



Mobile Fire-Rescue Department Bureau of Fire Prevention
 2851 Old Shell Road Mobile, Al 36607 (251)208-7484 Fax: (251)208-7162



Water Mist System Plan Review

March 2010

Permit Number: _____

Date of Review: ____/____/____ Business/Building Name: _____

Address of Project: _____

Designer Name: _____ Designer's Phone: _____

Contractor: _____ Contractor's Phone: _____

System Application: Local ____ Total Compartment ____ Zoned ____ **Design:** Pre-engineered ____
 Engineered ____ **System Type:** Low Pressure ____ Intermediate Pressure ____ High Pressure ____

Nozzle Types: Auto ____ Non-auto ____ Hybrid ____

IFC and 2003 NFPA 750

Worksheet Legend: OK = acceptable N = need to provide NA = not applicable

1. ____ 2 sets of drawings are provided.
2. ____ Equipment is listed for intended use and compatible with the system and equipment data sheets are provided.

Plan Set Shall Provide and Detail the Following (11.1):

General:

3. ____ Scale: a common scale shall be used and plan information is legible.
4. ____ Description of the water and gas storage containers including internal volume, design pressure at standard temperature and pressure, 11.1.5 (9).
5. ____ Building dimensions, location of fire partitions and fire walls.
6. ____ Description of the hazards or occupancies being protected and if these areas are occupied, 11.1.5 (7)
7. ____ Full height cross sections, which include ceiling construction.
8. ____ System application, nozzle type, operation method, and media type.
9. ____ Device and nozzle location, provide sectional view detailing detectors position.
10. ____ Type of devices and detail proper device wiring for detectors, horns, etc.
11. ____ Equipment symbol legend and compass point.
12. ____ Water mist control panel location is detailed and connected to the building fire alarm system, if the building is equipped with such a system.
13. ____ Sequence of operation for operation of the water mist system, 11.1.5 (22).

Detection System Riser, 5.10.1.1 and 11.1.5:

14. ____ Riser diagram shows the number and type of devices, audible, visual, release, shutdown, and discharge controls, per circuit, zone ID, a dedicated 120 AC power supply, batteries, panel, etc.

Point to Point System Wiring Diagram, 11.1.5(23):

15. ____ Interconnection and wire routing to identified devices and controls per circuit.
16. ____ Indicate the number of conductors and wire gauge for each circuit.
17. ____ Identify separate zones, circuits, and end of line resistor locations.



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Alarm Indicating Circuit Load Consumption of Circuits, 11.1.5:

18. ___ Quantity of signaling devices, current consumption, and end-of-line voltage for each circuit.
19. ___ Based on the approximate length of each circuit and the conductor amperage, determine the resistance for each 1,000 feet of wire using National Electrical Code ampacity values or those specified by the manufacturer of the conductors.
20. ___ Show the formula and acceptable circuit limits on the drawing or on an attached sheet including:
 21. ___ A. Standby power consumption of all current drawing devices multiplied by the hours required by NFPA (24 hours) including power consumption of the control panel modules.
 22. ___ B. Power consumption of all devices on standby power; including door holders, relays, smoke detectors, etc.
 23. ___ C. Alarm power consumption of all current drawing devices multiplied by the minutes required by NFPA (5 minutes).
 24. ___ D. Formula format for battery calculations.

System Devices:

25. ___ Pre-engineered Water Mist system layout meets the manufacturer's listing requirements and a specification/design manual is provided, 5.10.2.1. Alarm initiating and signaling devices are installed in accordance with NFPA 72.
26. ___ Equipment and detectors are listed for use and the listing data sheets are provided, 5.1.1.
27. ___ Two sources of electrical power are provided (24 hr minimum standby power), 5.10.2.2.
28. ___ Emergency release device is provided and detailed, unless each nozzle is thermally activated, 5.10.3.5.
29. ___ Normal manual control(s) for activation is detailed to be accessible, labeled, and mounted 4 ft. or less above the floor level, 5.10.3.6.
30. ___ Pneumatic control lines are protected against damage and supervised, refer to the exceptions, 5.10.4.3.
31. ___ When automatic activation is provided, the method is designed in compliance with 5.10.1.2.

