



FIRE PREVENTION STANDARDS	DATE: 06/10/98	NUMBER: FP0-006
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	TITLE: Private Water Systems for 13 -D	

**Guide to Private Water/Private Well Systems
for
Residential Sprinkler Systems**

(One- and Two-Family Dwellings)

These are the basic requirements for private water/private well systems for residential fire sprinkler systems compiled by the Fire Prevention Officers Section of the Santa Cruz County Fire Chief's Association. The appropriate local agency should be contacted regarding local requirements and permit amounts.

The National Standard utilized for residential fire sprinklers is the latest edition on NFPA 13-D. In addition, all automatic residential fire sprinkler systems must also meet the modifications as outlined in "Guide to Sprinkler Requirements for One- & Two-Family Dwellings "(Public Water Supply), FPO Standard # FPO-005.

IF SPRINKLER SYSTEM UNDERGROUND PIPING IS INSTALLED BY SOMEONE OTHER THAN THE SPRINKLER CONTRACTOR, A SEPARATE PLAN CHECK, FEE, AND INSPECTION SHALL BE REQUIRED.

Plans shall be submitted to the Authority Having Jurisdiction (AHJ) prior to installation.

Design and Installation Requirements

- A. NFPA 13D residential automatic sprinkler systems shall be designed and hydraulically calculated by a licensed engineer, Fire Protection Engineer (F.P.E.) licensed C-16 Contractor (must also be the installing contractor), or by an owner-builder of an owner-occupied single-family dwelling.
 1. Scale ¼" = 1 foot. North arrow.
 2. Dimensions and arrangements of rooms and partitions
 3. Systems shall be calculated to provide for a 10% residual.

- B. The sprinkler system shall be installed by a licensed C-16 contractor or by an owner-builder of an owner-occupied single-family dwelling.
- C. The fire sprinkler system shall consist of the overhead and underground piping.
- D. Proof of Engineering or C-16 license shall be submitted with plans and calculations.
- E. When significant field variations including changes to the calculated areas, are made to Fire Department approved sprinkler plans, the contractor shall submit prior to overhead rough inspection "Revised" plans and calculations to re-verify system demand. Insulation and wall/ceiling sheeting installations may be delayed if review of new plans and calculations is delayed.
When minor field variations are made to Fire Department approved sprinkler plans, the contractor shall provide "As-Built" plans prior to scheduling of the final inspection.

System Design Requirements

A. Water supply

1. Minimum Storage

The minimum required amount of stored fire protection water for one- and two-family dwellings is 10,000 gallons with an approved NFPA 13-D sprinkler system

2. Domestic Water Storage

The water tank(s) shall be used for domestic water storage in conjunction with fire protection water storage and designed to the following standard:

- a. The tank(s) are equipped with a minimum 1-inch fill supply line.
- b. Provide an automatic filling device. Pump to automatically activate to maintain water storage tank at a minimum capacity of 10,000 gallons.
- c. If low water cut-off switch is installed, it shall be set to activate no higher than 6" above centerline of suction discharge pipe.

B. Pump System

1. Pump Requirements

- a. Underground pipes will be 2" or as approved by the authority having jurisdiction based on available water, sq. footage and calculations. Indicate on plans with a detail drawing.
- b. The pump shall provide the required GPM (gallons per minute) and PSI (pounds per square inch) for both the fire sprinkler system and domestic water system.
- c. Appropriate size check valve.
- d. Pressure Gauge
- e. Pressure Relief Valve
- f. Pressure switch to be installed between check valve and valve
- g. Pump manufacturer to determine the number of pressure tanks required based on the GPM and PSI required.
- h. Provide full flow control valve after last pressure tank.
- i. Provide Contractor's Pump Acceptance Test Data Certificate at time of final inspection. ***See attachment 6E for copy of certificate**

- j. At plan submittal, provide the pump manufacturer's data guide for flow characteristics.

C. Requirements for Underground Installation

1. Pipe

- a. Underground pipes will be 2" or other sizing as approved by the authority having jurisdiction based on available water, square footage and hydraulic calculations: indicate on plans with a detail drawing. Future structural expansion should be considered when determining UG pipe size.
- b. Provide Schedule 80 PVC fitting between meter and underground pipe.
- c. Minimum underground pipe depth is 18" to top of pipe below rough grade.
- d. Schedule 40 PVC or other listed approved materials are allowed for underground supply line from the water source to the transition fitting. Schedule 80 PVC transition fitting to be installed a minimum of six inches below grade at the base of the riser.
- e. Underground piping will terminate with a threaded or glued cap at a minimum of six inches above finished grade.

Note: This is the termination of the underground piping.

- f. **All pipe transitions from metal to plastic will be through schedule 80 plastic fittings.**
- g. **All piping from the transition fitting to the riser shall be approved metallic pipe. If copper pipe is used for extension, type "L" is required.**
- h. Connection from underground piping to overhead piping to be made by the automatic fire sprinkler contractor. ***See attachments 6B and 6C**

2. Testing

- a. All residential sprinkler system underground piping systems shall be hydrostatically tested in accordance with the requirements of the California Plumbing Code (not less than minimum design working pressure for 15 minutes) and shall be witnessed by the fire department prior to being covered.
- b. Underground pipe shall be flushed with water at the minimum design pressure, **through an opening the size of the underground pipe's diameter**, until the water runs clear, ensuring that the line is free of contamination before the underground pipe is connected to the riser. If the underground piping is not going to be connected to the riser immediately, the underground pipe is to be secured with a threaded or glued cap.
- c. Provide Contractor's Material and Test Certificate for underground piping at time of test. ***See attachment 6D** for copy of certificate.