitudinal sway bracing is a maximum of 80 ft. for mains and cross mains and within 40 ft. of the end of the line. |
| 62. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.5 - A four-way sway brace spacing on a riser does not exceed 25 ft. and a four-way sway brace is located at the top of the riser if the top of the riser exceeds 3 ft. in length. |

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| 63. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 Figure A 9.3.5.6(e) - Seismic bracing calculations are detailed and provided for each brace to be used as shown in NFPA 13 Figure A.9.3.5.6(e). |
| 64. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.11- Longitudinal and lateral bracing is provided for each run of pipe between the change of direction unless the run is less than 12 ft. and supported by adjacent pipe run bracing, |
| 65. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.6.1-9.3.6.3 - Branch line method of restraint is detailed and in accordance with NFPA 13 Sections 9.3.6.1-9.3.6.3. |
| 66. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.6.4- Restraints for branch lines shall be at intervals not greater than 30 ft. if line movement will impact equipment or structural elements. |
| 67. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.6.5. -Restrain riser nipples 4 ft. long or greater against lateral movement. |
| 68. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13 9.3.5.6 – 9.3.5.11.- Calculations for sway bracing zone of influence may be required. |

SPRINKLERS

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| 69. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.1.7 - Total number of each type of sprinkler is noted and the number of sprinklers per floor are noted. |
| 70. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.1.7 - Sprinkler location is correct. |
| 71. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.1.7- Type of sprinklers: sprinkler K-factors, temperature rating, and orifice size. |
| 72. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.7.1.1 - Residential sprinklers are limited for use for wet pipe automatic sprinkler systems unless specifically listed for another use. |
| 73. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.7.1.3- 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. The sprinkler density complies with 6.6.7.1.3. |
| 74. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.7.1.5 - Sprinklers are rated for ordinary temperature (135°F-175°F) when ceiling temperature does not exceed 100°F. |
| 75. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.7.1.5.2 - Sprinklers installed where maximum ambient ceiling temperatures are between 101°F and 150°F (39°C and 66°C) shall be intermediate temperature-rated sprinklers unless modified by 6.6.7.1.5.3. |
| 76. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R Table 6.6.7.1.5.3 - Distance of sprinklers from heat sources complies with Table 6.6.7.1.5.3. |
| 77. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.7.2 - Quick-response sprinklers are used when protection is on the outside a dwelling unit. |
| 78. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.7 - Each sprinkler coverage area is within its listing limitations. |
| 79. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.3.1.2 and 6.7.1.3.1.3 - Residential sprinklers without a listed coverage criteria: Sprinkler separation is a maximum of 12 ft. and a maximum of 6 ft. from the wall unless the listing states otherwise. |
| 80. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.3.1.4 - Residential sprinklers without a listed coverage criteria: Sprinkler separation is a minimum of 8 ft. within a compartment unless the listing states otherwise. |
| 81. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.5.2.1 - Sidewall sprinklers distance from the ceiling complies with 6.7.1.5.2.1. |

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| 82. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.7.1.5.4 - A single sprinkler at the highest ceiling level can provide coverage for closets and storage areas not exceeding 300 cu. ft. and the lowest point of the ceiling height is 5 ft. |
| 83. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.8.2 - Sprinklers are not required in noncombustible dwelling unit bathrooms where the area and the walls and ceiling meet the construction requirements of 6.8.2. |
| 84. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.8.3 - Sprinklers are not required in dwelling unit clothes closets, pantries, or linen closets, provided the closet area, its least dimension, and its method of construction complies with 6.8.3. |
| 85. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.8.4 - Sprinkler protection for open and attached porches, balconies, corridors, and stairs are not required, <ul style="list-style-type: none">○ If the building construction is of Type V balconies and decks require sprinkler protection in accordance with Title 23 CFC 903.3.1.2.1. |
| 86. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.8.5 - Sprinklers are not required for areas not used for living purposes or used for storage as listed in 6.8.5. |

FIRE DEPARTMENT CONECTIONS

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| 87. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.4.1- At least one fire department connection is provided for buildings accessible by a fire department that exceed 2000 ft ² (186 m ²) or are more than a single story. |
| 88. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 13R 6.6.4.2- FDC is provided a connection that is at least a 1½ in. |
| 89. | <input type="checkbox"/> | <input type="checkbox"/> | Title 24 CFC 912.2 - The FDC location is detailed on the street side or response side of building or as approved by the fire official, and when connected to the water supply it will not obstruct emergency vehicle access to the building, |