



Los Angeles Fire Department

# **CHIEF'S REGULATION #4 PROCEDURES**

**TESTING OF FIRE  
PROTECTION EQUIPMENT**

Revision 06-19-2008

# LOS ANGELES FIRE DEPARTMENT

## CHIEF'S REGULATION NO. 4

### TESTING OF FIRE PROTECTION EQUIPMENT

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## **SECTION 1 – SCOPE**

The provisions of this regulation shall govern the minimum requirements for the periodic testing and repair of Fire Protection Equipment. The types of equipment addressed by this regulation include, but are not limited to Automatic Fire Sprinkler Systems, Central Station Signaling Systems, Elevator Emergency Service, Emergency and Standby Power Systems, Fire Department Communication and Emergency Voice Alarm Signaling Systems, Fire Escape Assemblies, Fire Hydrants, (Private) Fire Protection Assemblies, Fire Protective Signaling Systems, Fire Pumps, Gas Detection Systems, Pressure Regulating Valves, Refrigerant Discharge Systems, Smoke Management Systems, and Standpipe Systems. The intent is to ensure that this equipment is maintained in proper operating condition according to proper installation, and in accordance with generally accepted practices and the code in effect at the time of installation. It is not the intent of this regulation to limit or restrict the use of other testing or maintenance programs that provide an equivalent level of system integrity and performance as detailed in this regulation.

## **SECTION 2 – DEFINITIONS**

### **1. Addressable System:**

A Fire Alarm System with discrete identification that can have its status individually identified, or that is used to individually control other functions.

### **2. Alarm Signal:**

A signal initiated by a fire alarm initiating device indicating an emergency requiring immediate action, such as a signal indicative of fire.

### **3. Analog System:**

A system that transmits and receives signals indicating varying degrees of condition as contrasted with a conventional (basic fire alarm) initiation device, which can only indicate an on/off condition.

### **4. Annunciator:**

A unit containing two or more indicator lamps, alphanumeric displays, or other equivalent means in which each indication provides status information about a circuit, condition, or location.

### **5. Approved:**

Acceptable to the "authority having jurisdiction."

### **6. Authority Having Jurisdiction:**

The "authority having jurisdiction" is the

organization, office, or individual responsible for approving equipment, an installation, or a procedure.

### **7. Automatic Closing Device:**

A device attached to a fire protection assembly that allows the assembly to close when activated as a result of either heat, smoke, or other products of combustion.

### **8. Automatic Fire Extinguishing System:**

An approved self-contained system of devices and equipment, which automatically detects a fire and discharges an approved fire extinguishing agent onto or in the area of a fire. As regulated by Division 5 and 141 of the Los Angeles Fire Code (Except Automatic Sprinkler Systems).

### **9. Automatic Fire Sprinkler Systems:**

An approved integrated system of piping, valves, devices, automatic sprinkler heads and water supply which automatically detects a fire and discharges water in the area of the fire.

- (a) **Dry pipe:** A system containing air or nitrogen under pressure, the release of which permits the water pressure to open a valve known as a dry pipe valve. The water then flows into the piping system and out the opened sprinklers.
- (b) **Pre-action:** A system containing air that may or may not be under pressure, with a supplemental detection system installed in the same areas as the sprinklers. Actuation of the detection system opens the valve that allows water to flow into the piping and to be discharged from any sprinklers that are open.
- (c) **Deluge:** A system employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a detection system installed in the same areas as the sprinklers. When the valve opens, water flows into the system and discharges water from all sprinklers attached to the piping.

### **10. Automatic Initiating Device:**

A device designed to detect the presence of fire or smoke and initiate immediate action.

### **11. Basic Fire Alarm:**

A conventional system of components and circuits arranged to monitor and announce the status of fire alarm or supervisory signal-initiation devices and can only indicate an on/off condition.

**12. Building Description:**

Detailed information necessary to identify the size, use, occupancy type, and construction type of a building.

**13. Building Fire Control Room/Station:**

A specific room or area designated as the principal point of annunciation for the Fire Protective Signaling System and all associated equipment, systems and devices.

**14. Central Station Signaling System:**

A system consisting electrically operated circuits and equipment, which transmits alarms, trouble and supervisory signals automatically to a approved Central Station Service having competent and experienced servers and operators who, upon receipt of a signal shall take such action as required by the code. Such service is to be controlled and operated by a person, firm, or corporation whose business is to provide, maintain, and monitor supervised fire protection systems.

**15. Certification:**

A systematic program using approved testing and inspection procedures of the accepted systems, which allows the certified tester to verify that a fire protection system complies with all the requirements of the code as installed in accordance with the code in effect at the time if installation.

**16. Complex Fire Alarm System:**

A system of electrical devices and circuits installed, arranged and maintained to monitor and transmit varying degrees of condition and is used to control other auxiliary functions.

**17. Elevator, Automatic:**

Elevators with automatic operation and power-operated hoistway doors and equipped with firefighter Emergency service.

**18. Elevator Lobby Locking System:**

An approved fail-safe method of locking elevator lobby doors leading out of an elevator lobby.

**19. Emergency and Standby Power Systems:**

Special electrical wiring and equipment, which are required to be operational during interruptions of the normal electrical supply to the building, classified as follows:

- (a) **Emergency Power System:** The wiring, fixtures, equipment and luminaries in or on a building, which are required to be automatically energized from an alternate on-site electrical

supply within 10 seconds after failure of the normal electrical supply.

- [1] Exit signs and exit illumination
- [2] Elevator car lighting
- [3] Fire protective signaling systems

- (b) **Standby Power System:** The part of the normal electrical system which is required to be automatically transferred to, and energized from, an alternate on-site electrical supply, within 60 seconds after failure of the normal electrical supply.

- [1] Electrically driven fire pumps
- [2] Smoke management systems
- [3] Elevators designated for fire department and emergency use
- [4] Lighting circuits supplying elevator lobbies, Building Fire Control Room/Station, generator, and fire pump rooms
- [5] Exterior window washing equipment, including equipment listed in Emergency Power Systems

NOTE: Not all buildings have this equipment. Check single line diagram for proper equipment.

**20. Fire Department Connection:**

A connection through which the Fire Department can pump water into a Standpipe or Automatic Sprinkler System.

**21. Fire Escape Assembly:**

A secondary exit attached to the exterior wall of a building that is two or more stories in height and which provides emergency egress from the building. Fire escape assemblies shall include stairs, railings, landings, ladders and all associated safety equipment.

**22. Fire Hydrant (Private):**

A connection to a water main for the purpose of supplying water to fire hoses or other fire protection apparatus.

**23. Fire Protection Assembly, Automatic Closing:**

A rated fire assembly, which is maintained in a normally open position including all required hardware, anchorage, frames, sills, and is equipped with an automatic closing device.

**24. Fire Protection Assembly, Self-closing:**

A rated fire assembly, which is maintained in a normally closed position and is equipped with an

approved device to ensure closing and latching after having been opened for use.

**25. Fire Protective Signaling System:**

A system of electrical devices and circuits, or mechanical devices, installed, arranged and maintained to monitor and transmit, or emit, an audible and/or visual signal indicating an emergency requiring immediate action to safeguard life and property from fire.

**26. Fire Pump:**

An assembly that provides water flows and pressure to Fire Protection Equipment. The fire pump assembly includes the water supply, suction and discharge piping, valves, pump and pump driver, fire pump controller, and all auxiliary equipment appurtenant thereto.

**27. Fire Pump Controller:**

The cabinet, motors, starter, circuit breaker and disconnects switch, and other control devices for the control of electric motors and internal combustion engines that drive fire pumps.

**28. Firefighter Communication Systems:**

- (a) **Fire Department Communication System:** A two-way sound-powered telephone system capable of communicating between the building fire control room/station and all required locations.
- (b) **Emergency voice Alarm Signaling System:** A one-way system providing communication between the building fire control room/station and all areas of the building where provided.
- (c) **Required Telephone:** A telephone for fire department use with controlled access to the public telephone system.

