



YOLO COUNTY BUILDING INSPECTION DIVISION

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Form #
GH - 011

RESIDENTIAL FIRE SPRINKLER INSTALLATION STANDARDS

One and Two Family Dwellings

The installation of fire sprinkler systems in one and two family dwellings in the County of Yolo shall conform to the latest conditions of NFPA Standard 13D and the following local requirements where NFPA Standard 13D and the local standards conflict, the local standards shall prevail. Plan check and field inspection for residential fire sprinkler installation within the unincorporated area of Yolo County will be handled by the "Fire Authority" designated on the attached map. Specific contact people for each jurisdiction are:

City of Davis – Tim Annis (530) 757-5684 , 530 Fifth Street Davis, CA 95616

Woodland/Springlake - Jose Colin (530) 661-5859 , 300 First Street Woodland, CA 95695

Winters – Art Mendoza (530) 795-4131 , 700 Main Street Winters, CA 95694

West Plainfield – Bill Heins (530) 756-0212 , 24901 County Road 94B Davis, CA 95616

Permit Requirements

1. Submit (4) sets of drawings and calculations to the County of Yolo Building Department for review and approval. A simple hydraulic calculation sheet is attached for your convenience.
2. A fee for plan review including 1 recheck and two normal field inspections of residential fire sprinkler systems will be collected at plan review. Additional inspections will result in an additional charges payable prior to inspection. Fee's are as set in the current Master Fee Resolution.
3. Contractor must have a California C-16 contractor's license, and a valid County of Yolo Business License.
4. Fire Authority approval of residential sprinkler plans must be obtained prior to start of installation. County of Yolo Building Department approved plans shall be present on the job site during installation.
5. Qualified technicians who have or are working under a C-16 State Fire Sprinkler Installation License holder may install fire sprinkler systems provided they are certified through appropriate companies for installing CPVC piping. The Fire Authority will verify the appropriate certification during plan check or field inspection at the job site.

System Components

1. Each system shall have a single control valve arranged to shut off both domestic and sprinkler systems. A separate valve shall be provided to shutoff the domestic system only. Separate sprinkler control valves are not permitted. The main control valve shall be located above finish grade. A sample riser detail is attached for your convenience.
2. A copper riser is required from the underground supply to the distribution piping above the system drain/inspectors connection.

Location of Sprinklers

1. Sprinklers shall be installed in all areas with the following exceptions:
 - a. Sprinklers may be omitted from bathrooms not exceeding 55 square feet.
 - b. Sprinklers may be omitted from small closets where the least dimension does not exceed three (3) feet and the area does not exceed twenty-four (24) square feet, and walls and ceiling are surfaced with non-combustible or limited combustible (i.e. sheet rock) materials. This exception does not apply to utility closets which contain heat or flame producing appliances, closets with attic access or bedroom clothes closet.
 - c. Sprinklers may be omitted from detached garages, open attached porches, carports, and similar structures.
 - d. Sprinklers may be omitted from attics, crawl spaces, and other concealed spaces that are not used or intended for living purposes or storage. A single pilot head is required at the attic peak.

Water Supply

1. Every system shall be supplied by a least one automatic water supply. When stored water is used as the sole source of supply, the minimum quantity shall equal the water demand rate times ten (10) minutes.
2. The following water supply sources are acceptable:
 - a. A connection to a reliable water works system.
 - b. An elevated tank.
 - c. A pressure tank.
 - d. A stored water source with an automatically operated pump.
3. Water may be supplied through a domestic water well connection provided adequate water supply is available to supply domestic water and sprinkler system demand. A five- (5) gallon margin of safety shall be calculated into the system design. A minimum 1-1/2 inch supply line is required from the water supply to the main sprinkler control valve. Supply manufacturer's specifications and cut sheets for water pump and water tanks.
4. When domestic water wells are used as the water supply, the electrical power to the well pump must be installed in such a manner so that if the main breaker at the house is turned off the well power will not be disconnected. The following main service electrical layouts are acceptable:
 - a. The main electrical service panel is located away from the residence with a separate electrical feed to the house and a separate feed to the well. The feed to well shall not enter the house or originate from the house electrical panel.
 - b. The main electrical service panel is located on the house. The main panel must have provisions for two main breakers. One main breaker would disconnect all the house power and the other main breaker would be used to power the domestic water well. In this case the well circuit breaker must be equipped with a "Handle block on/off" and the circuit would enter the ground immediately upon leaving the panel and not be routed through the house.

