

Integration of Rainwater Catchment with Fire Suppression Systems

By

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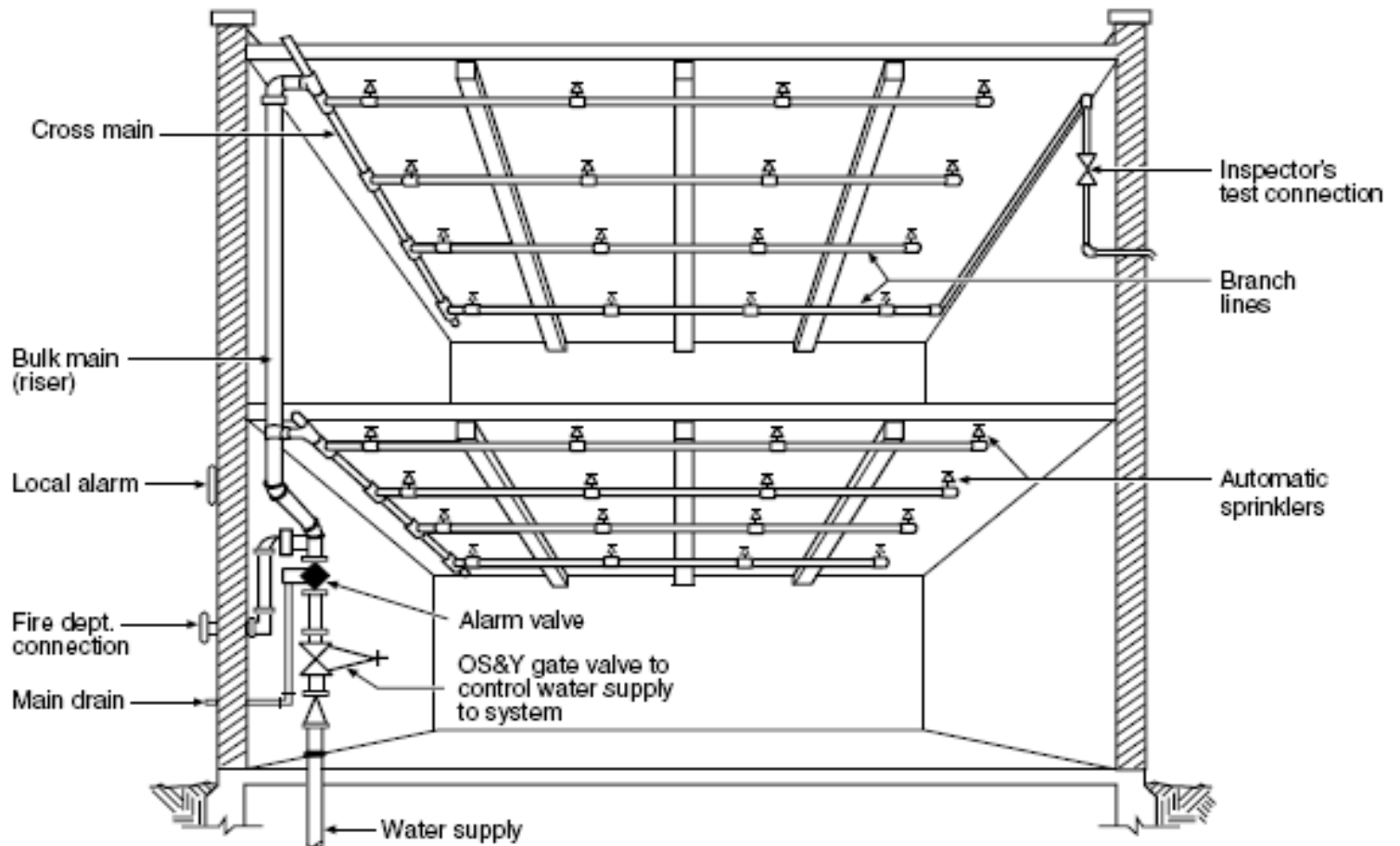


FIGURE 10.11.8 *Basic Components of a Wet-Pipe Sprinkler System (for SI units: 1 in. 25.4 mm)*

