

# American Fire Sprinkler Association

## Multipurpose Residential Fire Sprinkler System Guide

### Introduction

**The AFSA is concerned that the integrity of the Fire Sprinkler System could be compromised when designing Multipurpose Fire Sprinkler Systems. In addition, the AFSA feels it is important that all parties concerned have a thorough understanding of the differences between a conventional stand-alone system and a multipurpose system. The AFSA does not promote multipurpose systems. However, if they are going to be installed, this guide is offered to ensure they are installed correctly.**

### Part 1 – General

#### 1.01 Purpose

Multipurpose Sprinkler Systems use the same piping to supply domestic cold water and automatic fire sprinklers. There is only minimal guidance provided by NFPA 13D. The purpose of this guide is to provide a structure for the installation and to identify some of the differences between a stand-alone, dedicated sprinkler system and a multipurpose system. These differences create issues that must be resolved.

Fire sprinklers are the driving system for the initial pipe layout since it presents the greatest water demand, is a life safety system for which sprinkler locations are critical, and must be supported by hydraulic calculations.

It should be noted that a multipurpose system is not just a looped, web system with 1/2-inch pipe, but can be a conventional (tree type) system that also supplies cold water to the plumbing system. There are also multiple Authorities Having Jurisdiction (AHJ's), (including fire, plumbing, health officials and the water department) which may have to approve the use of these systems.

#### 1.02 Related Documents

Drawings and the general provision of the contract, including general and supplementary conditions apply to this section.

#### 1.03 Description

A pressure piping system within dwellings and manufactured homes intended to serve both domestic cold water and fire protection needs.

#### 1.04 Work Included

Furnish all design, labor, materials, equipment and services required for and/or reasonably incidental to the completion of the following work. Include all such work shown on the drawings and/or listed below.

- A. Provide a complete wet pipe multipurpose automatic fire sprinkler system in all areas as required by NFPA 13D.
- B. Provide a capped outlet for each cold water plumbing fixture. Capped outlets shall be removable so that after the fire sprinkler system is inspected, the plumbing lines can be run to cold water fixtures.
- C. Provide a complete plumbing system per the plumbing specifications using the fire sprinkler system to supply the domestic cold water. System must comply with NFPA 13D.
- D. NFPA allows multipurpose systems. However, some standard fire sprinkler or plumbing features may not be available. Therefore, a need exists to coordinate the multipurpose fire sprinkler system with the contractors and the fire and plumbing authorities having jurisdiction. Discussion of the following topics shall be addressed and agreed upon.
  - 1. Coordination includes identifying the location, size and type of plumbing outlets.
  - 2. An independent shut off valve for the fire sprinkler system will not be available.
  - 3. System alarm characteristics, i.e., smoke alarm only, no water flow alarm is currently available.
  - 4. Potable water characteristics, i.e., sprinkler heads, valves and other fire sprinkler components that may not be certified to the requirements of ANSI/NSF Standard 61.
  - 5. Coordination of the multipurpose system with the various trades involved.
  - 6. Use of materials that may not be U.L. listed for fire sprinkler systems used as plumbing supply to the cold water fixtures from the combined fire sprinkler/plumbing system (Ref. NFPA 13D:A-2-3 and A-3-3.1).
  - 7. Potential future installation of a water softener by the homeowner. (NFPA to address in appendix, 1999 edition).
  - 8. Work responsibilities such as lead-ins, system flushing, etc.

9. Signage: "This is a multipurpose fire sprinkler system, no modifications should be made to the plumbing or fire sprinkler system without contacting a qualified contractor".
10. Backflow protection between fire sprinkler and domestic is not possible on a multipurpose system.
11. Water pressure reducers; required at 80 psi by plumbing codes.
12. Dead end lines could exist on the fire sprinkler system unless design features exclude them.
13. Shop drawings and hydraulic calculations per NFPA 13D requirements.

#### 1.05 Referenced Standards

The latest editions of NFPA 13D and the local plumbing code.

### **Part 2-Products**

#### 2.01 Materials

- A. All fire sprinkler system pipe, fittings, and components shall be as required by NFPA 13D and will be listed by U.L. for fire sprinkler service.
- B. All plumbing pipe, fittings, and components shall meet the requirements of the local plumbing code.

### **Part 3-Execution**

#### 3.01 Installation

The fire sprinkler system portion of the multipurpose system shall be designed and installed by a qualified contractor that is licensed for the installation of fire sprinkler systems. The plumbing system shall be installed by a qualified contractor that is licensed for the installation of plumbing systems.

- A. Prior to design, coordination shall take place between fire sprinkler design and plumbing design.
- B. All fire sprinkler materials shall be installed per NFPA 13D requirements.
- C. All plumbing material shall be installed per the requirements of the local plumbing code.

- D. A fire department connection shall not be installed on a multipurpose fire sprinkler system.
- E. Fire sprinklers in unfinished basements shall be designed and installed to allow for a future finished basement.
- F. Fire sprinkler piping in attics or other areas subject to cold temperatures shall be protected from freezing.

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