**29. Foam-Water Sprinkler System:**

A foam-water sprinkler system is a special system that is pipe connected to a source of foam concentrate and to a water supply and equipped with appropriate discharge devices for discharging an extinguishing agent over the area to be protected.

**30. Gas Detection Systems:**

A system with all associated equipment and devices capable of continuous monitoring for the presence of a hazardous gas, with an audible visual alarm to alert occupants that a hazardous atmosphere exists.

**31. High-Rise Building, Existing:**

Buildings more than 75 feet (23m) in height.

Building height shall be measured from the lowest level of Fire Department access to the floor of the highest level used for human occupancy and is subject to the provisions of Title 24 of the California Code of Regulations. [Such building will generally have been constructed prior to July 1, 1974.]

**32. High-Rise Building, New:**

A building more than 75 feet (23m) in height. Building height shall be measured from the lowest level of Fire Department access to the floor of the highest level used for human occupancy and is subject to the provisions of Title 24 of the California Code of Regulations and Division 118 of the Los Angeles Fire Code. [Such building will generally have been constructed after July 1, 1974.]

**33. LISTED:**

Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and whose listed states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

**34. Maintenance:**

Repair and service, including periodically recurrent inspections and tests, required to keep the Fire Protection Equipment in operative condition at all times.

**35. Manual Pull Station:**

A manually operated device used to initiate an alarm to a fire protective signaling system.

**36. Pressure Regulating Device:**

A device designed for the purpose of reducing, regulating, controlling, or restricting water pressure. Examples include pressure reducing valves, pressure control valves, and pressure restricting devices.

**37. Refrigerant Discharge System:**

A system designed for manual discharge of a refrigerant agent into the atmosphere or a sewer system.

**38. Sequence of Operation:**

An approved series of functions to the Fire Protection Systems of a building caused by the initiation of a fire alarm initiating device.

(See Figure No. 1 in Section 4.)

**39. Shall:**

Indicates a mandatory requirement.

**40. Should:**

Indicates a recommendation or that which is advised but not required.

#### 41. Smoke Management Systems:

- (a) **Airflow Method:** A method of controlling smoke from migrating through fixed openings between smoke control zones using high air velocity through the opening(s) towards the fire zone of origin. The minimum average velocity cannot exceed 200 feet per minute is measured using an anemometer.
- (b) **Building Emergency Smoke Evacuation System:** A ventilation system capable of providing exhaust from specified areas of a building at a rate of not less than six changes of air per hour and releasing directly to the outside atmosphere without re-circulating exhaust to other areas of the building.
- (c) **Exhaust Method:** A method of controlling smoke in large spaces, such as malls and atria through the use of mechanical smoke removal systems. Testing is accomplished with the generally accepted practices to measure air and velocity.
- (d) **Mechanically Ventilated Smoke-proof Enclosure:** An enclosed stairway with vestibules equipped with a ventilation system designed to maintain a smoke-free atmosphere.
- (e) **Pressurization Method:** A method of controlling smoke by containing it within the zone of fire origin by maintaining a minimum 0.05 inch water gauge positive pressure differential between adjacent zones and the zone of fire origin. Testing is accomplished with the use of a magnehelic or incline manometer between adjacent smoke control zones.
- (f) **Pressurized Stair-shaft Ventilation System:** An enclosed stairway equipped with a ventilation system designed to maintain a uniform air velocity discharging to the outside atmosphere while maintaining a positive pressure in the stair-shaft relative to the adjacent areas during fire conditions.

#### 42. Standpipe Systems:

A wet or dry system of piping, valves, hose outlets, and allied equipment installed in a

building or structure with outlets located in such a manner that water can be discharged through hose and nozzles. Standpipe systems are classified as follows:

- (a) **Class I:** A standpipe system with or without a direct connection to a water supply equipped with 2½-inch hose outlets for use by Fire Department or trained personnel.
- (b) **Class II:** A standpipe system directly connected to a water supply and equipped with 1½-inch hose outlets with hose and nozzle intended for use by building occupants or by the fire department during initial response.  
**NOTE:** 1½-inch hose connections supplied from a sprinkler system shall not be required to meet the requirements of class II hose systems as defined by NFPA 14.
- (c) **Class III Combination:** A combination standpipe system directly connected to a water supply and equipped with both 1½-inch hose outlets with hose and nozzle intended for use by building occupants or by the fire department during initial response. And 2½-inch hose outlets for use by Fire Department or trained personnel. Hose connections for Class II Systems may be made through 2½-inch hose valves equipped with easily removable 2½-inch by 1½-inch reducers.
- (d) **Combined:** A system of piping directly connected to a water supply which serves 2½-inch hose outlets equipped with 2½-inch by 1½-inch reducers for use by Fire Department or trained personnel and also supplies water to an Automatic Sprinkler System.
- (e) **Class H:** A standpipe system directly connected to a water supply equipped with 1½-inch hose outlets with hose and nozzle located on two sides of a helicopter landing site intended for use by Fire Department or trained personnel in fighting fires on helicopter landing sites.

#### 43. Supervisory Signal:

A signal is indicating the need for action in connection with an abnormal condition of a Fire Protection System.

#### 44. System Description:

The concise and approved description of a

system, equipment or device as described by the Manufacturer's Operating Manual.

**45. Trouble Signal:**

A signal initiated by the Fire Alarm System, indicative of a fault or abnormal condition of a monitored circuit or component.

**Wet Stacking:**

Field term indication the presence of unburned fuel or carbon or both in the exhaust system of a diesel engine.

**SECTION 3 – GENERAL REQUIREMENTS**

**A. Testing Intervals:**

**(1) Yearly:**

Tests of the following systems, equipment, and devices shall be conducted at least each year:

**(a) All Buildings**

- [1] **Central Station Signaling Systems.**
- [2] **Elevators, Automatic, Phases I and/or II.**
- [3] **Emergency and Standby Power Systems.**
- [4] **Emergency Voice Alarm Signaling Systems.**
- [5] **Fire Department Communication Systems.**
- [6] **Fire Escape Assemblies.**
- [7] **Fire Hydrants (Private).**
- [8] **Fire Protective Signaling Systems.**
- [9] **Fire Pumps.**
- [10] **Gas Detection Systems.**
- [11] **Pressure Regulating Valves (Maintenance Test Only).**
- [12] **Smoke Management Systems.**
- [13] **Pre-action, Deluge, Dry pipe and Foam valves of Automatic Sprinkler Systems (Trip Test Only).**

**(b) Buildings Over 75 Feet (23m) in Height (high-rise Buildings)**

- [1] **Fire Protection Assemblies, Automatic Closing (Sections 4-G-1 through 8).**

**(2) Every Five Years:**

Tests of the following systems, equipment and devices shall be conducted at least once every five years:

**(a) All Buildings**

- [1] **Fire Protection Assemblies, Automatic Closing.**
- [2] **Refrigerant Discharge Systems.**
- [3] **Sprinkler Systems.**
- [4] **Standpipe Systems.**
- [5] **Pressure Regulating Valves (Flow Test).**

- (3)** The Chief has the authority to require a test at shorter intervals when an inspection by the Chief indicates there is substantial reason to believe that the equipment, system, or device would fail to operate properly in an emergency.

**B. Fire Department Notification:**

- (1) The Chief shall be notified by the concerned building owner or owner's agent at least two working days prior to the performance of any required test or retest in order that the Chief or his representative may observe the test.
- (2) At the conclusion of the test, the Chief shall be notified within 24 hours of any fire protection equipment or system that was determined to be inoperable. Subsequently, written documentation shall be submitted to the Chief within seven working days on approved Fire Department forms.
- (3) When it is determined that the fire protection equipment, system, or device is operable, the test person shall attest to its condition to the Chief using approved Fire Department forms within seven working days after initial test or retest.

