



# Sprinkler System – Procedures for Draining Systems

There are a number of events that may require draining an automatic sprinkler system, including restoring an activated dry-pipe system, facilitating sprinkler repair, or extending an existing system. Improper draining can lead to damage of sprinkler components from freezing conditions or corrosion. While such work should be performed by a qualified sprinkler service company, the following procedures should be followed to ensure that a system is properly drained.

## Preliminary Steps

A fire protection impairment program can be used to reduce the threat to property by limiting the time that fire protection is unavailable, establishing alternate fire detection and alarm activation methods, and providing substitute fire suppression systems.

## Notifications

At a minimum, the following parties should be notified of the planned action, the expected duration of the shutdown, and what precautions are being taken until service is restored:

- The insurance agent or insurance carrier.
- The local fire department. Fire departments often develop strategies for fighting fires at a particular location and the absence of a functioning sprinkler system will affect their plans.
- Appropriate state, local, or other government officials, where sprinkler systems are required by law.
- Employees in the area of the impairment; they should be provided with information on alternate fire protection available. Suspension of all non-essential hot work operations.
- Facility emergency response team (ERT).

## Fire Protection Impairment Plan

Additionally, a fire protection impairment plan should be developed and implemented. Before authorization is given, the impairment coordinator should verify that the following procedures have been implemented:

- The extent and expected duration of the impairment have been determined.
- The areas or buildings involved have been inspected and the increased risks determined.
- Recommendations have been submitted to management or the property owner or designated representative.
- Where a required fire protection system is out of service for more than ten hours in a 24-hour period, the impairment coordinator shall arrange for one of the following:
  - Evacuation of the building or portion of the building affected by the system out of service
  - An approved fire watch
  - Establishment of a temporary water supply
  - Establishment and implementation of an approved program to eliminate potential ignition sources and limit the amount of fuel available to the fire



Additionally, the impairment coordinator should:

- Establish a 24-hour fire watch. This can be done by extending employee hours or hiring a temporary guard service.
- When possible, assign personnel to reopen fire protection valves in case of a fire.
- Assign personnel to transmit fire alarms to the occupants and the fire department when the building alarm system is impaired.
- Strictly enforce no smoking rules.
- Provide temporary fire protection, including charging hose lines, distributing extra fire extinguishers throughout the facility, and using sectional control valves, whenever possible, to minimize the size of the area without fire protection.

### Procedures for Draining a Wet Pipe System

To drain a wet pipe system properly, the following steps should be followed:

- Close all sprinkler control valves. When control valves are closed, it should be ascertained whether the fire department connection is on the system side or supply side of the valve. If the connection is on the supply side of the valve, it will not be possible for the fire department to pump into the system without opening the control valve. It is very important to indicate the existence of this condition to the fire department when they are informed of the shutdown.
- Tag all closed valves.
- Open the 2-in (5.1-cm) main drain valve(s) and auxiliary drain valves, allowing the system to drain. Prior to 1975, wet pipe systems were required to have piping pitched to facilitate drainage; more recent systems may not be pitched and may require that excess water be blown out by compressed air or be removed by taking the piping apart.
- When the water has been completely drained, close the main drain and auxiliary drain valves. When the water has stopped flowing, check all control valves to be sure they are tightly shut; malfunctioning control valves should be repaired immediately.
- Check for water trapped at low points in piping that lack auxiliary drains; remove, drain, and replace such piping.
- Remove, drain, and replace pendent sprinkler heads; however, this may be unnecessary if the heads are installed directly in branch line tees. Where drop nipples feed pendent sprinklers, however, the nipples must be drained to prevent damage.
- Remove all water from valve pits.
- Drain unheated tanks or storage facilities.
- Provide heat to the sprinkler system riser below the alarm valve(s), using either electric heating tapes or cables or an appropriate temporary heater. If heating the supply side cannot be achieved, it may be possible to insulate the riser to prevent freezing. If not then the water supply should be shut down and the feed piping drained.
- For dry-pipe systems, ascertain that sufficient air is in the system to allow for the drop in pressure that occurs when temperatures drop. The pressure should be checked daily during cold weather (preferably at night when temperatures are usually lowest), since inadequate pressure can result in the dry-pipe valve tripping and subsequent freezing of the water that enters the system piping. Alternatively, supervision of the pressure and low-pressure alarms should be provided.



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