Battery Calculation Sheet Includes, 5.10.1.1 and 5.10.2.2.:

32. ___ Standby power consumption of all current drawing devices multiplied by the hours required by NFPA (24 hours), including power consumption of the control panel modules.
33. ___ Power consumption: Transfer to secondary power (UPS or generator), batteries provide no power loss for 15 minutes.
34. ___ Primary batteries shall be sized to at least 100 percent of maximum normal load.

Water Mist Information:

35. ___ Type of system, system application, type of nozzles, operation method, and media type.



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36. ____ Design objective and hazard classifications are provided, 8.3.1 and 8.4.2.
37. ____ Components subject to corrosion are protected, 5.1.3.
38. ____ If required a FDC is detailed on the discharge side of pressure source and prior to the filter/strainer, 10.5.5.

Calculations:

39. ____ System hydraulic and atomizing medium calculations are provided in accordance with Chapter 9.
40. ____ Hydraulic calculation nodes match plan nodes.
41. ____ Hydraulic junction points balance within the pressure specified in 9.3.5 and equivalent pipe lengths are in accordance with 9.3.6.
42. ____ Nozzle pressures are within limitations specified by the manufacturer, 9.4.1.2.
43. ____ The results of the hydraulic and pneumatic calculations at the supply point and at the nozzle are provided, 9.4.6.
44. ____ Water supply is designed for the largest single hazard or group of hazards, 10.2.
45. ____ Volume and pressure of the propellant gas is in accordance with Section 9.4.1.1.

Atomizing Media:

46. ____ For twin fluid systems, the atomizing media source shall be in accordance with 10.6.1.
47. ____ Pump capacity is in accordance with 10.5.2.2.
48. ____ Test connection is detailed for testing the pump in accordance with 10.5.2.3
49. ____ When used, an air compressor is listed for fire service use, 10.6.8.1.
50. ____ When used as the dedicated air supply, the compressor is connected to a backup power supply, 10.6.8.2.

Containers and Piping:

51. ____ Pressurized water and atomizing media containers shall meet the construction requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, *Unfired Pressure Vessels* or in accordance with U.S. Department of Transportation requirements., 5.2.2.2.
52. ____ Gas and water containers are sized for required quantities, 5.2.1, and are not located where environmental or mechanical damage will occur, 7.5.4.
53. ____ When required in a seismic design category, documentation explaining seismic bracing for atomizing media containers shall be provided, 5.2.2.1.
54. ____ Containers that are pressurized shall be equipped with a pressure relief device, 5.2.2.5.
55. ____ Manifolded containers shall be interchangeable and have the some volume and discharge pressure, 5.2.3.
56. ____ Low pressure storage cylinder detail shows the liquid level and pressure gauges, and high/low pressure supervisory alarm, 7.5.6.4.
57. ____ Pressure gauges are detailed on all pressurized cylinders, both sides of pressure regulator valve, pressurized side of the supply connections and system control valves, and air supplies for dry systems, 7.8.5.



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58. ____ Pipe or tube: type of material, sizes, pressure rating, if used in low, intermediate, or high PSI system, and pipe specifications are provided, 5.3.2.1.
59. ____ Bending criteria for Type K and L copper pipe is noted on plans which is in accordance with 5.3.6.
60. ____ Fittings are either listed or meet the referenced ANSI or ASTM standard for the given application. Specifications or equipment data sheets are provided, 5.4.
61. ____ Screwed unions are limited to pipe diameters of 2 inches or less, 5.4.2.3.
62. ____ One-piece reducers are used and noted on plans, 5.4.2.4.
63. ____ When required, an FDC is detailed and interfaces on the pressure side of the system, refer to exceptions 10.5.5.

Hangers:

64. ____ Hangers are listed for their intended use or in accordance with 5.5.
65. ____ Types of hangers and hanger locations on structural elements are detailed on plans, 7.3.7.1. Low pressure water pipe is hung in accordance with NFPA 13.
66. ____ Armoverters to nozzles are detailed and the supports shown for steel pipe and tube length greater than what is specified in 7.3.7.2.