**C. General Test Information:**

**(1) Notification:**

- (a) Notify all concerned agencies prior to and at the conclusion of all testing of

- all supervised fire protection equipment, systems, or devices.
- (b) Notify all building occupants prior to, during and at the conclusion of all testing of all supervised fire protection equipment, systems, or devices, which may cause concern to such occupants.

(2) **Fire/Life Safety System Description**

**Procedures:** Used to determine the status of a system as intended according to the approved design standard for that particular system, equipment or device as may be necessary to carry out the purpose and intent of this regulation. Building owners shall submit a fire life safety system description manual to the Fire Department for approval. The Chief shall be consulted and approval obtained for any alternative programs or procedures.

- (3) **Fan Motors:** When testing systems, equipment, or devices that will activate fans of emergency smoke management systems, determine proper automatic operation by actuation of each type of device in each zone, then disconnect power to fans and continue testing. Constant on/off operation of fans could damage motors. At conclusion of testing, return fan motors to their normal mode.

- (4) **Electrical Thermal Links:** Test electrical thermal links for continuity only.

- (5) **Fire Pumps:** When testing water flow alarms or pressure regulating devices on systems equipped with fire pumps, fire pumps may be placed in the on position to keep pumps from cycling on and off. At the conclusion of the test, return pumps to the automatic mode.

**D. Repair:**

When it is determined that any fire protection equipment, system, or device is inoperable or defective, the owner or the owner's agent shall

commence repairs of the deficiencies forthwith. Such repair shall be completed as soon as possible, but in every case within 30 days of the initial test. At the completion of repairs, the equipment, system, or device shall be re-tested to determine that it is fully operable.

The Chief shall be notified of the repair and retest within seven days on approved Fire Department forms.

**NOTE:** A permit from the Department of Building and Safety or the Fire Department may be required for repairs of equipment, systems or devices in accordance with the Los Angeles Building and Fire Codes. A licensed contractor with the appropriate license shall perform all required work.

**E. Fire Hose Connections:**

- (1) All fire hose connections shall be equipped with American National Standard hose coupling screw threads as specified in NFPA - 1963, "**Standard for Screw Threads and Gaskets for Fire Hose Connection,**" unless approved by the Chief.

- (2) All Fire Department inlets and outlets shall be equipped with approved plugs or caps.

**F. Gauges:**

Gauges shall be replaced when defective or every 5 years. Gauges shall be tested by comparison with a calibrated gauge. Gauges not accurate to within 3 percent of the full scale shall be re-calibrated or replaced.


- (2) Concern Name
- (3) Concern Address
- (4) Contractors license number or State Fire Marshals "A" license number
- (5) Certificate of Fitness Number
- (6) Date system was certified
- (7) Signature of certified tester
- (8) Seal of the City of Los Angeles
- (9) Type of system tested

**G. System Tagging:**

System tags shall be placed on all systems certified by the Certified tester, and shall bear the following information machine printed on them.

- (1) The words "Do not Remove by order of the Fire Chief"

The system tags shall be five and one-half inches (5-1/2) in length and two and three-fourths inches (2-3/4) in width. The following sample shall be used for all tags.

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
		2005			2006			2007			2008		2009				
<b>DO NOT REMOVE</b>	BY ORDER OF THE FIRE MARSHAL	<input type="checkbox"/> ANNUAL <input type="checkbox"/> 5-YEAR		COMPANY NAME _____ ADDRESS/PHONE # _____ STATE LIC. # _____						<input type="checkbox"/> AUTO SPRINKLERS <input type="checkbox"/> STANDPIPE CLASS _____ <input type="checkbox"/> COMBINED SYSTEM <input type="checkbox"/> FIRE PUMP <input type="checkbox"/> FIRE ALARM <input type="checkbox"/> CENTRAL STATION <input type="checkbox"/> E-POWER <input type="checkbox"/> SMOKE SYSTEM <input type="checkbox"/> ELEVATORS <input type="checkbox"/> FIRE DOORS <input type="checkbox"/> FIRE ESCAPES							
																	
		REG 4 NO. _____		Signature _____													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14
		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

## **SECTION 4 – GENERAL TEST PROCEDURES**

### **A. Central Station Signaling Systems:**

- (1) Test all fire protection equipment, systems, and devices, which are supervised by an approved central station monitoring company for their proper operating condition, supervision and maintenance in Accordance with NFPA-72.
- (2) Determine that the transmitter panel is operating properly and the approved system description, sequence of operation and operating instructions are available.
- (3) Notify the central station monitoring company and building occupants prior to conducting tests.
- (4) Actuate each water flow alarm device by use of the Inspector's test valve.
- (5) Actuate all other fire alarm devices, supervisory devices and transmitters for proper operation and supervision.
- (6) Determine that the system has two approved methods of transmitting the signal to the Central Station monitoring company.
- (7) At the conclusion of the test notify the central station monitoring company, determine that the central station properly supervised and received all test signals by maintaining a chronology of all testing. Return system to the normal mode, and notify building occupants that the test is complete.

### **B. Communication Systems (Firefighter and Building):**

Determine that all equipment is in proper operating condition and well maintained in accordance with NFPA-72. Check system reliability as follows:

- (1) **Fire Department Communication Systems.**
  - (a) Test clarity of voice communications between floors, the building fire control room/station and other locations where provided.
  - (b) Determine that a minimum of six approved sound-powered telephone

sets are available at the building fire control room/station.

- (c) Check telephone jacks for proper type, loose connections, corrosion, and proper installation.
- (2) **Emergency Voice Alarm Signaling Systems:**
    - (a) Determine that voice evacuation panel is operating properly and approved operating instructions are available.
    - (b) **New buildings:** Determine system reliability by testing clarity of voice communication between the fire control room/station and all areas within the structure include outside patios and balconies above the first floor. Audibility shall not be less than 15db minimum above the average ambient sound level.
    - (c) **Existing buildings:** Determine system reliability by testing clarity of voice communication between fire control room/station and all areas where provided. Audibility shall not be less than 10db above the average ambient sound level.
    - (d) Determine that the voice override on voice evacuation systems operates properly. With fire alarm audible signals operating, press down on the microphone button and speak into microphone. At that time, fire alarm audible tones shall discontinue to sound and voice sound shall be 15db minimum above average ambient sound level.

**NOTE:** Systems installed prior to 1993 may have an audible signal a minimum of 10db above the average ambient sound level.

- (e) Systems equipped with A.D.A. strobes may continue to flash when voice evacuation system is activated or audible signals are silenced.
- (3) **Required Public Telephone:**

To be located in the building fire control room as regulated by Section 403 of the California Building Code.

- (a) Determine that Fire Department telephone number is posted.
- (b) Determine that telephone is connected to the telephone system and is operational.

**C. Elevators, Automatic (Phase I and II):**

Test shall determine that all features of Phases I and Phase II (if provided) of fire emergency service are in proper operating condition in accordance with Title 8, Section 3041 of the California Code of Regulations.

**(1) Phase I (Recall)**

**(a) Elevator Lobby Smoke Detectors**

- [1] Determine that all landings served by each elevator or each group of elevators, except the designated main recall floor, are provided with smoke detectors.
- [2] Determine that smoke detectors located in the elevator machine room and at top of elevator shaft recalls elevators in that bank to designated main recall floor.

**EXCEPTION:**

The main recall floor may be equipped with elevator lobby smoke detectors, provided they recall the elevator car to an alternate floor approved by the Chief.

