

## Automatic Sprinklers: Sprinkler System Main Drain Installations

No. FP-2010-47 November 23, 2010

**Learning Objective:** The student shall be able to explain the requirements for main drain valve assemblies on automatic sprinkler systems.

National Fire Protection Association (NFPA) design and installation standards for automatic sprinklers require each system to have a main drain valve assembly. The purpose of the drain is to allow a service technician to release water from the system so it can be serviced.

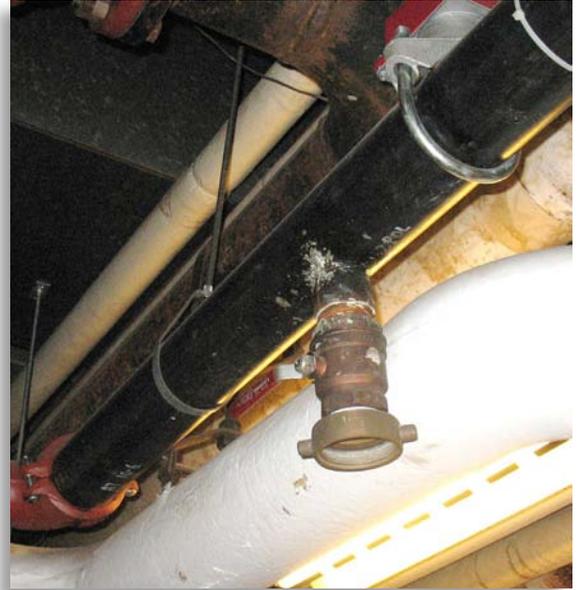
The main drain also serves as a tool to measure incoming water flow during the annual “main drain test.” (See Coffee Break Training 2006-15 for an explanation and visit [www.usfa.dhs.gov/nfa/coffee-break/index.shtml](http://www.usfa.dhs.gov/nfa/coffee-break/index.shtml) to watch or download a podcast on conducting the test.) Coffee Break Training FP-2009-14 describes the size requirements for main drain valve assemblies. Main drain valve assemblies normally are connected to the sprinkler system riser and have a rigid drain pipe.

The NFPA standards recommend that “the main sprinkler riser drain should discharge outside the building at a point free from the possibility of causing water damage. Where it is not possible to discharge outside the building wall, the drain should be piped to a sump, which in turn should discharge by gravity or be pumped to a waste water drain or sewer.”

Furthermore, “the main sprinkler riser drain connection should be of a size sufficient to carry off water from the fully open drain valve while it is discharging under normal water system pressures. Where this is not possible, a supplementary drain of equal size should be provided for test purposes with free discharge, located at or above grade.”

Today’s illustration evidently was someone’s attempt at installing a low point drain that could be connected to a hose for outdoor drainage. It is not a standard main drain installation in accordance with national standards. The leftover slag at the weld also suggests poor quality fabrication that might result in a catastrophic joint failure when the pipe is pressurized.

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



This contraption is intended to serve as a sprinkler system main drain, but is not a device that meets national standards.  
*Photo courtesy Byron Blake.*