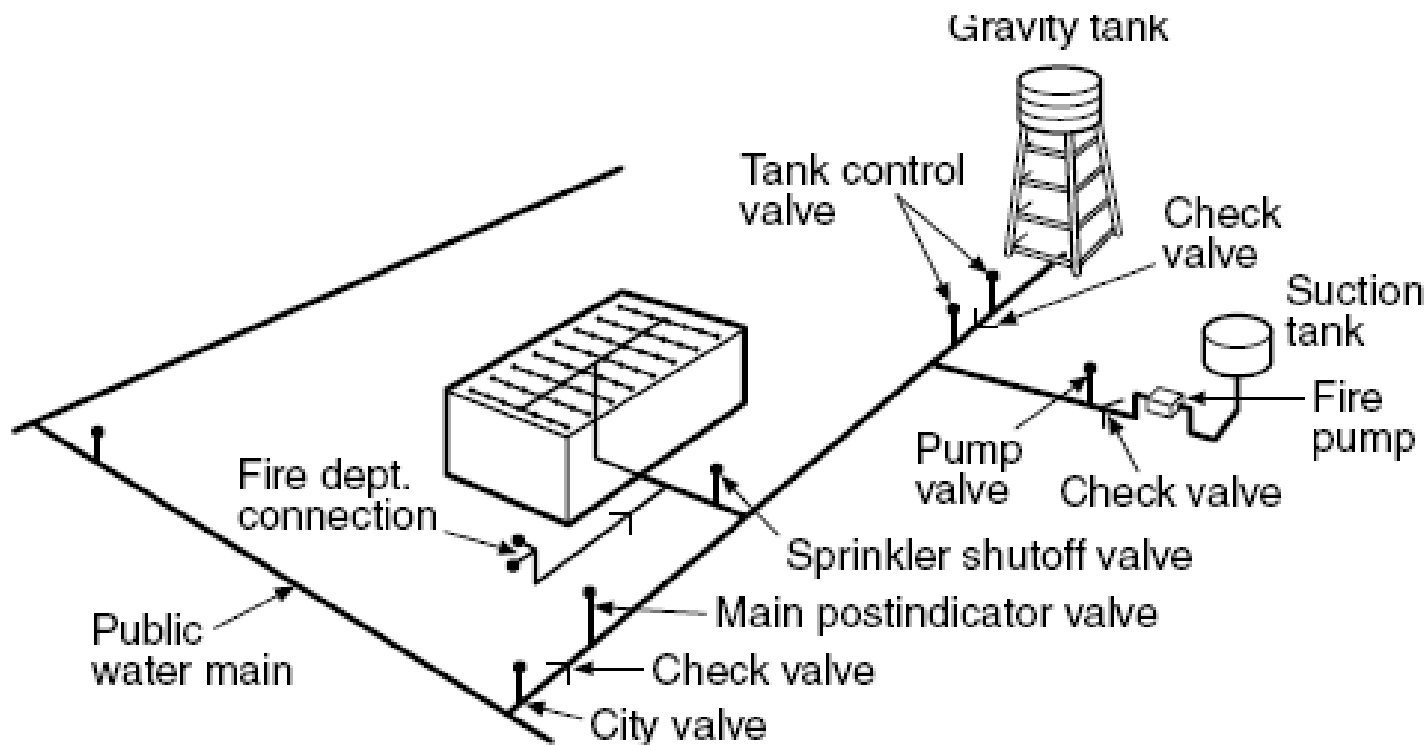


FIGURE 10.11.7 *Hypothetical Sprinkler System Installation Illustrating Various Water Supply Sources and System Attachments*

Table 4-1 Sprinkler System and Water Supply Design Requirements for Sprinklered Facilities

OCCUPANCY CLASSIFICATION ^a	SPRINKLER SYSTEM		HOSE STREAM ALLOWANCE L/Min (GPM)	DURATION OF SUPPLY Minutes
	DESIGN DENSITY L/min/m ² (GPM/ft ²)	DESIGN AREA m ² (ft ²) ^b		
Light Hazard	4.1 (0.10)	280 (3000)	950 (250)	60
Ordinary Hazard Group 1	6.1 (0.15)	280 (3000)	1900 (500)	60
Ordinary Hazard Group 2	8.2 (0.20)	280 (3000)	1900 (500)	90
Extra Hazard Group 1	12.2 (0.30)	280 (3000)	2840 (750)	120
Extra Hazard Group 2	16.3 (0.40)	280 (3000)	2840 (750)	120

^a Refer to Appendix B for occupancy hazard classification.