- [3] Recall function - Actuate the elevator lobby smoke detector on each landing. Check for Phase I activation and interconnection of circuit with the fire alarm system, if provided:
  - [a] Determine that the door retraction safety devices, (except mechanical safety edges) are immediately deactivated.
  - [b] Determine that the "Emergency Stop Switch" is rendered inoperative as soon as the doors are closed and the elevator car starts towards the designated recall level. A moving car, traveling to or away from the designated level shall have its

- "Emergency Stop Switch" rendered inoperative immediately.
- [c] Determine that elevator cars are not subject to calls from other sources; i.e., corridor call buttons and car floor selection buttons.
- [d] Determine that each elevator car returns nonstop to the designated main recall floor and remains there with the doors open.
- [e] Determine that the elevator shunt trip smoke detector operates properly and shuts power to the elevator equipment.

**(b) Designated Main Recall Floor Switch**

- [1] Determine that the proper designated main floor recall switch is provided for each elevator or each group of elevators. The designated main floor recall switch shall be a three-position ("on," "off," and "bypass") key-operated switch. The key shall not be removable in the "bypass" position. Determine that keys to operate the designated main floor recall switch and in-car elevator switch are keyed alike and are readily available for firefighter use. Keys shall be located in the Fire Department lock-box or other location approved by the Chief.
- [2] Turn the designated main floor recall switch to the "on" position. Determine that the recall function is the same as described in Section 4-C-1 Phase I Recall Function, except the alarm system, if provided, shall not activate.

**(c) Designated Fire Control Room/Station key-Switch**

- [1] Turn the designated fire control room/station key-switch to the on position, if provided. Determine that the recall function is the same as described in Section 4-C-1 (Phase I Recall Function), except that the fire alarm system, if provided, shall not activate. This switch shall be a

two-position ("on" and "off") key-operated switch.

**NOTE:** If a three-position switch is used, the main floor switch shall override the bypass position in the fire control room if activated.

- (d) **Elevator Status Panel:** Check for proper function of the elevator status panel.

**(2) Phase II (Override):**

- (a) Determine that the proper in-car switch is provided in each elevator car. The in-car switch shall be a two-position ("on" and "off") key-operated switch, keyed identically with the designate main floor switch. The key shall not be removable in the "on" position.

**NOTE:** Elevator cars equipped with a three-position "off, hold, on," key switch, the key is removable in any position.

- (b) Determine that keys are readily available for firefighter operation of the Phase II override function. There shall be a separate key for each elevator car in addition to the key for the designate main floor switch. Keys shall be located in the Fire Department lock-box or other location approved by the Chief.
- (c) Determine that the in-car phase II switch in each elevator car is operative only when the elevator is in the Phase I recall mode.

**NOTE:** If Phase I was activated by the lobby key switch and the in-car switch is in the "on" position, the elevator car shall remain in Phase II. If the lobby switch is turned to the "off" position the elevator shall remain in phase II until the car returns to the designated recall floor and the doors fully open.

- (d) **Phase II Override Function:** Turn the designated main floor switch to the on position, then turn the in-car switch of each elevator car to the on position. Test the override function of each car as follows:

- [1] Determine that each elevator car is operable only by a person in that car. The car shall not respond to a call from any other source.
- [2] Actuate a floor selection button in a normal manner. Close the doors by continuous pressure on the "door close" button. If not provided, close the doors by continuous pressure on the floor selection button. If the button that closes the doors is released prior to the doors reaching the fully closed position, the doors shall automatically reopen.
- [3] Determine that, if multiple floor selection buttons have been actuated, the elevator car will stop at the first of the selected floors that it reaches. At that time, all other selections shall cancel. The doors shall remain closed.
- [4] Open the doors by continuous pressure on the "door open" button. If not provided, open door by continuous pressure on floor selection button. If the button is released prior to the doors reaching the fully open position, the doors shall promptly and automatically re-close.
- [5] Where more than one operating panel is provided in an elevator car, determine that both panels will correctly operate the override function.
- [6] In elevators where key switches or programming characteristics are provided to prevent the elevator from stopping at one or more landings while in normal service, determine that fire emergency service overrides such features.
- [7] Determine that the "Emergency Stop Switch" is operative during the time the elevator is in the Phase II override function.

- [8] Cars equipped with a three position “off, hold, on,” key switch shall operate in phase II in the “on” position. Shall stay stopped at their designated landing in the “hold” position And return to phase I in to “off” position causing the car to return non stop to the main recall floor.
- [9] Return all systems and key switches to their normal positions.

**D. Emergency and Standby Power Systems:**

- (1) Determine that all equipment is in proper operating condition and well maintained in accordance with NFPA-70 and 110.
- (2) Determine that the generator has not been started within 12 hours to ensure a cold start and that all systems and equipment powered by emergency power are operating prior to load transfer from normal power to emergency power.
- (3) Use the main breaker for load transfer from normal power to emergency power.

**EXCEPTION:**

With the approval of the Chief, other methods of load transfer may be conducted.

- (4) Determine that the load transfers in the required time.
  - (a) Emergency power requirement is 10 seconds.
  - (b) Standby power requirement is 60 seconds.
- (5) Determine that emergency current supplies power to all required systems and equipment as per building single line diagram.
- (6) Conduct a load test on battery systems to ensure proper battery life. Batteries supplying power to unit lighting shall have sufficient power for 90 minutes.

**NOTE:** A proper test of unit lighting shall be conducted by using the main breaker, or with the approval of the Chief, the circuit breaker that supplies power to the fixtures and not by pressing the test button.

- (7) **Emergency Lighting Systems:**  
Determine that all Emergency Lighting has been restored within 10 seconds. All areas requiring Emergency Lighting shall be checked for adequate lighting. Ensure a reading of not less than one foot-candle power for exit path lighting measured at the floor level and a reading of not less than five foot-candle power for exit and directional signs measured at the sign. A light meter may be used. The emergency generator or battery system must supply power to all emergency lights for the duration of the test.
- (8) Return all systems and equipment to their normal position.

NOTE: Testing of emergency lighting levels should be conducted during hours of darkness when necessary in order to accurately measure the required candle-power simulating worst case scenario. A single line diagram shall be provided for each system tested.

**NOTE:** Diesel driven generators shall be exercised under load monthly for a minimum of 30 minutes to prevent wet stacking.

**E. Fire Escape Assemblies:**

- (1) Determine that fire escape stairs, landings, ladders, guards, rails, and safety chains are in good repair.
- (2) Determine that all landings are accessible from inside the building and provided with proper signage.
- (3) Operate the ladder release mechanism. The release mechanism must operate easily. The ladder must travel to the ground without hesitation. It must be stable and firm in its position after reaching the ground. This procedure shall be conducted twice.
- (4) Return ladder to its normal position.

inches per second.

#### F. Fire Hydrants (Private)

Determine that hydrant is in proper operating condition and well maintained in accordance with Los Angeles Fire Code Division 9, NFPA-25 and NFPA-291

- (1) Outlets: Determine that outlets are not damaged and are provided with proper caps. Only 1-1/4 or 1-3/4 pentagonal nuts shall be accepted.
- (2) Flow: Hydrant shall be opened fully and water flowed until all foreign material has cleared. Flow shall be maintained for not less than one (1) minute (care should be given to avoid flooding and property damage).
- (3) One hydrant closest to the main is chosen to be the residual hydrant at which the normal static pressure will be observed with the other hydrants in the system closed. The residual pressure will be observed with the other hydrants flowing.
- (4) When the required GPM's are flowing, a minimum residual pressure of 20 psi shall be maintained at the residual hydrant. Record the residual pressure with the required GPM'S flowing from the furthest hydrant in the system. The required flow shall be in accordance with Los Angeles Fire Code Division-9

**NOTE:** To obtain satisfactory test results, sufficient discharge should be achieved to cause a drop in pressure at the residual hydrant of at least 25%. For hydrants with a static pressure of less than 40 psi, hydrants should be rated at one-half the static pressure.