Piping support

1. Piping shall be supported from structural members using support methods comparable to those required by local plumbing codes.
2. The pipe hangers and anchors shall be of sufficient strength to support the weight of the pipe and its contents. The hangers shall not have rough or sharp edges that could damage piping.
3. Plumbers tape or "J" hooks are not permitted.

Alarms

A local water flow alarm shall be provided on all sprinkler systems. The alarm device shall consist of a listed exterior horn/strobe combination with red box, clear lens, labeled with "Fire" and installed to be plainly visible from the street fronting the property as approved by the Fire Chief. An approved interior alarm device shall be installed and interconnected with all smoke detectors to be clearly audible in all bedrooms over the background noise levels with all intervening doors closed.

Tests and Inspections

1. The underground piping shall have a "witnessed flush" by the Yolo County Building Inspector, the Fire Chief having jurisdiction or Designee before being connected to the sprinkler system.
4. All new systems shall be hydrostatically tested at not less than 200-PSI pressure for thirty minutes or as approved by the Fire Chief having jurisdiction.
5. A system flow test will be conducted to insure proper operation of the alarm system.
6. Visual inspection will include but not be limited to the following:
 - e. Proper head type, location, and spacing.
 - f. Escutcheons on all heads.
 - g. Damaged, painted, taped, or dirty heads.
 - h. Proper hanger installation.
 - i. Three spare sprinkler heads of each type in a box with proper socket.
 - j. Proper orifice to be installed in inspectors test pipe.
7. All inspections must be called for at least 48 hours in advance.

RESIDENTIAL SPRINKLER SYSTEM **PLAN SUBMITTAL REQUIREMENTS**

HYDRAULIC CALCULATIONS:

- Remote area calculations - one (1) or two (2) head - most demanding.
- Hydraulic calculation summary sheet(s) - prefer attached form.
- Manufacturer's specification sheet for each type of head.
- Graph of water supply and system demand - use attached graph - call Fire Chief for flow information.

DRAWINGS:

Full set of drawings to include:

Site plan fully dimensioned to include:

- Adjoining streets.
- Access roads.
- Direction arrow.
- Owner (Builder's Name)
- Building address.
- Riser location.
- Supply line size and location.
- Designer's license and number.

Floor plan of each level to include:

- Drawn on minimum 18" x 24" paper using 1/4" = 1' scale.
- Rooms and designated use.
- Pipe size and type.
- Sprinkler heads and locations.
- Riser detail.
- Location of alarm bell.
- Hydraulic reference points.

