

Sonoma County *Fire Chiefs Association*

Fire Prevention Officers Section

(6/22/05)

Guideline for 13-D Pump/Tank Assembly Water Supply For One- and Two-Family Dwellings, and Manufactured Homes

Definitions

Automatically operated water pump – An approved pump(s) that will supply both fire sprinkler and domestic water demand – pressure and flow.

Fire Flow – Total water demand available to fire apparatus for firefighting (Appendix III-A, California Fire Code)

Plan Submittal

- Provide a minimum of two sets of plans (the County of Sonoma requires four plans for their submittal) and specifications with submittal.
- Pump and tank assembly plans shall be submitted to the local fire authority and approved prior to installation.
- Approval for final inspection and/or occupancy will **NOT** be granted unless pump/tank assembly plans are submitted to and approved by the local fire authority.
 - Pump tank assemblies shall substantially conform to figure 1.1 attached.
 - Pump curve criteria shall be provided with plans submittal.
- Fire sprinkler calculations shall be approved by the local fire authority. Sprinkler calculations and pump specifications must be closely coordinated relative to the fire sprinkler design (pressure and gpm flow) and the pump specifications. A copy of the approved fire sprinkler calculations submitted with the pump/tank submittal is highly recommended.

Water Supply Demands

- The minimum water supply for residential fire sprinkler systems will be based on a 2 head sprinkler demand calculation and provide at least 10 minutes of flow.
- **Domestic Demand:** When water supply connections serve more than one dwelling unit, 5 gpm shall be added to the fire sprinkler system demand. (NFPA 13D – 6.3(1), 2002 ed.)
- **When water is supplied from a storage tank:** The tank shall be connected to a reliable water source (a well) with automatic fill. The supply line from the water tank to base of the fire sprinkler riser shall be sized to provide the water demand required for the fire sprinkler system as determined by hydraulic calculations.
 - It is recommended that the 2500-gallon water tank be used for fire flow when it is required by Fire Safe Standards.
 - Note: If the same tank is used for fire flow and domestic demand, the domestic demand requirements shall be added to the fire flow, necessitating an increase in the size of the tank.
- **When water is supplied by a public water system:** The fire sprinkler contractor shall ensure, through design calculations, that the water pipe (lateral) and meter size are adequate to supply the required volume and pressure for the fire sprinkler system. A booster pump and storage tank (pump tank assembly) may be required when the metered system is not adequate to meet fire sprinkler demand. Minimum pipe and meter size from the public water

main to meter shall be one and one half (1½" lateral) and one inch (1" meter) respectively, unless different pipe and meter sizing can be supported by approved hydraulic calculations.

Pump/Tank Assembly

- The automatically operated water pump shall provide a minimum of 50 GPM at a minimum of 50 PSI.
- A bladder type water pressure tank is recommended to reduce pump cycling.
- **Shut off valves or control valves:** Each fire sprinkler system shall have an indicating ball style brass control valve at the base of the riser that controls both the sprinkler system and domestic water. The valve shall be installed a minimum of 6" above grade and easily accessible. For sprinkler systems served by pump systems, this valve may be located on the discharge side of the system's bladder tank. A separate shut –off valve solely for the domestic water may be installed downstream of the control valve. Other than a water meter shut-off valve, no other system control valves are permitted. See figure 1.1 attached.
- A sign (minimum 1/4" letters, contrasting background, weather resistant if installed outdoors) shall be affixed at on or near the control valve that states (NFPA 13D – 6.3(6), 2002 ed):
"This valve controls a fire sprinkler system for this home. Do not perform any system modifications without approval from the Fire Dept. Keep valve in the fully open position at all times. Do not remove this sign"

Piping Specifications

- The supply line shall be hydrostatically pressure tested to at a pressure consistent with the Plumbing Code.

Backflow Prevention

- The local water purveyor may require a backflow prevention device. If the local water purveyor requires backflow prevention devices, the pressure loss shall be accounted for in the hydraulic calculations. Said devices shall not be equipped with any control valves capable of shutting off the water supply to the sprinkler system.

LETTER - TEMPLATE TO BE SENT TO PROPERTY OWNER, GENERAL CONTRACTOR AND FIRE SPRINKLER CONTRACTOR IF PUMP/TANK ASSEMBLY INFORMATION IS NOT INCLUDED ON THE SPRINKLER PLANS.

NAME
ADDRESS
CITY

On _____ the XXX Fire Department reviewed and approved plans and supporting hydraulic calculations for a residential fire sprinkler system to be installed at _____. The proposed home is located in an area where available water pressures for both domestic supply (sink, shower, toilets, landscaping, etc.) and the fire sprinkler system are too low to satisfy the water demands of both these systems.

To overcome the pressure differentials, you will be required to provide a water pump (variable speed pump is the most preferred method), storage tank (you must provide water for 10 minutes of sprinkler flow) and a pressure tank. This is commonly referred to as a pump and tank system (or air gap system).

Because it is critical to assure that you and/or your contractor provide the appropriately sized pump to functionally operate the fire sprinkler system, it is imperative you have your pump contractor provide the XXX Fire Department with the following:

- Pump specifications
- Pump curve (this demonstrates that the pump meets the design specifications for the sprinkler system)
- Simple diagram (most closely resembling the Standard)

This information must be submitted to the XXX Fire Department at least 45 days before final inspection (or occupancy). Failure to do so will result in a delay in occupancy. It is highly recommended you have your general contractor, fire sprinkler contractor, and pump/tank contractor meet to coordinate the submittal of the plans to this office.

According to the fire sprinkler design plans submitted and approved by this office, the pump and tank specifications are as follows:

Minimum pump pressure required: _____
Minimum gpm requirement of pump: _____
Minimum size of water storage tank: _____

Please contact _____ at xxx-xxxx if you have any questions or require clarification.