#### G. Fire Protection Assemblies: Automatic Closing

**NOTE:** The following Automatic Closing Fire Assemblies shall be tested by persons qualified to do the work in order to determine their proper operating and reset condition in accordance with NFPA-80. The average closing speed shall be not less than six inches per second, not including any initial delay time, and not more than twenty-four

- (1) **Swinging Fire Door:** Release the hold-open device by unfastening the most distant fusible link or by de-energizing the smoke-actuated hold-open device. The door must close the opening completely and latch.
- (2) **Sliding Doors on an Inclined Track:** Unfasten the most distant fusible link to release the suspended weight to allow the door to travel down the inclined track to the closed position. The door must close completely and be held firmly in place by the binders. Doors in pairs must butt together without gaps or excessive offset from each other.
- (3) **Sliding Doors on a Level Track:** Unfasten the most distant fusible link supporting the closing weight. As the closing weight drops, the door must cover the opening completely.
- (4) **Rolling Steel Doors:** Unfasten the restraining cable or most distant fusible link and drop the restraining trigger quickly. The door must cover the opening completely.
- (5) **Telescoping Vertically Sliding Doors:** Unfasten the small counterweight. The large counterweight must operate the door, covering the opening completely.
- (6) **Vertical Sliding Doors:** Unfasten the most distant fusible link that supports the suspended weight. The door must cover the opening completely.
- (7) **Stair-shaft Door Locks:** Determine that the locks release when:
  - (a) The building loses normal electrical power; doors will remain locked when transferred to emergency power.
  - (b) Any fire protective signaling system-initiating device is actuated.
  - (c) Initiated manually from building fire control room/station or other location approved by the Chief.
- (8) **Initiating Devices:** Ascertain that all initiating devices, e.g., smoke detectors and manual pull stations that are interconnected to a fire protection signaling system will actuate the hold-open device and release the fire

protection assembly to which they are connected.

**NOTE:** Single Station - stand alone smoke detectors connected to fire doors in multiple residential occupancies that are not part of a fire alarm system shall be tested every six months by the building owner or by the owner's representative. A record of the test shall be maintained and made available for inspection upon request by the Chief.

(9) **Ventilation and Air Duct Dampers in non-sprinklered buildings:**

Disconnect the fusible link or actuating device to the damper control. The damper must automatically travel to a position that closes the opening completely.

**NOTE:** Dampers in sprinklered buildings shall be tested when first installed, or when major improvements to an area are made.

(10) **Laundry and Rubbish Chute Doors:**

Operate the door assemblies. The doors must close and latch either by means of a counterbalance or spring-load mechanism.

(11) **Dumbwaiter Doors, Access Doors, and Fire Windows:** Determine that the automatic operation of these assemblies will function by releasing the weights or by actuation of any initiating device. Opening or closing the contacts, whichever is applicable, will actuate electrically operated devices. Determine that they close the opening completely when activated.

(12) **Fire Shutters:** When these assemblies are automatic or self-closing, determine that they close the opening completely when activated.

## H. Fire Protective Signaling Systems:

**NOTE:** Prior to testing any Fire Protective Signaling System, the system shall be clear of all supervision, trouble, tampers, and alarm signals.

(1) Determine that all equipment is in proper operating condition and well

maintained in accordance With NFPA-72

(2) **Operating Instructions:** Approved operating instructions for the Fire Protective Signaling System shall be posted in or adjacent to the building fire control room/station. A systematic checklist of all fire and life safety initiating devices with a simplified floor plan of the location and type of each initiating device shall be provided in or adjacent to the building fire control room/station.

(3) **Sequence of Operation:** An approved sequence of operation shall be posted in or adjacent to the building fire control room/station showing the operation of all auxiliary functions of the fire protective signaling system. (See Attachment No. 1)

(4) **Trouble Signal:** Disconnect fire alarm AC power. The audible trouble signal and trouble light or lights must operate. Operate the trouble signal-silencing switch. Restore power and trouble light switch to normal position. If a ring-back system is provided, the trouble light switch must be reset.

(5) **Supervision of Initiating Device Circuits:** Disconnect a fire alarm initiating device. Audible trouble signal and light or lights on fire alarm annunciator panel must operate.

(6) **Supervision of Audible Fire Alarm Device Circuits:** Disconnect a notification appliance. At that time, either an audible trouble signal and/or light on fire alarm annunciator panel must operate.

(7) **Supervision of Control Valve Circuits:** Movement of the valve from its normal position shall initiate a distinctive signal at the fire alarm panel. The off-normal supervision signal (tamper) shall remain until the valve is restored to its normal position. The off-normal supervision signal shall be obtained by two revolutions or 1/5 the travel distance of the control valve apparatus, whichever is less from its normal position.

(8) **Initiating Device Function Test:** Test all fire alarm initiating devices. Actuation of an initiating device shall

indicate a signal on the fire alarm panel and/or the annunciator panel, indicating the type of device and zone of actuation if provided. Actuation of initiating devices shall also sound an audible signal that is a minimum 15 dBA above the ambient noise level. Sound shall be a minimum of 75 db (45 dBA for private mode) and shall not exceed 120 dBA anywhere in the occupiable area. An average ambient sound level greater than 105 dBA shall require the use of visible notification appliances.

**EXCEPTION:**

Systems installed prior to 1993 and appliances intended for operation in the private mode. An audible tone of 10 dBA above normal ambient sound level is acceptable.

- (9) In buildings regulated by the provisions of Title 24-California Code of Regulations and Division 118-Los Angeles Fire Code, shall have all fire alarm, trouble and supervision signals transmitted to a 24-hour continuously supervised Building Fire Control Room/Station or to a UL approved remote Central Station Service.
- (10) **Sprinkler System Flow Switch:** Open the Inspector's test valve(s) for each riser or floor valve, causing the water flow switch to be actuated. This actuation shall indicate an alarm within 20 to 60 seconds. In addition, the outside sprinklers alarm bell (if provided) will sound within 90 seconds.
- (11) Determine that subsequent alarms reactivate audible signals; i.e., resounding of alarms from one floor to the next.
- (12) Verify that all ADA strobes are activated by initiating devices and flash at a rate of 60 to 120 per minute. Strobes may continue to flash when the voice evacuation system is activated or when the fire warning system is silenced.

**NOTE:** ADA strobe shall be synchronized when more than two strobes are visible from any location.

**I. Fire Pumps:**

- (1) Determine that the fire pump, fire pump controller, remote status panel, water supply, fire pump test header, approved signs and all other associated components are in proper operating condition and maintained in accordance with NFPA-20 and NFPA-25.
- (2) Determine the rated capacity and pressure of the pump from the pump plate attached to the pump. Determine the required flow and the number of test outlets required by multiplying the rated capacity of the pump (GPM) by 250 (GPM). To determine the 50, 100 and 150 percent required flow of the pump. An approved method shall be used to measure both GPM and PSI.
- (3) Determine that the fire pump starts automatically and manually in accordance with manufacturer specifications by decreasing system pressure for automatic starts and using the start switch for manual starts.
- (4) Operate the fire pump for seven minutes with all Fire Department discharge outlets in the closed position (except for a minimum flow of water to ensure proper pump cooling). Record churn pressure.
- (5) After the fire pump has been operating for seven minutes, open the correct number of test outlets and record the pump discharge at 50%, 100%, and 150% percent of the rated capacity. At peak flow (150%percent), the fire pump shall not perform less than 65% percent of its rated capacity.
- (6) If the fire pump is fed directly from city mains, ensure that the residual pressure on the supply side of the pump does not drop below 20 PSI during the flow test. A reading below 20 PSI could damage city mains.
- (7) At the conclusion of the pump test, restore all valves and controls to their normal operating condition.

**NOTE:** Fire pump assemblies shall be automatically started weekly without flowing

water. Electric fire pumps shall run for a minimum of 10 minutes and diesel fire pumps shall run for a minimum of 30 minutes to prevent wet stacking.

