Coffee Break Training - Fire Protection Series

Automatic Sprinklers: Sprinkler Aboveground Hydrostatic Tests

No. FP-2009-15 April 14, 2009

Learning Objective: *Given a copy of NFPA®13, the student shall be able to identify the requirements for hydrostatic testing of aboveground sprinkler pipe.*

Once a sprinkler system has been installed, or has been altered significantly, the work must be pressure tested to find and correct any leaks. This testing is known as "hydrostatic" testing because the pipe is filled with water and then pressurized.*

NFPA®13, *Standard for the Installation of Sprinkler Systems*, requires that the hydrostatic test occur at a minimum of 200 psi (13.8 bar) and there can be no pressure loss for two hours. If the systems are exposed to more than 150 psi (10.4 bar) working pressure, they must be tested at a pressure of 50 psi (3.5 bar) in excess of system working pressure. For example, if the normal water pressure in a neighborhood is 175 psi (12 bar), the sprinkler system must be hydrostatically tested to at least 225 psi (15.5 bar).

Sprinkler hydrostatic tests are measured at the lowest point of the system or portion of work.

If there is a significant addition or modification to an existing system that affects more than 20 sprinklers, that work must be isolated from the existing equipment and tested at not less than 200 psi (13.8 bar) for 2 hours. If work affects 20 or fewer sprinklers there is no requirement to test the pipe in excess of the normal system working pressure.

When first installed, the pipe between the fire department connection and the check valve in the inlet pipe must be hydrostatically tested in the same manner. If repairs or replacement work are done on the fire department connection, the pipe between the exterior and the check must be isolated and hydrostatically tested at 150 psi (10.3 bar).

If cold weather prevents hydrostatic testing due to the potential for freezing, an "interim" test using air pressure at 40 psi (2.8 bar) may be conducted so the system may be put in service. When the weather warms, however, an approved hydrostatic test must be performed.

The hydrostatic test pressure should be taken at the low elevation point of the system or area being tested. as illustrated in the photograph where the fitter is preparing to pressurize the system.

Any visible leaks or pressure loss must be identified and fixed before the system can be approved for service.

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* Dry pipe sprinklers systems also must be subjected to an air pressure test, called a "pneumatic" test.