



Automatic Sprinklers: Main Drain Outlets

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Learning Objective: Given a copy of NFPA® 13, the student shall be able to identify the requirements for sprinkler main drain outlets.

The discharge point of the main drain often is an overlooked detail in sprinkler system installation. Owners, designers, and fitters may try to find convenient, out-of-the-way places, without considering the consequences of the decision.

NFPA® 13, *Standard for the Installation of Sprinkler Systems*, requires that main drain test outlets be installed at locations that will permit flow tests of water supplies and connections. The outlet should be arranged so the valve can be opened wide for a sufficient time to assure a proper test without causing water damage.

It's common to find main drain outlets indoors where it is expected to flow into a recessed floor drain. If you look at the discharge from the 2-inch (51 mm) outlet in the picture, you can see that the amount water and turbulence with which is it discharged may be more than a typical floor drain can handle.



The minimum size of the drain outlet corresponds to the size of sprinkler system riser:

If not controlled, the discharge from the main drain can create significant damage.

Riser or Main Size		Drain Outlet Size	
Inches	Millimeters	Inches	Millimeters
Up to 2	51	$\frac{3}{4}$ Larger	19
2 $\frac{1}{2}$ to 3 $\frac{1}{2}$	64 to 89	1 $\frac{1}{4}$ Larger	32
4 and larger	102	2	51

NFPA® 13 also provides the following rules for main drain discharge outlets:

- Sprinkler drains may not have direct connections to sanitary sewers.
- The drain discharge must conform to any health or water department regulations.
- Approved corrosion-resistant pipe must be used where drain pipes run underground.
- Outlets may not discharge into blind spaces under the building.
- Where exposed to the atmosphere, outlets must have a turned-down elbow.
- Drain pipes must be arranged to avoid exposing any part of the sprinkler system to freezing.

For additional information, refer to NFPA® 13, *Standard for the Installation of Sprinkler Systems*, Chapter 8.