Seismic Bracing (Based on the requirements in NFPA 13):

67. ____ Seismic bracing is designed, detailed, and seismic calculations are provided, NFPA13.
68. ____ Lateral sway brace spacing complies with 9.3.5.3.
69. ____ Seismic separation assembly for piping is provided at building seismic joints, 9.3.3.
70. ____ Longitudinal sway brace spacing complies with 9.3.5.4.
71. ____ 4-way sway brace is provided at the top of the riser, 9.3.5.5.
72. ____ Longitudinal and lateral bracing is provided for each run of pipe between the change of direction in accordance with 9.3.5.11.
73. ____ Branch lines and end sprinklers are restrained against vertical and lateral movement, 9.3.6.3.
74. ____ Calculations for seismic bracing is provided, 9.3.5.6.–9.3.5.11.

Nozzles:

75. ____ Nozzles: All design and installation listing data for each nozzle is provided. The information shall include: specific hazard objectives, flow rate, space height; protection distance, spacing, coverage area, and pressures; delivery time, spacing from walls, compartment volume, and thermal classification, etc., 5.6.1 and 7.2.
76. ____ Thermal nozzles: nozzle temperature rating and the maximum ambient temperatures are provided and comply with Table 5.6.7.1.
77. ____ Number, type, and the placement of spare nozzles are noted on plans, 5.6.7.
78. ____ Nozzles with waterway dimensions less than 51 microns use the type of water specified in 10.5.1.7.

Valves:



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79. ___ Valves are listed for the intended use, equipment data sheets are provided and valve signage is provided.
80. ___ Monitored or locked indicating valve is provided for each source of water supply, 7.8.1.8.
81. ___ Water pressure regulating valve (PRV) is provided for any portion of the system with the potential to exceed the maximum system pressure rating and it opens at the percentage of system-rated pressure specified in 7.8.3.1.
82. ___ Water pressure relief valve size and location is detailed and in compliance with 7.8.3.1.3.
83. ___ Indicating valve location is detailed and in compliance with 7.8.3.1.4.
84. ___ Water flow test valve is detailed and designed to meet the equivalent flow of PRV, 7.8.3.1.6.
85. ___ Compressed gas PRV is detailed when the supply pressure is higher than the operating pressure, 7.8.3.2.2.
86. ___ Check valve is detailed between the system and the potable water connection, 7.8.4.3.
87. ___ Pressure gauges are detailed on the pressurized side of control valves and supply connections, 7.8.5.

Strainers:

88. ___ Strainers and filters are listed for their use and the listing data sheets are provided, 5.8.1.
89. ___ Pipeline strainer and filter designs have a flush-out connection, 5.8.5.
90. ___ Number, type, and placement of spare strainers and filters are noted on the plans, 5.8.8
91. ___ Strainers and filters are detailed at each water supply connection or system riser, 7.7.
92. ___ Strainer and filter ratings or mesh openings are of a percentage of the nozzle waterway dimension as specified in 10.5.1.6.

Pumps and Controllers:

93. ___ Automatic pump is provided and detailed, 10.5.2.1.
94. ___ Pump capacity is in accordance with 10.5.2.2.
95. ___ Test connection is detailed for testing the pump in accordance with 10.5.2.3
96. ___ Pumps: design information and details include pump capacity, over pressure relief, method of automatic start and shutoff and water supply method, 5.9.
97. ___ Pumps are sized to provide the water flow rate and system demand, 10.5.2.2.
98. ___ Pump operation and functions are supervised at a constantly attended location, the method and what is supervised on the electrical and diesel pumps are noted on plans, 10.5.2.3.
99. ___ Power supply for pump driver complies with NFPA 20 except for being fed with an independent service feed, 5.9.2.
100. ___ Pump controller is a listed fire pump controller, 5.9.3.1.

Test Connector:

101. ___ It is detailed and it is sized not less than the largest nozzle, located at the most hydraulically remote point of the system, 7.10