^b See paragraph 4-2.3.3.

Note: The protection requirements identified in Table 4-1 are based on standard commercial practices followed throughout civilian industry for highly protected risk (HPR) properties. Table 4-1 represents the minimum requirements necessary to establish minimum comprehensive life, mission, and property loss prevention. Table 4-1 was adapted as a result from detailed studies by Factory Mutual of loss experience from 1956 to 1965, loss experience in selected occupancies from 1966 to 1977 and from 1981-1990, and fire test data.

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For a Light Hazard Application:

- Sprinkler Volume: Design Density (.1 gallons per minute (gpm) / square foot) x Design Area (3000 sf) = 300 gpm.

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- Flow duration is 60 minutes, resulting in the minimally required water volume for automatic fire sprinkler system operation to be (550 gpm x 60 minutes)
= 33,000 gallons

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=550 gallons / minute
- Flow duration is 60 minutes, resulting in the minimally required water volume for automatic fire sprinkler system operation to be (550 gpm x 60 minutes)= 33,000 gallons
- Tank volume is (33,000 gallons/ 7.481 gallons per cubic foot)
= 4411 Cubic Feet.

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- Tank volume is (33,000 gallons/ 7.481 gallons per cubic foot)
= 4411 Cubic Feet.
- Size of tank (Cubic Feet) = (length * width * height)

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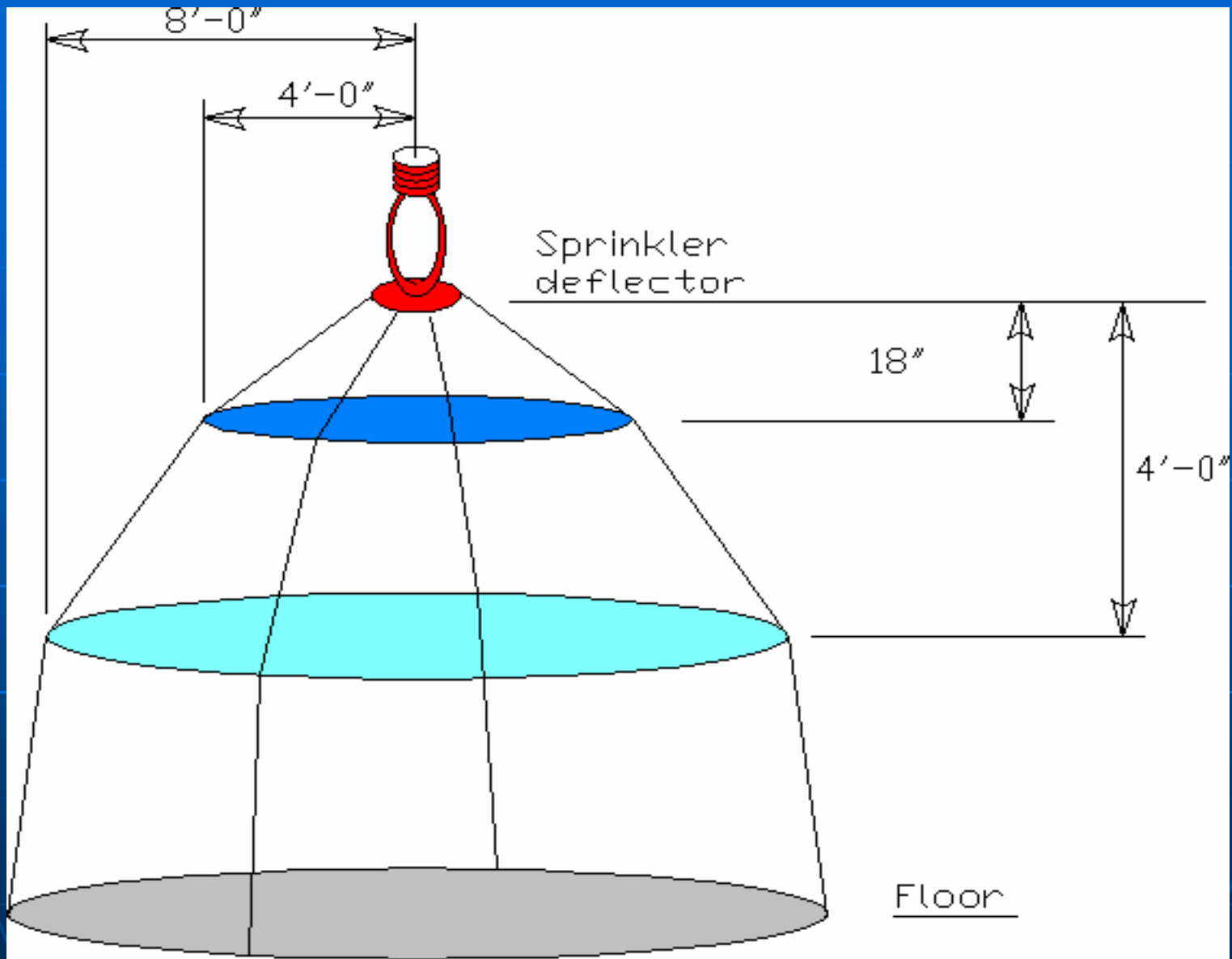
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Metric