**J. Gas Detection System:**

**(1) Methane Gas**

- a. Verify that the gas detection system and all associated components are in proper operating condition and maintained in accordance with F.P.B. Requirement No. 71, Chapter 71 of the Los Angeles Building Code and Division 123 of the Los Angeles Fire Code.
- b. Verify that the control panel is in proper operating condition and the approved system description, sequence of operation, operating instructions and emergency telephone number of company responsible for servicing system is posted at or adjacent to the control panel and the annunciator panel.
- c. Verify that emergency power is capable of supplying power for 24 hours in the standby mode and 5 minutes in full alarm after 24 hours in the standby mode.
- d. For methane systems, test all sensors in the system using 10% to 25% L.E.L. and 50% to 60% L.E.L. Methane Test Gases for proper activation of alarm system and proper annunciation at the status panel. The drift (difference) between the sensor and the test gas shall not exceed +or- 5% LEL when using 50% test gas. Verify that system goes into pre-alarm between 10% and 24% L.E.L. and into full alarm at 25% L.E.L.
- e. Verify that all audible devices sound an alarm a minimum of 15db above the ambient noise level but not less than 75db and not more than 120db and are distinctive from all other alarm signals. Visual devices shall be visible and shall be synchronized when more than two devices are visible
- f. All devices shall be identified with the word "METHANE" written on them.
- g. Verify that all mechanical air ventilation systems (if applicable) operate properly when system is activated at or below 10% L.E.L. and an exchange of air occurs at a rate of not less than four (4) changes of air per hour and exhausted directly to the outside. Verify that vent risers are not damage or obstructed and maintain a 10' foot clearance around point of discharge.
- h. When required, verify that all methane alarm, supervision, and trouble signals are transmitted to a 24-hour continuously supervised location or a UL Laboratory approved remote central station service. Verify for proper type of activation and dispatch.
- i. Verify that the electrical circuit breakers supplying normal electrical power are equipped with a lockout device.
- j. Verify that sensors located in the vent risers do not place the system in alarm and do not cause a fire department dispatch. These sensors shall only send a supervisory signal.
- k. Verify that all sensor identification addresses correspond with the same information as the control panel.

**K. Pressure Regulating Valves:**

The following procedure applies to every 2-1/2-inch standpipe outlet equipped with pressure regulating valves, to determine their proper operating condition and maintenance in accordance with NFPA-14 and NFPA-25.

Fire pump(s) must be operating when measurements are taken. Perform test procedure in the following sequence:

- (1) Attach approved flow and pressure measuring devices to the pressure-reducing valve.
- (2) Attach an approved 2-1/2 inch shut-off on the discharge side of the measuring devices.
- (3) Attach an approved water drainage system on the discharge side of the 2-1/2 inch shut-off.
- (4) Open the outlet fully; regulate the water for the required maintenance flows from the 2-1/2 inch shut-off.
- (5) Determine that the outlet delivers at

- least 300-GPM.
- (6) With 300-GPM flowing, ensure that the residual pressure on the discharge side of the outlet is at least 80-PSI and not more than 125-PSI. Document residual pressure with 300-GPM flowing on approved Fire Department forms. If adjustments are needed a residual pressure of 100-PSI is recommended.

**EXCEPTION:**

For buildings built after 1994, required flow is 300-GPM between 100-PSI and 125-PSI.

- (7) Ensure that static pressure on the discharge side of the outlet is a maximum of 150-PSI. Document static pressure on approved Fire Department forms.

**EXCEPTION:**

For buildings built after 1994, static pressure shall be 175-psi maximum.

- (8) Close outlet and remove test equipment.

**L. Refrigerant Discharge Systems:**

- (1) Systems Providing For Manual Discharge of Refrigerant to the atmosphere:
- (a) Determine that the emergency refrigerant control box is plainly marked:  
"FOR FIRE DEPARTMENT ONLY – (REFRIGERANT) CONTROL VALVE."
  - (b) Determine that the high and low-pressure valves in box are indicated.
  - (c) Operate the high and low-pressure valves to assess proper working condition.
- (2) System Provided With A Fire Department Diffuser Consisting of A 2 ½" Hose Connection To A Sewer:
- (a) Determine that the emergency refrigerant control box and valves are properly labeled as per (a) and (b) above.
  - (b) With water flowing through 2 ½" hose to Fire Department diffuser, open the

high and low-pressure valves to assess proper working condition.

**M. Smoke Management Systems:**

- (1) **Building Emergency Smoke Management Systems:** Ensure that areas equipped with Mechanical Smoke Ventilation Systems are tested for proper automatic operation by actuation of a fire protective signaling system-initiating device.
- (a) **Mechanical Ventilation:** Building air-handling equipment (HVAC) designed to remove smoke shall exhaust at a rate of not less than six changes of air per hour and exhaust directly to the exterior of the building without recirculating to other locations in the building. Mechanical ventilation equipment controls shall be located in the fire control room/station and have the capability of controlling one or all floors for smoke evacuation.
  - (b) **Below Grade Levels:** All areas below grade equipped with mechanical smoke ventilation shall be tested for proper automatic operation by actuation of a fire protective signaling system-initiating device. System shall exhaust at a rate of not less than six (6) changes of air per hour, and exhaust directly to the exterior of the building.
  - (c) **Smoke Removal:** Mechanical Smoke Control systems. Check system reliability as follows:
    - [1] Actuate all initiating devices designed to operate fans, blowers, and smoke control dampers to determine proper automatic function of system.
    - [2] When fans, blowers, and smoke control dampers are interconnected to the building fire control room/station, ensure that remote control from that location is operable and proper status is indicated on the smoke control panel. Verify that all lights are

functional when the lamp test button is depressed.

- [3] Perform a visual inspection of all fans, blowers, and smoke control dampers to verify proper operation in the smoke removal mode.
- [4] Verify that smoke control systems supplied by emergency power systems, operate properly when normal power is lost. Secondary power shall be from an approved emergency standby power source complying with the electrical code.

**(2) Mechanically Ventilated Smoke-proof Enclosure:**

- (a) **Doors:** Open all doors in the system and determine if they are held open by smoke-actuated hold-open devices.
- (b) **Initiating Devices:** Actuate any initiating device on each floor and determine:

- [1] That all-magnetic hold open devices release and all fire rated doors in the system properly closes and latch.
- [2] That the comfort air handling system (HVAC) has shutdown.
- [3] That the vestibule ventilation system is activated and the supply and exhaust dampers open.
- [4] That the stair-shaft ventilation system is activated.
- [5] That the fire control panel properly indicates the status of the fire protective signaling system.
- [6] That all fire alarm audible and visual devices operate on appropriate floor.
- [7] That the smoke control panel, if provided, operates properly in both manual and automatic modes and proper status is indicated on the panel.

**(c) Performance test, vestibule:** Use this procedure:

- [1] Actuate any fire alarm initiating device.
- [2] Open the doors from the vestibule to the stair-shaft, on any three

consecutive floors.

- [3] Ensure that the system meets the following requirements:
  - [a] 2500-cfm minimum is flowing at the stair-shaft exhaust opening.
  - [b] The flow from the exhaust of each of three vestibules shall be 2500-cfm minimum per vestibule with all three flowing simultaneously.

**(d) Performance Test, Stair-shaft:** Use this procedure:

- [1] With the system operating and all doors closed, measure the stair-shaft static pressure at three floors located in the top, center, and bottom thirds of the stair-shaft. This pressure is to be measured between the stair-shaft and hallway, at the floors selected, with the comfort air handling (HVAC) turned off.

**EXCEPTION:** Determine that the minimum pressure within the vestibule with the doors closed is 0.05-inch water gauge (12.44 PA) positive pressure relative to the fire floor and 0.05-inch water gauge (12.44 PA) negative pressure relative to the exit enclosure. No pressure difference is required relative to the exit enclosure.

