DPD SFD

Joint Ruling

DPD Director's Rule 17-2005
SFD Administrative Rule 9.08.05

Applicant: CITY OF SEATTLE Department of Planning and Development Seattle Fire Department	**Page** 1 of 7	**Supersedes:** DPD DR 21-97
	Publication: 4/21/05	**Effective:** 10/17/05
Subject: Sprinkler Systems and Fire Alarms for Elevator Machinery Rooms, Hoistways and Pits	**Code and Section Reference:** Seattle Building Code Section 3022	
	Type of Rule: Technical requirements	
	Ordinance Authority: SMC 3.06.040	
	Approved (signature on file) John H. Nelsen, Fire Marshal, SFD	**Date** 10/5/05
Index: Building Code Elevators	**Approved** (signature on file) Diane M. Sugimura, Director, DPD	**Date** 10/11/05

BACKGROUND AND PURPOSE

The purpose of this rule is to coordinate the state and local requirements for automatic sprinkler systems in elevator machine rooms, hoistways and pits. Seattle codes require elevator machine rooms to be protected by sprinklers in buildings protected throughout with an automatic sprinkler system. Automatic sprinklers may be omitted in elevator machine rooms when a building is not required to be so protected. The ASME elevator rules, as adopted by the State of Washington in Chapter 296-96 of the Washington Administrative Code (WAC), prohibit automatic sprinklers in elevator machine rooms

unless they are provided with automatic power disconnect devices also known as shunt trips. Automatic power disconnect devices may cause serious problems for firefighters. This Rule identifies the requirements of both the Department of Planning and Development (DPD) and Seattle Fire Department (SFD) relating to sprinklers, fire alarms, and controls for these spaces. Its provisions satisfy DPD and SFD requirements for sprinkler protection with a sprinkler system under manual control, with power disconnect when the sprinkler system is activated.

NOTE: Seattle's rules for installation of shunt trip devices and sprinkler control valves are different from those of Washington State.

RULE

Elevator machine rooms in buildings protected throughout with an automatic sprinkler system shall comply with the following requirements:

1. FIRE ALARM INITIATING DEVICES

1.1. Smoke detectors, (not heat detectors), shall be installed at each elevator floor, and in each elevator machine room. Upon activation, these detectors shall cause Phase I recall and activate a fire alarm.

1.2. On all elevator installations where the elevator hoisting machine and motor are located at the top of the hoistway or located in the elevator pit area, a heat detector shall be located within 18 inches of the motor. The heat detector shall cause Phase I recall and activate a fire alarm.

1.3. In buildings having a fire alarm system, the detectors shall report to the fire alarm panel as a separate zone for each machine room, controller room and secondary sheave area provided with a detector.

1.4. In buildings without a fire alarm system, the detectors shall initiate an audible and visual alarm located at the recall floor near the entrance to the elevators. The alarm shall have signage with 1-inch letters stating, "ELEVATOR FIRE ALARM".

2. CONTROL OF SPRINKLER WATER FLOW

2.1. HIGH-RISE BUILDINGS (See Drawing 1 for an example.)

2.1.1 A sprinkler supply line to each elevator machine room shall be provided.

2.1.2 A solenoid valve shall be installed on the sprinkler supply line, and shall be in an accessible location outside the machine room. The solenoid valve shall be of the normally open type and shall be energized under normal conditions to prevent water from entering the machine room sprinkler piping.

2.1.3 A shunt trip-type circuit breaker or other approved control device that will remove power to the elevator controller, shall be installed in each elevator machine room. In machine rooms containing controllers for more than one elevator, the disconnect device shall disconnect power to all elevators controlled from that room, either by a master disconnect or by a disconnect for each elevator.

Note: Ground-fault circuit breakers have not been tested and approved for this purpose and are not acceptable.

2.1.4 Electrical power for the shunt trip control shall be dedicated circuit(s) from the emergency system and installed in compliance with the Seattle Electrical Code. See article 620.51(E).

2.1.5 The sprinkler supply solenoid valve and the elevator shunt trip disconnect device shall be controlled by a key switch located outside the machine room. The switch shall be easily accessible and located outside of and next to the machine room door not higher than 6 feet above the floor.

