



Coffee Break Training - Fire Protection Series

Automatic Sprinklers: Sprinkler System Design: Pipe Schedule Limitations (Part 2)

No. FP-2014-31 August 5, 2014

Learning Objective: The student will be able to explain the limitations on where pipe schedule design sprinkler systems can be used.

National Fire Protection Association (NFPA) 13, Standard for the Installation of Sprinkler Systems now limits the pipe schedule method except under very specific circumstances.

Generally, there are four conditions where pipe schedule designs may be employed:

1. Additions or modifications to existing pipe schedule systems sized according to the pipe schedules of NFPA 13.
2. Additions or modifications to **existing** extra hazard pipe schedule systems.
3. New systems of 5,000 square feet (465 square meters (m²)) or less.
4. New systems exceeding 5,000 square feet (465 m²) where the water requirements shown in the table below are available at a minimum residual pressure of 50 pounds per square inch (psi) (3.4 bar) for the sprinkler at the highest elevation.¹



Pipe schedule designs can be employed as part of existing sprinkler systems as long as they meet specific criteria.

Minimum Water Supplies for Pipe Schedule Systems¹

Minimum Residual Pressure			Acceptable Flow at Base of Riser (Including Hose Stream Allowance)*		
Occupancy classification	Psi	Bar	Gpm	L/min	Duration (minutes)
Light hazard	15	1	500-750	1,893-2,839	30-60
Ordinary hazard	20	1.4	850-1,500	3,218-5,678	60-90

* See Coffee Break Training FP-2006-50.

Furthermore, if the designer intends to install sprinklers that have a K-factor other than 5.6 (see Coffee Break Training FP-2006-2), uses listed pipe other than what is described in NFPA 13, or plans to use the system for exposure protection, then the sprinkler system must be hydraulically designed. Pipe schedule systems cannot be used in new systems to protect Extra Hazard, Group 1 or Group 2 occupancies.

In subsequent Coffee Break Training items, we will explore hydraulically designed systems in greater detail.

For more information, consider enrolling in the National Fire Academy (NFA) course “Water-based Fire Protection System Plans Review” (R0137). Information and applications can be obtained at <http://apps.usfa.fema.gov/nfacourses/catalog/details/10542>. The course is available at the NFA in Emmitsburg, Maryland, or through your state fire service training agency.

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