For a Light Hazard Application:

- Sprinkler Volume: Design Density (4.1 liter / m²) is the volume of water needed to be delivered to the Design Area (289 m²)
= 1148 liters / minute
- Hose Volume: The volume required for sprinkler operation is added to the water volume needed for Fire Hose operation. In this case,
(1148 l/m+ 950 l/m)
= 2100 liters / minute
- Flow duration is 60 minutes, resulting in the minimally required water volume for automatic fire sprinkler system operation to be (2100 l/m x 60 minutes)
= 125,000 liters
- Tank volume is (length * width * height) / 1000 liters / cubic meter)
= 125 Cubic Meters



Spray Pattern
NFPA 13 A.8.5.5.1

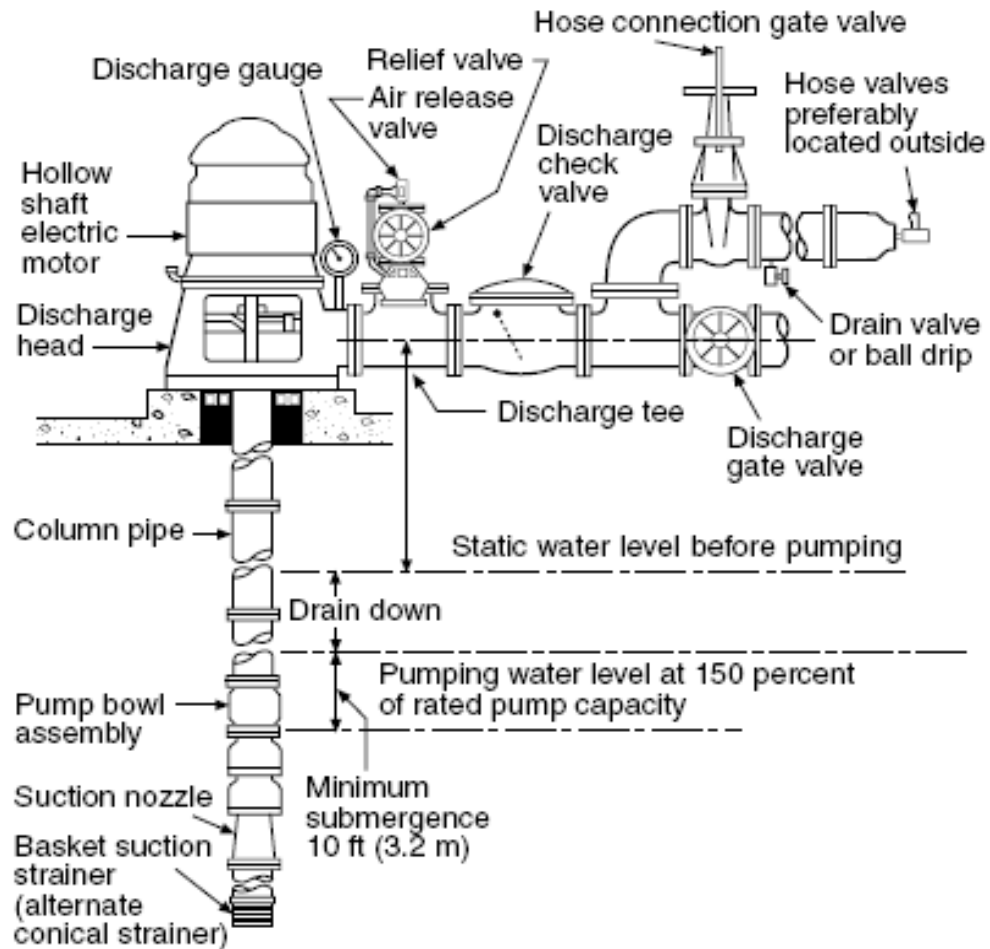
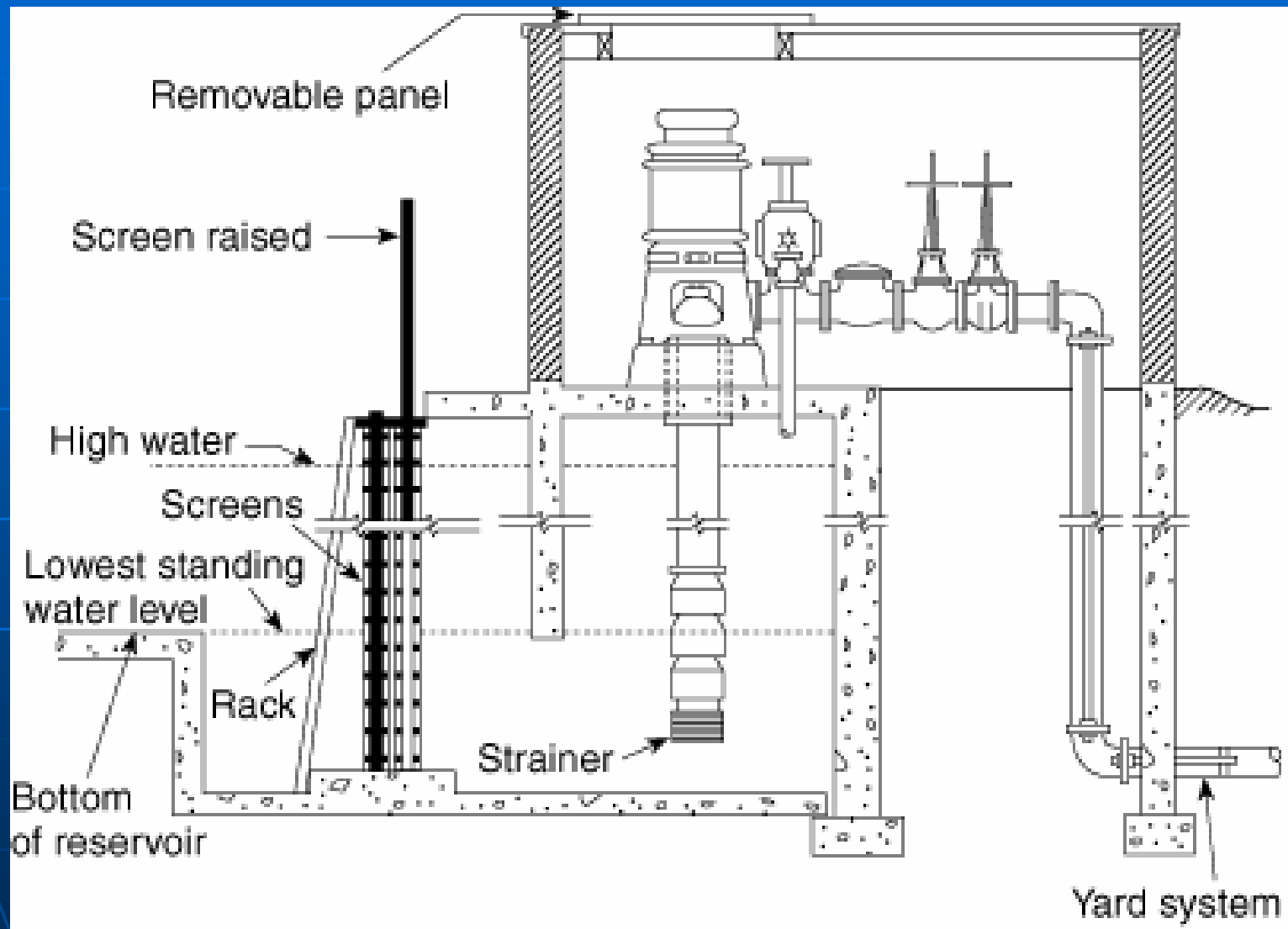
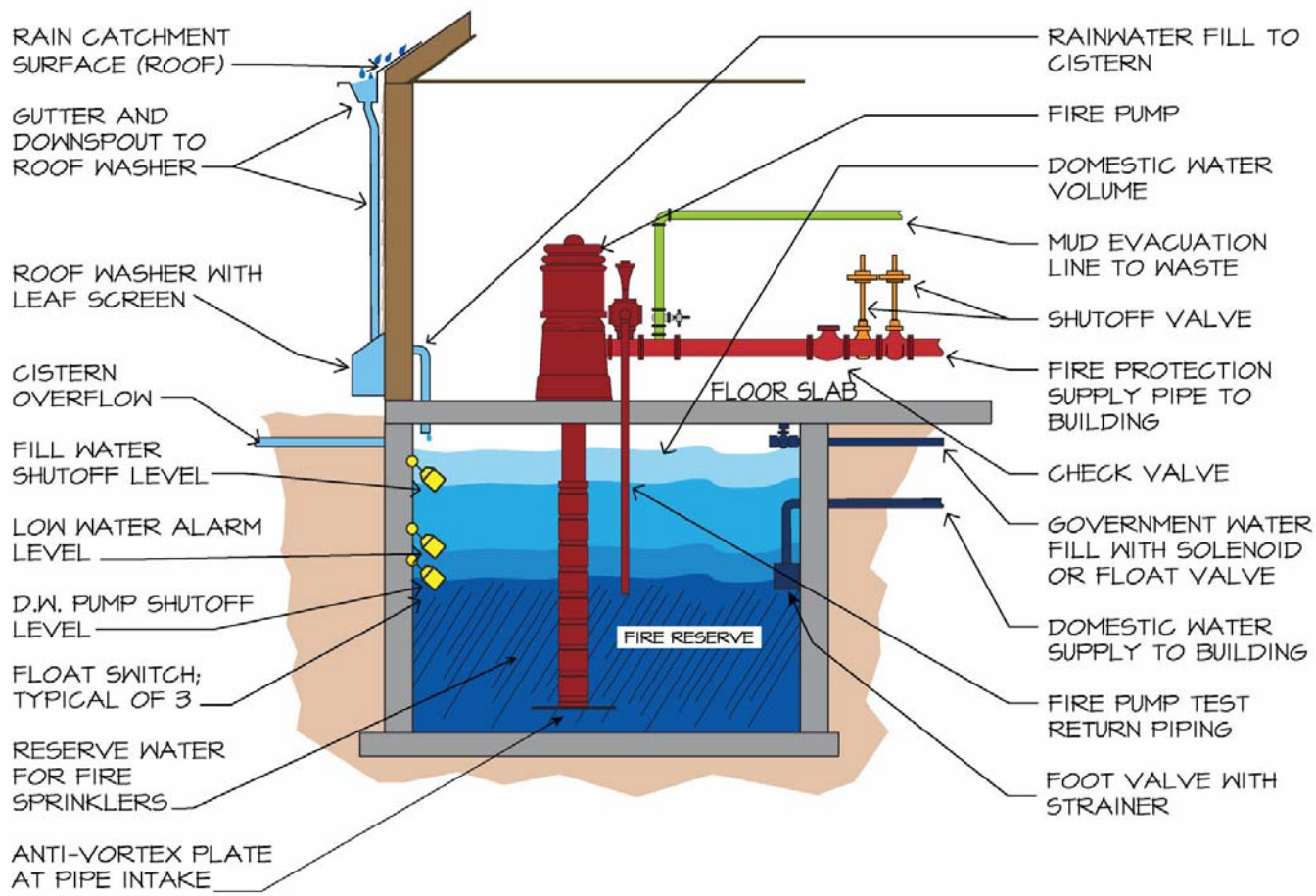


FIGURE 10.7.16 *Vertical-Shaft-Turbine-Type Pump Installation. Note: The distance between the bottom of the strainer and the bottom of the wet pit should be one-half of the pump bowl diameter but less than 12 in. (305 mm).*





CISTERN PIPING WITH FIRE RESERVE
 NOT TO SCALE

For Further Information

Contact

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Questions ??