

Los Angeles City Fire Department
Training Bulletin # 63

Date of Issue **5-90**

Revision Date

**PROCEDURES FOR SUPPLEMENTING
HIGH RISE FIRE PUMPS**

PROCEDURES FOR SUPPLEMENTING HIGH RISE FIRE PUMPS

The purpose of this training bulletin is to outline the Departments high-rise pumping procedures and to identify buildings where the procedures would be applied. In addition, safety considerations and obstacles that could be encountered will be discussed.

The high-rise pumping procedures will be implemented on buildings with a building fire pump supplying the standpipe systems. These buildings are existing high-rise buildings (built between 1960 and 1974) higher than 150 feet, existing high rise buildings between 75 and 150 feet that have been retrofitted to include a fire pump, and new high-rise (built after 1974) buildings.

The procedures are designed as a back up to a building's fire pump. In the event that the building's fire pump fails, Fire Department apparatus will be required to assume the building fire pump's function of maintaining the system pressure. The system pressure equals head pressure plus friction loss in the standpipe inlets plus pressure required at the highest outlet.

There are a variety of ways to identify the system pressure. The quickest and most reliable way is to locate the Fire Department Connection (FDC) sign, a plaque mounted near the fire department connection inlets. Minimally, the FDC sign provides the system pressure, and may also include additional information such as area of building served and address of building. An alternate method to determine the system pressure, would be to consult the building engineer, or to view the discharge gauge of the building's fire pump while the pump is running. The latter two, of course, would not be practical during an emergency and would best be accomplished during a pre-fire inspection. At an emergency, and a FDC system pressure sign is not provided, an estimate of the building's system pressure can be calculated by multiplying the number of floors by five (5), then adding the constant of 150 psi. The sum will be the approximate system pressure. This constant of 150 psi is a figure derived by adding the average pressure required at the roof outlet (125 psi) and the friction loss in the standpipe inlet (25 psi).

Example: 20 story high-rise:

$$\begin{array}{r} 20 \text{ (number of floors)} \\ \times 5 \text{ (amount of head per floor)} \ 100 \\ \hline + 150 \text{ (constant)} \\ \hline 250 \text{ psi} \end{array}$$

For a 20 story high-rise, the approximate system pressure would be 250 psi.

PROCEDURES

RESPONSIBILITY

The member responsible for supplying the water system will be the first arriving 200 series engineer, or in the event that the first two arriving companies on scene are single engines, the second arriving engineer will supply the system. The engineer supplying the water system will:

1. Lay hydrant to fire.
2. Spot the apparatus at the Fire Department Connections (FDC's) with the pump panel away from the building. Spot so as to lay the 2 1/2" lines as free from kinks and sharp bends as possible, especially at the discharge gates and 2 1/2" FDC inlets.
3. Remove all plugs from the 2 1/2" FDC inlets to prevent back pressure from leaking past the clapper valves and "locking" them on.
4. Connect two 2 1/2" lines from the apparatus to the FDC's, utilizing the discharge gates on the building side of the apparatus. Each line shall be a maximum of 100 feet. If pumping over 300 psi, strap the lines together using ladder straps on each side of each coupling and midway between each coupling. Load the 2 1/2" lines before strapping.
5. If the high rise is over 20 stories or the system pressure at the FDC is over 250 psi, another apparatus shall spot to the hydrant/4-way and pump half the system pressure to the apparatus supplying the FDC's.

6. If there is a fire, pump into the system 100 PSI BELOW THE SYSTEM PRESSURE as shown on FDC sign or on the calculated estimate. This should be below the ON/OFF pressure settings of the building fire pump. This will allow the building fire pump to perform its designed function of supplying the system.

INITIAL PRESSURE TO PUMP

Example: 20 story building -

System Pressure = 250 psi.
Less = 100 psi.
Pump = 150 psi.

If you are not flowing water, monitor the pump temperature. Use the pavement cooler to alleviate water in the pump heating up.

7. Once the Engineer is hooked up and pumping, determine if the water is flowing or not and notify the Incident Commander to this fact. An expedient way to determine if water is flowing is to feather the discharge gate. If the gate resists closing and/or there is a drop on the discharge gauge, water is flowing. If the water is static, the closing of the gate is easily accomplished and the pressure trapped in the discharge line will register on the discharge gauge. Monitor gauges to determine if and when you start flowing water, this will be indicated by a drop in discharge pressure and verified by, feathering the gate. Once water is flowing, throttle up to the system pressure and notify the Incident Commander.
8. If there is an actual fire, whether the Engineer(s) is (are) supplying the FDC with one apparatus, or two apparatus pumping in series, request additional engines from the Incident Commander and have them duplicate the operation into the other two inlets of the FDC utilizing a separate source of water, if possible, for the supply lines. This will provide additional GPM and increased reliability in supplying the system.

SAFETY CONSIDERATIONS:

At the scene of a high rise fire, danger from falling glass and debris is a genuine concern. Due to the engineer's exposed position and proximity to the building, precautions shall be taken to guard against the hazards of falling debris. The engineer can protect himself by one of more of the following:

1. Donning all safety clothing
2. Having a truck company spot their aerial so as to cover both the panel and the FDC's. Once spotted, lay salvage covers, folded to a quarter of their width, on the rungs from the pedestal to the top of the aerial.
3. Spotting a second apparatus next to your engine and using a pike pole and salvage cover, create a roof over the panel.
4. Creating a lean-to over the panel out of pike poles, rubbish hooks and salvage covers.
5. Draping rubbish carriers, salvage covers or other such suitable barriers over the offside running board to the ground to protect the legs from the horizontal spread of flying glass shards.

Protection for the 2 1/2" can be accomplished by using ladders, salvage covers, seat cushions, compartment or hose bed liners (wood slats). The means of protection is limited only by the operators ingenuity and the materials on hand.