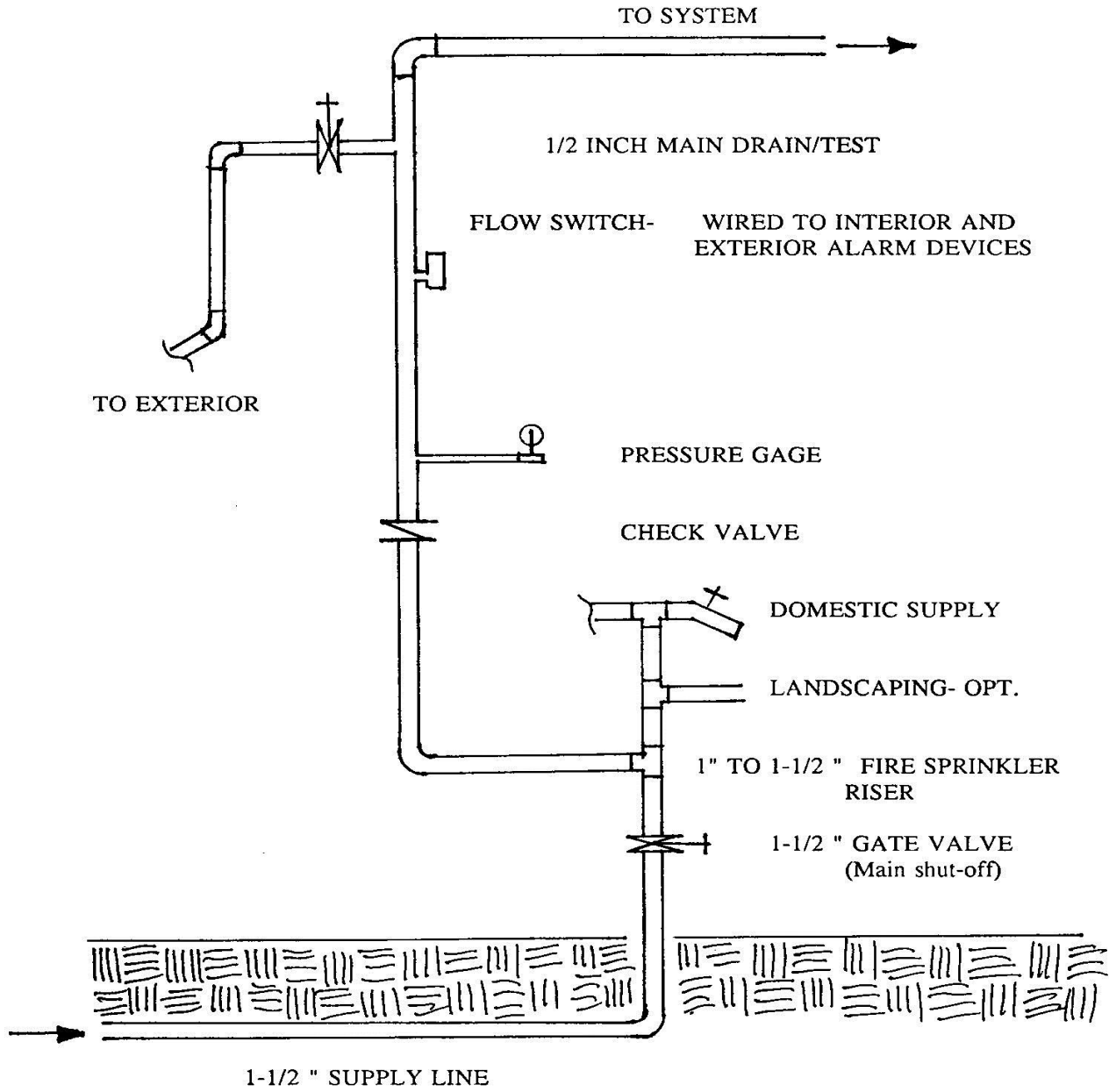
Section drawings to include:

- Full width and height section to show construction features (basement through roof).
- Denote beams or special obstructions.

Sprinkler legend to include:

- Make and model of each head.
- Type of head (pendant, upright, sidewall).
- Temperature rating of each head.
- Minimum design flow pressure for each type of head.
- K-Factor for each type of head.
- Orifice size for each type of head.
- Maximum area coverage for each type of head.
- Number of each type of head needed.
- Symbol for each type of head.

RESIDENTIAL RISER DETAIL



HYDRAULIC CALCULATION WORKSHEET

JOB NAME : _____ SHEET NO.: _____ OF _____

Start Node (SN) _____	To End Node(EN) _____	C Factor _____	
Pipe Type _____	Pipe Size _____	Pipe Flow _____	gpm
Starting Pressure @ (SN)= _____			psi
Elevation @ (SN) _____			Feet
Elevation @ (EN) _____			
Difference _____			x 0.4331= _____
psi			
Pipe Length = _____			
Fittings:			
_____ 90° Elbow	@ _____	= _____	
_____ Tee - Run	@ _____	= _____	
_____ Tee Branch	@ _____	= _____	
_____	@ _____	= _____	
_____	@ _____	= _____	
_____	@ _____	= _____	
Total Pipe Length		_____	x Frict. L/Ft. = _____
Meter Size		_____	Meter Loss = _____
			psi
Ending Pressure @ (EN)= _____			psi

Start Node (SN) _____	To End Node(EN) _____	C Factor _____	
Pipe Type _____	Pipe Size _____	Pipe Flow _____	gpm
Starting Pressure @ (SN)= _____			psi
Elevation @ (SN) _____			Feet
Elevation @ (EN) _____			
Difference _____			x 0.4331= _____
psi			
Pipe Length = _____			
Fittings:			
_____ 90° Elbow	@ _____	= _____	
_____ Tee - Run	@ _____	= _____	
_____ Tee Branch	@ _____	= _____	
_____	@ _____	= _____	
_____	@ _____	= _____	
_____	@ _____	= _____	
Total Pipe Length		_____	x Frict. L/Ft. = _____
Meter Size		_____	Meter Loss = _____
			psi
Ending Pressure @ (EN)= _____			psi

