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Director

Construction Industry Communication #27

From: Amit Ghosh, Chief Building Official
Re: Sprinkler System Hydrostatic Testing at temperatures below 40°F (4°C)
Date: March 9, 2023

Requirements: Ohio Building Code 903.3.1 requires sprinkler systems to be designed and installed in accordance with section 903.3.1.1 (NFPA 13 sprinkler systems) unless otherwise permitted by sections 903.3.1.2 (NFPA 13R sprinkler system) and 903.3.1.3 (NFPA 13D sprinkler system) and other chapters as applicable.

- Both NFPA 13 and NFPA 13R require sprinkler systems to be hydrostatically tested
- Both NFPA 13 and NFPA 13R require any portion of a sprinkler system to be protected from freezing and reliably maintain at or above 40°F (4°C).

Background: Building construction during cold weather often requires the performance of hydrostatic testing prior to buildings having a complete thermal envelope and/or permanent heat. The result is sprinkler piping containing residual water that is subject to freezing.

Memorandum: Prior to covering sprinkler piping it is important to verify the proper installation of all sprinkler piping in accordance with the approved documents and a hydrostatic test has been performed. Under conditions that prevent a building from maintaining 40°F (4°C) the following practices are acceptable procedures to allow work to continue:

- NFPA 13 section 25.2.1.3 – Where cold weather will not permit testing with water, an interim air test shall be permitted to be conducted as described in 25.2.2.
 - 25.2.2 – an air pressure leakage test at 40 psi conducted for 24 hours. Any leakage that results in a loss of pressure in excess of 1 ½ psi for the 24 hours shall be corrected.
 - This provision does not remove or replace the requirement for conducting the hydrostatic test.
 - This provision is limited to types of piping permitted by the manufacturer to be pressurized with air
- Performing hydrostatic test with premixed antifreeze solutions
 - Antifreeze solution must be approved by the piping manufacturer
 - Antifreeze solution must be flushed from wet piping systems prior to putting suppression system into service.
- Partial framing approvals to reduce heat loss within building
 - Framing approval of exterior walls to install insulation
 - Framing approval of roof construction to install ceiling materials and insulate
 - Areas of partial framing approval does not authorize concealing of sprinkler piping
 - Other trade approvals may be required prior to installing insulation or ceiling finishes.
- Specific areas containing minimal piping may be covered after a rough suppression inspection
 - Floor joists above small dropped ceiling areas (prerock)
 - Furnace rooms to allow installation of heating units