The key switch shall be a two position switch with the key removable in both positions and have normally open and closed set of electrical contacts. When in the normal position, the closed contacts of the key switch shall supply power to the solenoid valve, thus preventing water flow to the machine room sprinkler system. When the key is turned to the on position, two functions will occur. The normally open contact of the key switch will close and apply power to the shunt trip device(s) and disconnect all power to the elevators. This will also open the normally closed contact that was supplying power the solenoid valve and allow water flow to the machine room sprinkler system.

A duplicate key switch shall be installed in the fire alarm control center near the elevator status panel. The key switches shall shut off operating power to all elevators controlled from that machine room and shall open the solenoid valve on the sprinkler system.

2.1.6 The key switches at the machine rooms and in the fire alarm control center shall be permanently labeled, "ELEVATOR POWER DISCONNECT AND SPRINKLER ACTIVATION" in ¼ inch letters. The label shall specify which elevators are controlled by the switch.

2.1.7 Operation of elevator power disconnect circuits shall not interrupt power to the elevator emergency lighting, machine room lighting, fire alarm system, or communications.

2.1.8 When an individual elevator disconnect is turned to the off position, the shunt trip key switch shall continue to function for all other elevator shunt trip disconnects and sprinkler supply solenoid valves supplying the machine room.

2.1.9 A City elevator standard key box containing the key to the key switch and the elevator machine room door shall be installed outside of each main machine room door. (Ace Key No. 39504). NOTE: If the Ace key lock is used for the switch, no key box is required.

2.2. OTHER THAN HIGH-RISE BUILDINGS (See Drawing 2 for an example.)

2.2.1 An approved, manually-operated valve with an integral switch shall be installed on the sprinkler supply line for each elevator machine room. The switch shall be connected to the elevator power disconnect device. The valve shall be easily accessible and located outside of and next to the machine room door not higher than 6 feet above the floor. The valve shall be normally closed. Opening the valve shall shut off power to the elevators and charge the sprinkler lines with water.

2.2.2 The sprinkler valve shall be permanently labeled in ¼ inch letters, "ELEVATOR POWER DISCONNECT AND SPRINKLER ACTIVATION".

2.2.3 When the location of the elevator machine room and/or the associated sprinkler control system may be exposed to freezing conditions, the sprinkler control system shall be installed using the method as required for high rise buildings (Section 2.1).

Electrical power for the solenoid valve and the shunt trip control shall be a dedicated circuit(s) installed in compliance with the Seattle Electrical Code, article 620.51(E). When the elevator(s) is powered from a standby power source, the electrical power for the solenoid valve shall be powered from the same source.

3. SPECIAL REQUIREMENTS OF THE SPRINKLER SYSTEM

3.1. An accessible valve or other approved drain system shall be provided outside of the machine room to drain the manual or solenoid system when the valve has been returned to the closed position. The drain shall be located at the lowest point between the valve and the sprinkler head. A separate drain system shall be required for sprinklers located at the top of the hoistway and in elevator pits.

