



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 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 Guide # FPO-005.

- 1) Plans shall be submitted and approved prior to installation to the Fire Prevention Office having jurisdiction. Allow a minimum of 14 days for plan check and approval.
- 2) The following information is required when submitting plans for a sprinkler system in a single or two-family residence.
- 3) Design and Installation Requirements
 - a. N.F.P.A. 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 (if they install the system), or by an owner-builder of an owner-occupied single-family dwelling.
 - (1) Scale ¼" = 1 foot. North arrow.
 - (2) Dimensions and arrangement of rooms and partitions.
 - (3) Systems shall be calculated to provide for a 10-pound 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 field variations are made to Fire Department approved sprinkler plans, the contractor shall provide "As Built" Plans and Calculations to prove the system as installed prior to overhead rough inspection. Insulation and wall/ceiling sheeting installations may be delayed if review of new plans and calculations is necessary.

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.

2. Domestic Water Storage

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

- a. The tank is 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.

***See the pump manufacturer's installation requirements.**

B. Pump System

1. Pump Requirements

- a. Minimum 2 inch pipe supply from tank to pump.
- 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. At plan submittal provide the pump manufacturer's data guide for flow characteristics.
- d. Appropriate size check valve.
- e. UL approved pressure gauge to have at least **300 PSI** reading.
- 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.

***See Attachment E or F**

- i. Provide Contractor's Pump Acceptance Test Data Certificate at time of final inspection.

***See Attachment H** for a copy of certificate.

C. Requirements for Underground Installer

1. Pipe

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

Note: This is the termination of the underground piping.

- f. Transition fitting to be installed a minimum of six inches below grade.
- g. All piping from the transition fitting to the base of the riser (minimum six inches above grade) shall be approved metallic pipe. If copper pipe is used for extension, type "L" is required. ***See Attachment A for diagram.**
- h. All transition from metal to plastic will be through schedule 80 plastic fittings.

2. Testing

- a. All residential sprinkler system underground piping systems shall be hydrostatically tested with water in accordance with the requirements of the Uniform 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 insuring 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 is to be secured with a threaded or glued cap.
- c. If the underground piping is not going to be connected to the riser immediately, the underground pipe is to be secured with a threaded cap.
- d. Provide Contractor's Material and Test Certificate for underground piping at time of test. ***See attachment C** for copy of certificate.

The appropriate local agency should be contacted regarding local requirements and permit amounts. Refer to the following table to determine which fire agency will oversee plan review, installation activities, perform compliance inspections and collect permit fees, if any. For those agencies marked with an (*) on the following table, CAL FIRE/Santa Cruz County Fire Department is the agency responsible for all aspects of the automatic fire sprinkler installations.

Location	Fire Agency Name	Address	Telephone
Aptos	Aptos/La Selva FPD	6934 Soquel Drive Aptos, CA 95003	(831) 685-6690
Ben Lomond	Ben Lomond FPD	9430 Hwy 9 Ben Lomond, CA 95005	(831) 336-5495
*Bonny Doon	CAL FIRE/ Santa Cruz County Fire	P.O. Drawer F-2 Felton, CA 95018	(831) 335-6748
Boulder Creek	Boulder Creek FPD	13230 Central Ave Boulder Creek, CA 95006	(831) 338-7222
Branciforte	Branciforte Fire Dept.	2711 Branciforte Dr. Santa Cruz, CA 95065	(831) 423-8856
Brookdale	Boulder Creek FPD	13230 Central Ave Boulder Creek, CA 95006	(831) 338-7222
Capitola	Central FPD	930 17 th Ave. Santa Cruz, CA 95062	(831) 479-6843
*Corralitos	CAL FIRE/ Santa Cruz County Fire	P.O. Drawer F-2 Felton, CA 95018	(831) 335-6748
*Davenport	CAL FIRE/ Santa Cruz County Fire	P.O. Drawer F-2 Felton, CA 95018	(831) 335-6748
Felton	Felton FPD	131 Kirby St. Felton, CA 95018	(831) 335-4422
*Freedom	Pajaro Valley Fire District	P.O. Drawer F-2 Felton, CA 95018	(831) 335-6748
La Selva Beach	Aptos/La Selva FPD	6934 Soquel Drive Aptos, CA 95003	(831) 685-6690
Live Oak	Central FPD	930 17 th Ave. Santa Cruz, CA 95062	(831) 479-6843
Mount Herman	Felton FPD	131 Kirby St. Felton, CA 95018	(831) 335-4422
Pajaro Dunes	CAL FIRE/ Santa Cruz County Fire	P.O. Drawer Felton, CA 95018	(831) 335-6748
Rio Del Mar	Aptos/La Selva FPD	6934 Soquel Drive Aptos, CA 95003	(831) 685-6690
*Salispuedes	Pajaro Valley Fire District	P.O. Drawer F-2 Felton, CA 95018	(831) 335-6748
Santa Cruz City	Santa Cruz FD	230 Walnut St. Santa Cruz, CA 95060	(831) 420-5280
Scotts Valley	Scotts Valley FPD	7 Erba lane Scotts Valley, CA 95066	(831) 438-0211
Soquel	Central FPD	930 17 th Ave. Santa Cruz, CA 95062	(831) 479-6843
Watsonville	Watsonville FD	115 2 nd St. Watsonville, CA 95076	(831) 768-3200
Zayante	Zayante FPD	7700 East Zayante Rd. Felton, CA 95018	(831) 335-5100