

Williamson County Fire Chiefs Association Capitol Area Fire Chiefs Association Central Texas Regional Procedures



#07

SPRINKLER SYSTEMS AND FIRE PUMPS STANDARD OPERATING GUIDELINE



PURPOSE

On February 1, 2020 an Automatic Aid Agreement commenced between members of the Capitol Area Fire Chiefs Association (CAFCA) and the Williamson County Fire Chiefs Association (WCFCA). Central Texas Regional Procedure #7 Sprinkler System and Fire Pumps SOG is a cooperative effort between all members to ensure personnel and resources operate in a like manner across Williamson and Travis Counties. This policy is for fireground operations involving buildings containing automatic sprinkler systems and fire pumps.

BACKGROUND

Automatic sprinkler protection is the best system available to quickly control fires in buildings. Sprinklers are more effective in putting water onto a fire than manual firefighting methods. Many buildings have incorporated this important feature. Firefighters should have a reasonable understanding of operating in harmony with these systems. When these systems fail to operate as designed, most often it is because a valve has been closed, defeating their purpose.

POLICY STATEMENT

- A. Fire pump and sprinkler system readiness should be visually checked any time the presence of significant fire is established in a building equipped with these systems.
- B. Fires in buildings containing an automatic sprinkler system require that the sprinkler system pressure be supplemented by the fire department, except residential systems with a single inlet fire department connection (FDC).
- C. A minimum of two supply lines should be connected to the FDC. If there are separate FDC connections for the sprinkler system and the standpipe, one supply line should initially be connected to each system. Additional 3" hoses should then be added to supply all inlets on the FDCs with the standpipe FDC being the priority.
- D. The pressure supplied to the sprinkler or standpipe system must be equal to the required system pressure (refer to Figure 1). If a building has a fire pump, the required system pressure can often be determined by observing the discharge gauge on the fire pump. Normally, 150 psi should be considered the minimum pressure to supply an FDC.
 - 1. Some FDCs may have a sign that indicates a higher pressure is required. When this is indicated the higher pressure should be used.
 - 2. The required system pressure for many sprinkler and standpipe systems in the City of Austin are maintained in CAD and can be accessed on MDCs by the units on scene.

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- 3. If a building does not have a fire pump (or it is not working) and the system pressure cannot be determined by other means, the height of the building can be used to estimate the required system pressure.
 - a. For buildings with 10 floors or less, 150 psi at the FDC is adequate pressure.
 - b. For buildings with more than 10 floors, 150 psi plus an additional 5 psi for every floor from the 11th to the top floor (or the highest floor served by a zoned standpipe system) should be pumped at the FDC.
- 4. If a sprinkler or standpipe system requires 225 psi or more pressure, water supply to the FDC should be established utilizing two pumping apparatus in a tandem pumping operation. However, the pressure supplied to the FDC should never exceed 350 psi, the maximum allowed by the fire code.
- E. Sprinkler systems shall be shut down only on the authority of Command, and only after the fire has been extinguished.

PROCEDURE

- A. At any structure fire in a building equipped with a sprinkler system or fire pump, Command should dispatch a team of at least two firefighters to locate the main valve, and make sure it is in the open position. Often the main controls and valves for these fire protection features are located in a common area, such as a basement or mechanical room. If the valve is closed, it should be fully opened unless the system has a sign stating it is out of service. In any event of valve closure or a system with an out of service sign, Command shall be notified.
- B. If sprinklers are operating in a building containing a fire pump, the team assigned to check the control valve shall check to ensure the fire pump is running. The discharge pressure of the fire pump should be observed to verify that the FDC is being supplied at that pressure or slightly higher (150 psi as the minimum). If the pump is not operating and sprinklers are flowing water or standpipe operations will be utilized, the pump should be started by placing the pump controller lever in the "MANUAL" position. It is also recommended to place the fire pump controller lever in the "MANUAL" position anytime operations require the pump to run without the possibility of the pump shutting down unintentionally.
- C. If the pump does not start, notify Command. The Engine Company supporting the sprinkler system should deliver the required system pressure. The required system pressure (Refer to Figure 1):
 - 1. May be found in the CAD address information on the MDC.
 - 2. May be found on a sign that is located at the FDC.
 - 3. May be calculated by adding the rated pump pressure (found on the pump nameplate) and the pump intake gauge pressure.
 - 4. May be estimated based on the height of the building.
- D. Sprinkler systems shall not be shut down to improve the interior visibility or to aid in ventilation. Many fires have redeveloped and overpowered the sprinkler system because the control valve was closed too early.
- E. In high-rise buildings, each floor has a sectional control valve which controls the sprinkler system for that particular floor. The sectional control valve should be used to control the sprinkler system for each floor. The main control valve should not be used unless the sectional control valve is not functional. Sectional control valves may also be found in other types of buildings that are equipped with sprinkler systems.

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- F. When a Company Officer discovers a fire protection system critically impaired or inoperable, Fire Watch Guidelines should be utilized and jurisdiction's prevention section or fire marshal consulted to determine if a fire watch should be required.
- G. Fire Companies may encounter a residential sprinkler system (NFPA 13R) with an FDC that has a single inlet of 1½" or 2½" diameter connection. These systems are designed to allow occupant egress through containment of the fire. NFPA 13R systems are not designed to have an Operations unit pump 150 psi to them. If there is a need to pump to the system at all, the pressure pumped into the FDC should be similar to the static pressure of the hydrants in that area because this type of sprinkler system is designed to operate at the pressure within the water mains. To ensure that the system is not over pressurized, supplying the FDC should be performed by an Operations unit that is not pumping to any hose lines because hose lines most often require a higher pressure.



Figure 1: Flow Chart for Determining the Pressure to Pump at an FDC

Key Points for Pumping to a Standpipe FDC

Connect to FDC Using All Inlets Put Gauge on FDC to Measure Pressure at FDC Pump in the Pressure Mode Dump Water on Ground to Keep Pump Cool If System Requires Over 225 PSI, Tandem Pump Pump to FDC before beginning Fire Attack