3.2. All sprinkler risers and returns shall be located outside of the machine room and hoistway.

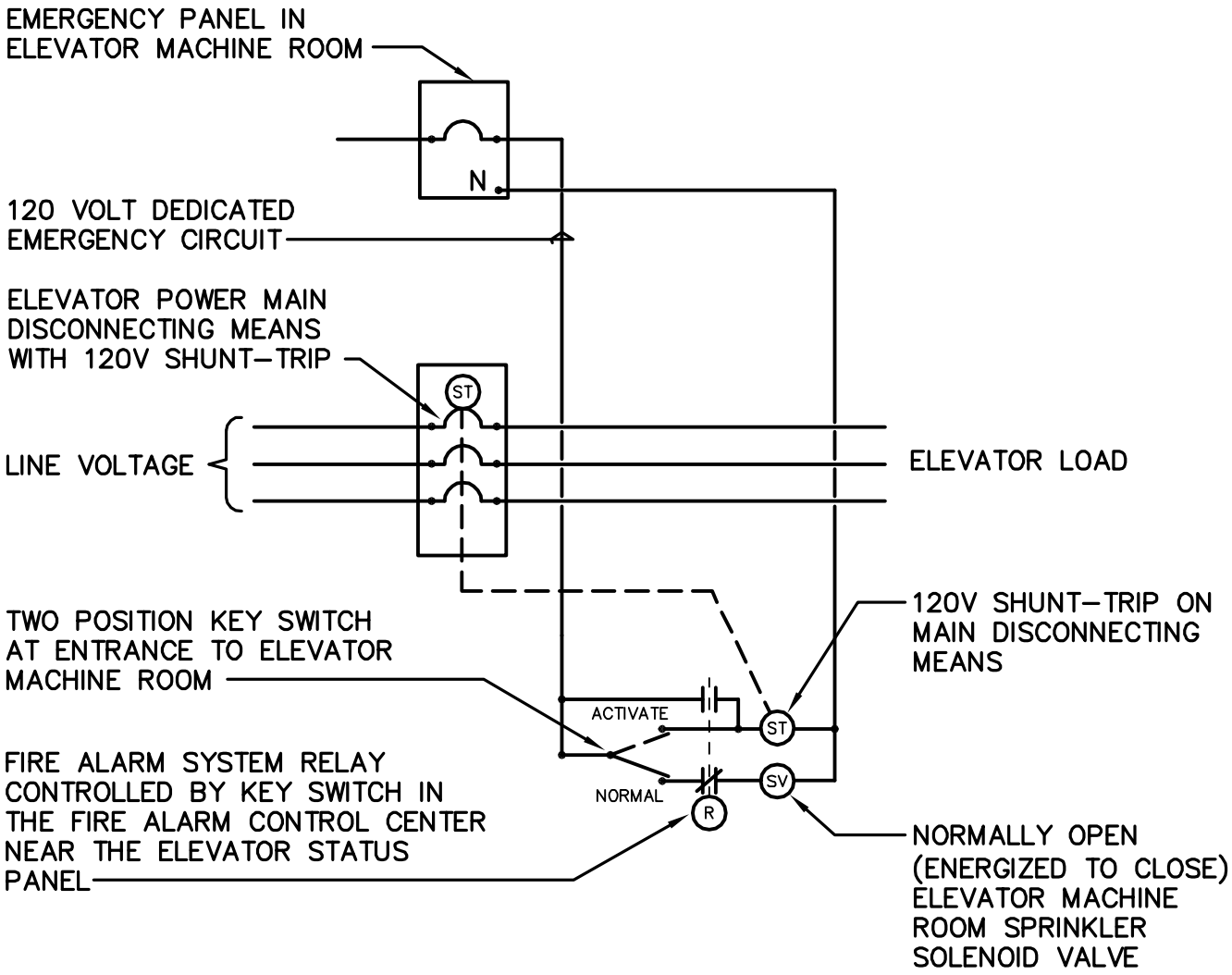
3.3. Sprinklers are not required at the top of noncombustible or fire-rated hoistways of elevators whose car enclosure materials meet the requirements of ASME A17.1, Safety Code for Elevators and Escalators.

3.4. Branch lines in machine rooms or machinery spaces shall supply sprinklers in these spaces only, except that branch lines in machinery rooms may also supply sprinklers at the top of the hoistway. When sprinklers are installed at the top of an elevator hoistway, the lines shall not be charged with water. The method of control shall be the same as used for the machine room sprinklers. Branch lines in the hoistway shall supply sprinklers at not more than one floor level.

3.5. When a manual shut-off valve with an integral switch is used, the power disconnect control device shall operate within two full turns of the valve.

3.6. Automatic sprinklers shall be installed in hydraulic elevator pits. The sprinklers shall be installed in such a way that the water spray pattern shall not spray higher than 2 feet above the pit floor, with a spray pattern directed level and down. A cage type guard shall be installed over the sprinkler. Automatic sprinkler heads shall not be located on a car entrance side or interfere with pit access. A drain valve and plug shall be provided at the lowest point of the automatic sprinkler piping in the pit and shall be installed to avoid mechanical damage. Piping shall enter the shaft at the floor level of the bottom landing. It shall be wall mounted, fit tight against the wall, and have proper clearance to the car and counterweights. In walk-in pits, sprinkler piping may enter the pit in an approved manner other than the floor level of the car's lowest landing.