**(3) Pressurized Stair-shaft System:**

Inspect the system for proper status prior to activating system. Activate any fire alarm initiating device to automatically activate the system. Inspect the status panel in the building fire control room/station for proper operation. Determine that the system has the minimum airflow requirement. This is done by multiplying a typical cross-sectional area in the stair-shaft in square feet by 50 linear feet per minute. With all doors closed using an approved anemometer at the exhaust point, determine that the system meets 90 percent of the minimum required CFM while maintaining a positive pressure.

- (4) **Door Test:** Test pressure is obtained by using an approved door-testing

device applied in a direct vertical line above the axis of the door knob/lever.

- (a) **Test 1:** With the system on and all doors closed, the maximum allowable pressure that is required to open that door should be 30 lbs. That door must close and latch when released.
- (b) **Test 2:** With the system on and one other door open, the maximum allowable pressure to open the door shall be 15 lbs. Door must close and latch when released. In Tests 1 and 2, stair-shaft doors that swing outward must close and latch after being opened and released.
- (c) **Test 3:** With the system off all doors in stair-shaft must close and latch after being opened and released.

#### N. Sprinkler Systems, Automatic:

Determine that all equipment is in proper operating condition and well maintained in accordance with NFPA-13 and NFPA-25.

- (1) **Inlets:** Determine that appropriate inlet connections with approved signs have been provided and are in operable condition.
- (2) **Flush the Fire Department Inlet Connection and Piping:** Use the following method to remove obstructions and/or debris from the Fire Department inlet connection and piping:
  - (a) **Back Flush:**
    - [1] With the main system shut-off valve closed and the piping to the Fire Department connection drained, disassemble and inspect the check valve, then remove, reverse, or block open the clapper in the check valve. Reassemble check valve.
    - [2] Open the main system shut-off and flow adequate water back through to the Fire Department connection inlet to assure that all debris is cleared from the inlet piping and Fire Department connection. Restore system to normal.

**NOTE:** This is the preferred method of clearing the Fire Department connection.

- (3) **Main Drain Test:** With the main drain valve closed, note pressure reading on the gauge. Fully open the main drain valve with water flowing, note the residual reading on the pressure gauge. Close main drain valve and note pressure gauge reading. A slow return on pressure gauge to original static reading may indicate a closed valve or obstructions in water supply lines.
- (4) **Gauge Tests:** Connect a test gauge at the test gauge opening to determine the reliability of existing gauges.
- (5) **On-site Water Supply:**
  - (a) Determine that filling for on-site water supply, if provided, operates when flow test is conducted.
  - (b) Determine that the air pressure and/or water supply gauges on dry, pre-action, and deluge systems are in proper working condition.

**NOTE:** Tests of these systems will be done by using the bypass connection.

- (6) Inspect system for proper sprinkler head placement, orientation, type, proper hangers, seismic braces, and signs of corrosion, paint, physical damage, and proper signage.

**NOTE:** Sprinklers protecting spray-coating areas shall be protected against over-spray residue. Sprinklers shall be protected using plastic bags having a maximum thickness of 0.003 inches, [0.076mm] or with small paper bags. Coverings shall be replaced when deposits or residue accumulate.

- (7) Inspect spare sprinkler heads box for correct number and type of sprinkler heads and proper wrench. The number of spare sprinkler heads shall be as follows:
  - (a) Up to 300 heads - not less than 6 sprinklers heads.
  - (b) 300 to 1,000 heads - not less than 12 sprinklers heads.

- (c) Over 1,000 heads - not less than 24 sprinklers heads.
- (8) Sprinkler heads in operation over 50 years and sprinkler heads known to have an abnormally high failure rate listed by the Chief shall have a representative sample of not less than four sprinklers or 1 percent, whichever is greater tested by an approved testing laboratory for evaluation. (If one sprinkler fails, all sprinklers in the system shall be replaced.) This testing procedure shall be repeated at 10-year intervals.

**Exception No. 1:**

Sprinkler heads manufactured prior to 1920 shall be replaced.

**Exception No. 2:**

Fast response sprinkler heads that have been in service for 20 years shall be tested. They shall be re-tested at 10-year intervals.

**Exception No. 3:**

Representative samples of solder-type sprinklers with a temperature classification of Extra High {325 degrees (163 degrees C)} or greater that are exposed to continuous maximum allowable ambient temperature conditions shall be tested at five-year intervals.

- (9) Sprinkler systems with static pressures in excess of 175 psi shall be equipped with approved pressure regulating devices.
- (10) **Operation Test:** Open the Inspector's test valve at the topmost or most remote location from the main control valve in the system. The alarm must sound within 90 seconds for water motor-type alarms and within 20 to 60 seconds for electrically monitored water flow switches.
- (11) **Valves:** Operate, inspect, and lubricate post indicator valves, underground gate valves, OS&Y valves, and one-way check valves to determine that they are in good operating condition and do not leak. Return all valves to their normal position. Check tamper supervision circuits by moving valve from its normal position two revolutions or 1/5 the

travel of the valve whichever is less. This shall initiate a distinctive signal at the fire alarm panel, if provided.

- (12) **Sprinkler Wrench:** A special sprinkler wrench[s] shall be provided and kept in the cabinet to be used in the removal and installation of sprinklers. A sprinkler wrench [s] shall be provided for each type of sprinkler installed.

**NOTE:** Valves that are not supervised shall be secured in their normal position using a break-a-way lock and chain.

- (13) **Automatic Sprinkler Systems other than wet:** Automatic sprinkler systems equipped with Pre-action, Deluge or Dry Pipe systems shall have their water-control valves and their automatic and manual tripping means tested annually as required by approved manufacturer's testing procedures and the Chief.

**EXCEPTION:**

This regulation shall not apply to junior sprinkler systems of less than 21 sprinkler heads and sprinkler systems designed and installed in accordance with NFPA-13D, standard for the installation of sprinkler systems in one and two family dwellings and manufactured homes.

- (14) **Foam-Water Sprinkler Systems:** Testing of foam water sprinkler systems shall be conducted to ensure that the foam-water system(s) operates as designed, both automatically and manually. Testing procedures shall simulate anticipated emergency events so the response of the foam-water system can be evaluated in accordance with NFPA 16, 16A, 25 and recommended test procedures as per manufacturer's specifications.

**O. Standpipe Systems:**

Determine that all equipment is in proper operating condition and well maintained in accordance with NFPA-14 and NFPA-25.

- (1) **Class I and III Standpipes:**

(a) **Fire Department Connections:** Ensure that appropriate inlet connections are provided with approved signs and are in operable condition. Flush Fire Department connection and piping using an approved method to remove obstructions and/or debris from the inlet connection and piping as stated in Section 4-N-2.

(b) **Air Test:** Air test dry systems to a maximum of 25 psi for 30 minutes to determine if the system leaks. This is to avoid water damage to the building if piping has been damaged or disconnected.

**NOTE:** Air test not required on outside piping.

(c) **Hydrostatic Test:** Fill the system completely with water and note the static pressure (head) on a test gauge installed on the lowest inlet connection. Hydrostatically test the system at a pressure 50 PSI greater than the head pressure but in no case less than 200 PSI for two hours.

(d) **Flow Test:** Flow a minimum of 500-gpm for the first standpipe through the most remote Fire Department outlets plus 250-gpm for each additional standpipe with the total supply not to exceed 1,250-GPM. The system shall maintain a residual pressure of not less than 65 PSI for three minutes. Test gauges shall be used to measure residual pressures and a pitot gauge or approved flow meter used to measure water flow quantities.

**Alternate test procedure:**

Flow 100 GPM of water through the standpipe at the topmost outlet. Using a flow meter and pressure gauge, measure the flow and residual pressure. Install a pressure gauge at the lowest inlet connection, with 100 GPM flowing at the topmost outlet measure the residual pressure at the topmost outlet and the inlet pressure. Determine that the friction loss in the system does not exceed 15 PSI.

