Coffee Break Training - Fire Protection Series

Automatic Sprinklers: Fire Department Connection Drains

No. FP-2012-10 March 6, 2012

Learning Objective: *The student shall be able to describe the requirements for draining fire department connection pipes.*

Today's photograph illustrates the old adage "out of sight, out of mind."

The accumulated water in this fire department connection line is subject to freezing that could damage the pipe. *Photo courtesy of Tim Mier, Cuyahoga Falls Fire Department, OH*

This is a remote fire department connection that supplements the sprinkler system in a new building. The installing contractor claimed to have conducted a new water main flush after the initial installation, but neither the fire nor the building department witnessed it.

When time came to conduct an acceptance test on the sprinkler system, the fire inspector asked to witness the underground water main flush as required by the National Fire Protection Association (NFPA) 13, *Standard for the Installation of Sprinkler Systems*. A new 12-inch (305 mm) service from the street to the hydrant on the dead end of the new main was flushed first. Then, the inspector requested that the 8-inch (203 mm) line serving the sprinkler system be flushed.

The easiest manner in which to flush the sprinkler feed main was to permit the "forward flow" test valve to be opened. The forward flow test configuration which is required to test the operational status of backflow prevention devices was a bypass that was plumbed piped back into the fire department connection line. To maximize flow through the 4-inch (102 mm) valve and fire department connection line, the installer planned to remove the internal swing check valve from the fire department connection and flush through the double 2-1/2-inch (63.5 mm) hose inlets.

When the double hose inlet fitting was removed before flushing, the inspector discovered the line was full of water. The contractor had installed an automatic low-point drain between the fire department connection and its 4-inch (102 mm) check valve, but evidently the gravel bed into which it was intended to drain did not have adequate capacity to allow the water to percolate away in a timely fashion. (See Coffee Break Training 2009-17 for information on automatic drains.) If the accumulated water in the pipe froze and expanded, the fire department connection line would have been in danger of catastrophic failure.

Another important point to note is that in addition to an adequate drain bed, NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, requires that all check valves be subjected to an internal inspection every 5 years, so if the check valve in the fire department connection line is buried, it will have to be excavated to be inspected.

For additional information, refer to NFPA 13, Chapter 8 and NFPA 25, Chapter 13.

This Coffee Break Training tip courtesy of Tim Mier, Deputy Fire Marshal, Cuyahoga Falls Fire Department, OH.