DRAWING 1

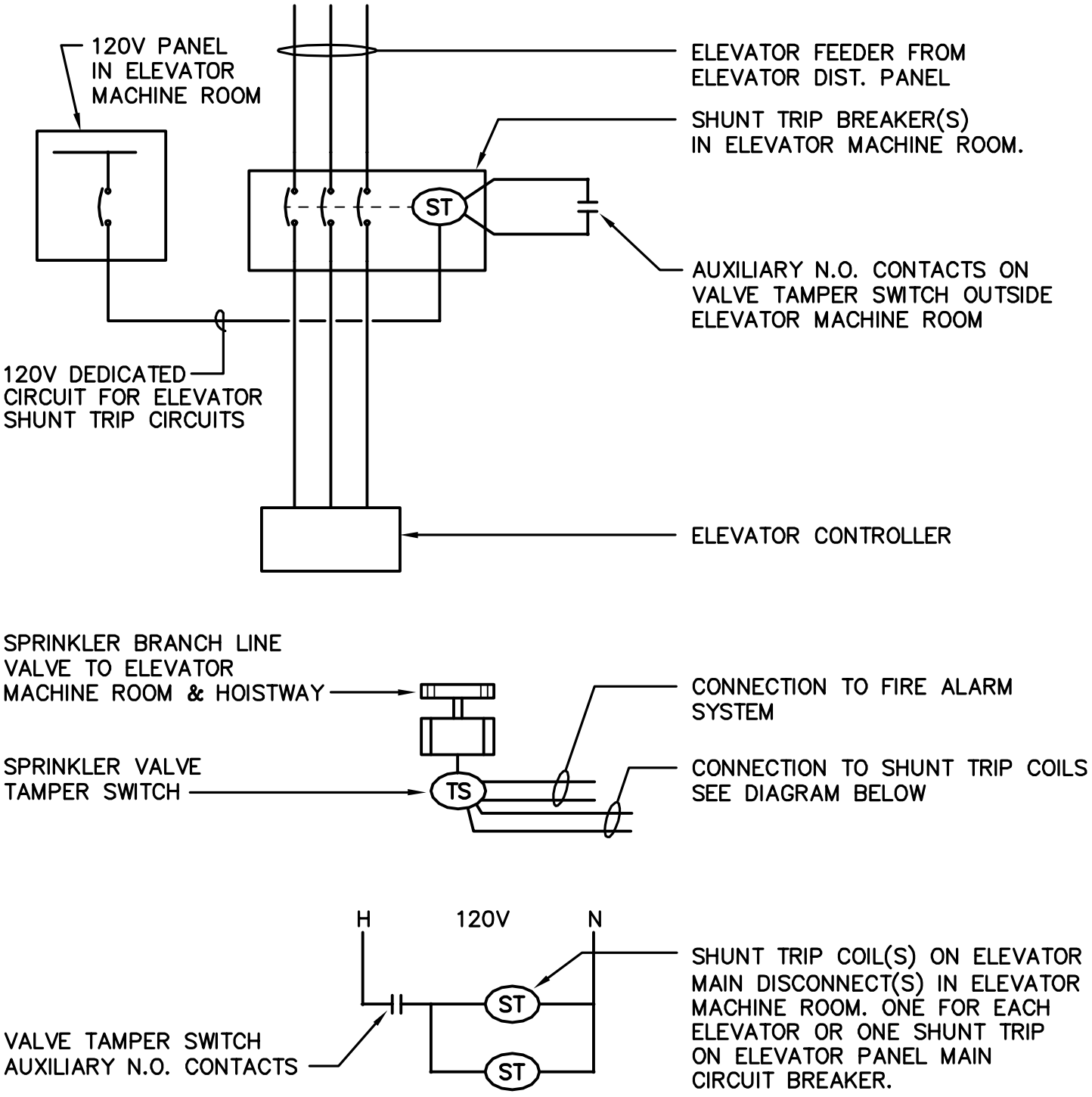


NOTE:
LABEL KEY SWITCHES AT ELEVATOR MACHINE ROOM AND FIRE ALARM CONTROL CENTER "ELEVATOR POWER DISCONNECT AND SPRINKLER ACTIVATION" IN 1/4" LETTERS. ALSO IDENTIFY WHICH ELEVATORS ARE CONTROLLED BY THE SWITCH.

EXAMPLE: HIGH RISE BUILDINGS ELEVATOR / SPRINKLER CONTROL DIAGRAM

NOT TO SCALE

DRAWING 2



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