Subtracting the combined static pressure (head) and residual pressure from the inlet pressure determines the friction loss.  $FL=IP- (SP+RP)$

(e) **Gauge Test:** Connect a test gauge at the test gauge opening to determine the reliability of existing gauges.

**EXCEPTION:**

Existing retrofit buildings as regulated by section 91.8604 of the Los Angeles Building Code that are 75 feet to 275 feet, shall flow a minimum of 750-gpm at 65 psi at the roof. Buildings greater than 275 feet shall flow a minimum of 1000-gpm at 65 psi at the roof.

**NOTE:** A separate flow test shall be conducted for each Fire Department connection and riser.

Risers with spring loaded snoots shall have the required flow through the fire department connection from an axillary apparatus.

**(f) Fire Department Outlets:**

- [1] Check each Fire Department outlet for any signs of corrosion and leakage.
- [2] Inspect and operate each outlet valve in the system to determine that it will function properly. Close valve and replace cap.
- [3] Where the static pressure at a hose connection exceeds 175 psi, an approved pressure-regulating device shall be provided to limit the static pressure to 175 psi. The pressure-regulating valve shall provide a residual pressure between 80 and 125 psi with 300-gpm flowing. Buildings built after 1994 shall have a residual pressure between 100 and 125 psi with 300-gpm flowing.
- [4] Flow water from each Fire Department outlet not equipped with pressure regulating valves in a manner that will indicate the valve is fully operable and that there is appropriate water pressure at that outlet.
- [5] Check automatic drip connections, if provided, for proper function.

**(g) On-site Water Supply:**

- [1] Determine that filling for on-site water supply, if provided, operates when flow test is conducted.
- [2] Determine that air pressure and/or water supply gauges, if provided, are in proper working condition.

**(h) Hose:**

Disconnect hose, from Fire Department outlet (if provided). Examine full length of hose section for mildew, cuts, abrasions, and other deterioration. Check hose couplings, gaskets, and nozzle for damage and obstruction. Hydrostatic testing of fire hose shall be conducted in accordance with NFPA 1962, Chapter 5.

**(2) Class II (Wet) Standpipes:**

- (a) **Flow Test:** Determine that the system and its water supply will meet one of the following standards according to the date of its installation. Test gauges shall be used to measure residual pressures and an approved flow meter shall be used to measure water flow quantities. The required water flow must be maintained for at least 30 seconds from systems supplied by street mains or gravity tanks and at least two minutes from systems supplied by booster pumps or pressure tanks:

- [1] **Systems Installed Prior to 1948:** Shall have residual pressures of not less than 8 psi at the topmost outlet on each riser with 20-gpm flowing.
- [2] **Systems Installed from 1948 to 1959:** Shall have residual pressures of not less than 12 psi at the topmost outlet on each riser with 35-gpm flowing.
- [3] **Systems Installed from 1960 to 1971:** Shall have residual pressures of not less than 15 psi at the topmost outlet on each riser with 35-gpm flowing.

- [4] **Systems Installed from 1971 to 1982:** Shall have residual pressures of not less than 30 psi at the topmost outlet on each riser with 70-gpm flowing.

- [5] **Systems Installed after 1982:** Shall have a residual pressure of not less than 65 psi at the topmost outlet on each riser with 100-gpm flowing.

- [6] **Class H Standpipe Systems Installed prior to 1996:** Shall have a residual pressure of 108 psi on each riser with 90-gpm flowing.

- [7] **Class H Standpipe Systems Installed after 1996:** Shall have a residual pressure of not less than 65 psi on each riser with 100-gpm flowing.

**(b) On-site Water Supply:**

- [1] Determine that filling for on-site water supply, if provided, operates when flow test is conducted.
- [2] Determine that air pressure and/or water supply gauges, if provided, are in proper working condition.

**(c) Outlets:**

- [1] Check each outlet for signs of corrosion and leakage.
- [2] Where the residual pressure at a 1-1/2 inch outlet exceeds 100 psi, an approved pressure-regulating device shall be provided to limit the residual pressure to 100 psi.
- [3] Flow water from each outlet in the system in a manner that will indicate the valves are fully operable and that there is water pressure at that outlet.

**(d) Hose:**

Inspect hose at each outlet. Examine full length of hose section for mildew, cuts, abrasions, and other deterioration. Check hose couplings for gaskets, damage and obstructions. Check for proper nozzles. Unlined hose shall be equipped with smoothbore nozzles;

lined hose shall be equipped with adjustable spray nozzles.

- (e) **Service Testing:**  
Hydrostatic testing of fire hose shall be conducted in accordance with NFPA-1962 Chapter 5.

**EXCEPTION:**

Unlined hose shall not be hydrostatically tested. Hose shall be replaced with lined hose when replacement is necessary.

**(3) Combined Standpipe Systems:**

- (a) **Inlets:** Determine that proper inlet connections with approved signs have been provided and are in operable condition.

Flush Fire Department Inlet Connection and Piping using an approved method to remove obstructions and/or debris from Fire Department inlet connection and piping as stated in Section 4-N-1.

- (b) **Fire Pump Test:** Follow Fire Pump test procedures as stated in Section 4-I.
- (c) **Flow Test:** Follow Class I and III standpipe test procedure as stated in Section 4-O-1-(d).
- (d) **On-site Water Supply:** Follow Class I and III standpipe test procedure as stated in Section 4-O-1- (g).
- (e) **Automatic Sprinkler System:** Follow Automatic Sprinkler System test procedure as stated in Section 4-N.
- (f) **Fire Department Outlets:** Follow Class I and III standpipe and pressure regulating valve test procedure as stated in Section 4-O- (f) and 4-K 1-8.

**NOTE:** Combined Standpipe Systems equipped with looped standpipe risers shall be flow tested by shutting down one side of the system at a time and flowing water from the open side. Fire alarm initiation shall take place within 20 to 60 seconds. After both sides have been individually tested, a flow test with both flow valves open shall be conducted. Tamper valves shall be tested by moving valve from its normal position two revolutions or 1/5 the travel of the valve whichever is less. This shall initiate a trouble signal at the fire alarm panel.

**NOTE:** A separate flow test shall be conducted for each Fire Department connection and riser.

**SECTION 5 – APPLICATION**

The provisions of this regulation do not supersede, nullify, or in any manner abrogate any other provision of the Los Angeles City Fire Code. Compliance with the provisions of this regulation does not relieve any person from compliance with applicable provisions of any County, State, or Federal Law.

**Los Angeles City Fire Department  
 Chief's Regulation No. 4 Requirements  
 GUIDELINES FOR SEQUENCE OF OPERATION FOR LIFE SAFETY SYSTEMS IN HIGH-RISE BUILDINGS**

	Manual Pull Station	Elevator Lobby Smoke Detector	Area Smoke Detector	Return Air Duct Smoke Detector	Elevator Shaft Smoke Detector	Sprinkler Water Flow Switch	Sprinkler Valve Tamper Switch	Special Extinguishing System	Building Power Failure
Annunciate @ FCR (alarm and trouble)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Annunciate @ 24-hour attended remote location (alarm and trouble)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Activate Audible Alarm Signal on floor of alarm	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Shut Down All Air Handling (HVAC) on floor of alarm	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Release All Electromagnetically Held Doors on floor of alarm	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Activate Smoke Evacuation System on floor of alarm	Yes	Yes	Yes	Yes	No	Yes	No	No	No
Recall All Elevators serving floor of alarm	No	Yes	No	No	Yes	No	No	No	Yes
Release All Stair Shaft Door Locks in building	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Activate All Stair Shaft Pressurization Fans in building	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Open Elevator Shaft Smoke Damper	No	No	No	No	Yes	No	No	No	No
Release Approved Elevator Security Door Locks	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes



