

Freeze-up of Fire Protection Systems

Cold temperatures can cause the freezing of water in sprinkler system piping, which can create a serious impairment of a building's fire protection system. A frozen fire protection system can result in not only fire losses due to the crippled extinguishing system, but also extensive water damage to the building and its contents resulting from burst piping. This checklist provides information on methods to prevent the freezing of systems and precautions to reduce the risk of fire if a system freezes.

Preventing Freezing

Impairment of fire protection systems, due to freezing pipes, can subject a protected property to significant losses. The following, as a minimum, should be considered in order to prevent or reduce the likelihood of a frozen system:

- Provide heat to areas in a facility where there is a water-based fire protection system and in which temperatures may all be below 40°F (4° C).
- Repair broken windows, ill-fitting doors and other items that allow heat loss.
- Install a dry-pipe sprinkler system in areas where a wet system has a history of freezing.
- Add anti-freeze solution to wet pipe systems that may be subject to incidental freezing.
- Verify that systems protected by anti-freeze solution have proper proportions of anti-freeze and water.
- Provide heated or adequately insulated enclosures for pipes exposed to low temperatures, such as piping through unheated crawl spaces and attics.
- Insure that underground pipes are installed below the frost line and add a greater depth of earth over the pipes, if needed.
- Keep snow, water and ice away from hydrants, valves and standpipe connections.
- Allow for slight water flow in piping systems, such as water mains and feed lines, by opening a drain in a heated area or some other valve. Do not open valves in the sprinkler piping, as this will cause alarms to be activated or necessitate shutting off alarms.
- Repair leaking or damaged hydrants.
- Inspect and repair, as needed, hydrant valve seats and drains.

Precautions to Take While a System is Impaired

There are a number of general precautions that should be observed when a suppression system is impaired, including impairments due to freezing. These include:

- Do not use torches or other open flame devices to thaw pipes or other equipment.
- Provide temporary heating in the area; however, do not use portable heating equipment, such as salamanders and other un-vented, fuel-burning heaters, since they introduce fire hazards, as well as health hazards.
- Do not store fuel for temporary heating systems in areas not designed for that purpose.
- Suspend all hazardous operations in the impaired area.
- Notify employees and the local fire department that the system is impaired.
- Close all fire doors and openings between work areas to limit the spread of a fire.
- Establish temporary fire protection measures in the impaired area, including adding portable extinguishers and stretching fire hoses from unaffected areas.
- Prohibit smoking in the area.

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