



CHINO VALLEY INDEPENDENT FIRE DISTRICT FIRE PROTECTION STANDARD

HIGH-RISE REQUIREMENTS

STANDARD # 113

REVISED 02/03/1992 PAGES 16

Index

- Section 1:** Intent
- Section 2:** Definitions
- Section 3:** Scope
- Section 4:** Automatic Sprinkler Systems
- Section 5:** Alarm and Communications
- Section 6:** Smoke Detection
- Section 7:** Smoke Control
- Section 8:** Exits
- Section 9:** Elevators
- Section 10:** Standby and Emergency Power and Lighting
- Section 11:** Seismic Considerations
- Section 12:** Spandrel Protection
- Section 13:** Firefighting Provisions
- Section 14:** Automatic Sprinkler Systems
- Section 15:** Fire Control Center
- Section 16:** Emergency Helicopter Landing Facility
- Section 17:** Plan Review and Update

Section 1.

Intent

- A. It is the intent of this standard to prescribe regulations consistent with State, local and nationally-recognized good practices for safe guarding to a reasonable degree of life and fire safety, buildings designed for human occupancy which exceed fifty-five feet (55') in height.
- B. Where no specific standards or requirements are specified in this document, or contained within other applicable laws, adopted codes or ordinances, compliance with the standards of the American Insurance Association, or other nationally recognized fire safety standards as are approved by the Fire Chief and Building Official shall be prima facia evidence of the compliance with this intent.

Section 2.

Definitions

- A. For the purpose of this standard, a “High-Rise Building” shall mean any building used for human occupancy which exceeds fifty-five feet (55') or three (3) stories in height above the lowest floor level having Fire Department vehicle access.
- B. For the purpose of this standard, “building access” shall mean an exterior door opening conforming to all of the following:
 - 1. Suitable and available for Fire Department use.
 - 2. Located not more than two feet (2') above the adjacent ground level.
 - 3. Leading to a space, room, or area having foot traffic communication capabilities with the remainder of the building.
 - 4. Designed to permit penetration through the use of Fire Department forcible entry tools and equipment unless other arrangements have been made with the fire authority having jurisdiction.
- C. For the purpose of this standard, a “bank of elevators” shall mean a group of elevators or a single elevator controlled by a common operating system; that is, all those elevators which respond to a single call button constitute a bank of elevators. There is no limit on the number of cars which may be in a bank or group, but there may be not more than four (4) cars within a common hoist way.

- D. For the purpose of this standard a “Fire Control Center” shall mean a central location within the high-rise building for Fire Department operations and monitoring of such systems and equipment as required in this standard.
- E. For the purpose of this standard a “Central Monitoring Station” shall mean a U.L. (Underwriters Laboratory) listed and SFM (State Fire Marshal) licensed company approved for monitoring.
- F. For the purpose of this standard a “Dispatch Center” shall mean Ontario Fire Dispatch.

Section 3.

Scope

- A. Every high-rise building over fifty-five feet (55') in height measuring from the last point of Fire Department vehicle access shall conform to this standard.

Section 4.

Automatic Sprinkler Systems

- A. Every high-rise building shall be provided with an automatic Fire Sprinkler System.
- B. The Fire Sprinkler system shall conform to National Fire Protection Association pamphlet No. 13 and the following outlined standard:
 - 1. The N.F.P.A. pamphlet No. 13 used shall be the latest edition adopted by the Fire Chief.
 - 2. Shut off valves and water flow devices shall be provided for each floor. In addition to activating a local alarm on the floor upon which the water flow is detected, operation of such valves shall transmit an alarm directly to the Central Monitoring Station, then to the Dispatch Center of the Fire District and to the Fire Control Center.
 - 3. Each stairwell shall have included on every floor a 2 ½ inch gated discharge with a (P.R.D.) pressure-reducing device. There shall be a pressure gauge, approved by the Fire District, on each hook-up. This gauge shall be on the discharge side of the gate valve.
 - 4. System piping shall be hydraulically designed to meet N.F.P.A. 13 Appendix A; density curves and group standards.

5. Any room or area of the building where the application of water is considered undesirable, or may complicate firefighting or rescue attempts, may have the sprinklers omitted at the discretion of the Fire Chief. Alternate extinguishing systems shall be installed as approved by the Fire Chief. Such rooms may include:
 - a. Generator or transformer rooms
 - b. Safe deposit or other vaults of fire-resistive construction, when used for storage of records, files, and other documents when stored in metal cabinets or on metal shelving.
 - c. All communications equipment areas.
 - d. Other areas with specific prior approval from the Fire Chief and Building Official based on a review of justifiable fire protection engineering criteria.
6. The actuation of any sprinkler head shall:
 - a. Operate the voice alarm system and place into operation all equipment necessary to prevent the recirculation of smoke.
 - b. Transmit an alarm directly to the Central Monitoring Station, then to the Dispatch Center of the Fire District and to the Fire Control Center when a (F.C.C.) is required by this standard. Such signal shall be zoned with a minimum of one (1) zone per floor and a maximum of ten thousand square feet (10,000') per zone.

Section 5.

Alarm and Communications

- A. Every high-rise building shall have manual fire alarm boxes which shall be located adjacent to exits into corridors, stairway shafts and in every elevator lobby, and shall:
 1. Operate the voice alarm system, and place into operation all equipment necessary to prevent the recirculation of smoke.
 2. Transmit an alarm directly to the Central monitoring Station then to the Dispatch Center of the Fire District and to the Fire Control Center when a (F.C.C.) is required by this standard.
- B. Three (3) communication systems shall be provided as follows:

1. Voice Alarm System. The operation of any smoke detector, sprinkler, water flow device or manual fire alarm station shall automatically sound an alert signal to the desired areas followed by voice instructions giving appropriate information and direction to the occupants. Strobe warning devices shall be installed for the hearing impaired.
 2. Fire Control Center, when required, shall contain controls for the voice alarm system so that a selective or general voice alarm may be manually initiated.
 3. The system shall be supervised to cause the activation of an audible trouble signal to the Central Monitoring Station then to the Dispatch Center of the Fire District and the Fire Control Center when a (F.C.C.) is required by this standard. Upon interruption or failure of the audiopath, including amplifiers, speaker wiring, switches and electrical contacts, and shall detect opens, shorts and grounds, and any other malfunction which might impair the transmission of voice alarms.
 4. The alarm shall be designed to be heard clearly by all occupants within the building or designated portions thereof as is required for the public address system. Said alarm will be subject in field audibility tests.
 5. This system shall be capable of Fire Department intercommunication with units selectable from the Fire Control Center.
- C. Public Address System. The Public Address System shall be a one-way system providing communication from the Fire Control Center or other designated location to the following locations:
1. Elevators, elevator lobbies, corridors and stairways. Speakers in corridors shall be located not more than two hundred feet (200') apart, and shall be subject to a field audibility test prior to approval.
 - a. In every room exceeding one thousand (1,000) square feet in area.
 - b. In every room exceeding fifty (50) occupant load.
 - c. In each dwelling unit or hotel guest room.
- D. Fire Department System. A sound-powered telephone system capable of communication between all floors and with the Fire Control Center or other designated locations shall be provided. All exterior phone jacks shall be designed to communicate with the (F.C.C.), or other designated locations, and all other areas of the building. An acceptable number of hand-held phone sets as determined by the Fire District shall be made available and stored at the _____ Fire Control

Center and/or other locations as specified by the Fire Chief.

Sound-powered phone equipment, including communications panel, phone sets and location of phone jacks, are subject to Fire District approval. Phone jacks shall be located as follows:

1. At every floor level at each hose connection or hose cabinet.
 2. At every exterior location where a stair shaft exists to a public way.
 3. At the exterior of each stair shaft penthouse located on the roof.
 4. In every elevator.
 5. At every elevator lobby.
 6. In every Mechanical Control Center.
 7. In every Air Handling Equipment room.
 8. In every Elevator Machinery room.
 9. At the Emergency Heliport or other approved roof locations.
 10. And other locations as deemed necessary by the Fire Chief.
- E. The sounding of a fire alarm signal in any given area or floor shall not prohibit voice communication to other areas or floors.
1. The voice alarm and public address system may be combined. Combination systems shall be designed to permit voice transmission to override the voice or fire alarm signal, but shall not discontinue the fire alarm signals except as provided at the Fire Control Center or other designated locations.
 2. The alarm and communication systems shall be designed and installed so that interruption of any signal speaker shall not cause loss of any other speakers in the circuit.

Section 6.

Smoke Detection

- A. Every high-rise building shall be protected with an approved, electrically supervised, automatic fire detection system having detectors which will respond to visible or invisible products of combustion in the following locations:

1. In every mechanical room.
2. In every heating, air conditioning or ventilation duct system as follows:
 - B. In the main circulating air duct on the downstream side of the filters and so located as to operate in case of smoke in the air stream, or such devices may be installed in each room or space served by a return air duct.
 1. At every opening through any assembly having fire resistive rating of two (2) hours or more.
 - C. In every elevator lobby.
 - D. The actuation of any smoke detector shall:
 1. Operate the voice alarm system and place into operation all equipment necessary to prevent the recirculation of smoke.
 2. Transmit an alarm directly to the Central Monitoring Station then to the Dispatch Center of the Fire District and to the Fire Control Center when a (F.C.C.) is required by this standard and shall be on a separate zone.

Section 7.

Smoke Control

- A. Every high-rise building shall have mechanical ventilation for removal of the products of combustion provided in every story and it shall consist of mechanical air handling equipment designed to accomplish smoke removal. Under fire conditions the return and exhaust air shall be moved directly to the outside without recirculation to other sections of the building. The air-handling systems shall provide a minimum of one (1) air change each ten (10) minutes for the largest single room.
- B. Additional ventilation for the removal of the products of combustion shall be provided in every story and shall consist of one (1) of the following:
 1. Panels or windows in the exterior wall which can be opened from the inside and from the Fire Control Center or other approved locations shall be provided at the rate of at least twenty square feet (20') per fifty lineal feet (50') of exterior wall in each story and distributed around the perimeter at not more than fifty foot (50') intervals. The openable panels shall be tempered glass. Such panels shall be clearly marked and identified as required by the Fire Department.

2. Any other engineered design which will produce equivalent results as certified for approval to the Fire Chief by a registered Fire Protection Engineer.

Section 8.

Exits

- A. Exits in all high-rise buildings shall comply with the requirements of Chapter 33 of the Uniform Building Code and the following:
 1. All stairway doors which are to be locked from the stairway side shall have the capability of being unlocked simultaneously without unlatching upon a signal from the Fire Control Center or other approved locations.
 2. Smoke proof enclosures may be eliminated if all enclosed stairways are pressurized, as provided for mechanically operated smoke proof enclosures, to a minimum of 0.15" and a maximum of 0.50" of water volume.
 3. A telephone or other two-way communications system connected to the Fire Control Center shall be provided at not less than every fifth (5th) floor in each stairway.

Section 9.

Elevators

- A. Elevators and elevator lobbies in all high-rise buildings shall comply with Chapter 51 of the Uniform Building Code and the following:
 1. Except for the main entrance level, all elevators on all floors shall open into elevator lobbies which are separated from the remainder of the building as is required for corridor construction in section 3304 (g) and (h) of the Uniform Building Code.
 2. Each elevator lobby shall be provided with an approved smoke detector located on the lobby ceiling. When the detector is activated, elevator doors shall not open and all cars serving that lobby are to return to the main floor and be under manual control only. If the main floor detector or a transfer floor detector is activated, all cars serving the main floor or transfer floor shall return to a location approved by the Fire Department and be under manual control only. The smoke detector is to operate before the optical density reaches 0.03 per foot.

3. On every floor except the main entrance level the elevator lobby shall be provided with self-closing twenty (20) minute minimum rated fire doors to form a vestibule. Said doors shall close automatically when the smoke detector in the lobby is activated. Both sides of the doors shall have signs reading "IN FIRE EMERGENCY, DO NOT USE ELEVATOR—USE EXIT STAIRS" in two-inch (2") high three-fourth inch (3/4") stroke letters and a map of the floor showing the locations where the person is and the path to the closest exit stairway.
4. A permanent sign shall be installed in each elevator cab adjacent to the floor status indicator and at each elevator call station on each one-half inch (1/2") high by one-eighth inch (1/8") wide stroke letters reading "IN FIRE EMERGENCY, DO NOT USE ELEVATOR—USE EXIT STAIRS" or similar verbiage approved by the Fire Chief and Building Official.
5. Elevator hoist ways shall not be vented through an Elevator Machine Room. Cable slots entering the Machine Room shall be sleeved beneath the Machine Room floor and extend to not less than twelve inches (12") below the shaft vent to inhibit the passage of smoke into the Machine Room.
6. At least one (1) elevator car in each bank serving all floors shall have a minimum inside car platform of four feet three inches deep (4'3") by six feet nine inches (6'9") wide, with a minimum clear opening width of forty-two inches (42") unless otherwise designed and approved to provide equivalent utility to accommodate an ambulance stretcher having a minimum size to twenty-two inches (22") by seventy-eight inches (78"), in its horizontal position. This elevator shall be identified.

Section 10.

Standby and Emergency Power and Lighting

- A. Every high-rise building shall be provided with a standby power system as follows:
 1. An on-site standby power generation system consisting of one (1) or more generators. In the event of failure of normal source of electric service, the standby power generation system shall provide an alternate source of electrical energy to serve at least the designated power loads set forth in sub-section (2) below.
 2. The power load requirements for sizing the standby power generation system shall include, but not necessarily be limited to, the following:
 - a. Exit signs and exit illumination as required by Section 3313 of the Uniform Building Code.

- b. Elevator car lighting circuits.
 - c. Fire alarm system.
 - d. Fire detection system.
 - e. Sprinkler alarm system.
 - f. Electric-driven fire pumps.
 - g. Voice communication systems.
 - h. Mechanical ventilation and air handling equipment required by this Section.
 - i. Elevators assigned for Fire Department use.
 - j. All public assembly areas shall have lighting in accordance with exit illumination as required in Section 3313 of the Uniform Building Code.
 - k. All parking garages shall have lighting in accordance with exit illumination as required in Section 3313 of the Uniform Building Code.
 - l. Lighting circuits supplying elevator lobbies, the Fire Control Center and the Generator Room.
3. The standby power generation system shall be equipped with suitable means for automatically starting the generator set(s) upon failure of operation of electrical systems and equipment specified above at full power within sixty (60) seconds of such normal service failure.
 4. On-site fuel supplies for prime movers of standby power generator sets shall be sufficient for at least six (6) hours at full demand operation. Where fire pumps are required, an eight (8) hour fuel supply shall be provided. Fuel tanks shall be installed with preventative earthquake features.
- B. Every high-rise building shall be provided with emergency electrical systems as follows:
1. Electrical systems and equipment specified herein are classed as emergency systems:

- a. Exit signs and exit illumination as required by Section 3313-3314 of the Uniform Building Code.
 - b. Elevator car lighting circuits.
 - c. Fire alarm system.
 - d. Fire detection system.
 - e. Sprinkler alarm system.
2. The emergency power supply system shall be so designed that upon failure of the normal electrical service, the emergency electrical systems and equipment specified above shall be automatically transferred without power interruption. Such emergency power supply may be separate from the standby power specified above.
 - a. When the standby power generation system reaches full operating capacity, the emergency electrical systems and equipment shall be transferred thereto.

Section 11.

Seismic Considerations

- A. Every high-rise building shall have the anchorage of the following mechanical and electrical equipment designed and installed in accordance with Section 2312 of the Uniform Building Code for lateral force based on a C_p (Coefficient for rigid elements and components), value of 0.5 unless data substantiating a lesser value is furnished.
 1. Elevator drive and suspension systems.
 2. Standby power and lighting facilities.
 3. Fire pumps, automatic fire extinguishing systems and other fire protection equipment.
 4. Air handling equipment regulated by this Chapter.

Verification of such conformance shall be substantiated by a licensed structural engineer.

Section 12.

Spandrel Protection

- A. Every high-rise building shall have spandrel protection provided by one of the following:
1. Openings in exterior walls, where such openings are within five feet (5') of each other horizontally on vertically adjacent floors, shall be protected by approved flame barriers either extending thirty inches (30") beyond the exterior wall in the plane of the floor or by approved vertical panels not less than three feet (3') in height above the floor.
 2. Decrease the spacing of sprinkler heads on the perimeter, or in any locations where spandrels would be required, to that as specified for extra hazard occupancies in NFPA 13.
 3. Alternate spandrel fire protection may be considered subject to approval by the Fire Chief and Building Official when designed and submitted by a Fire Protection Engineer.

Section 13.

Firefighting Provisions

- A. Every high-rise building shall have each floor of the building provided with Fire Department cabinets. The cabinets shall be as close as possible to stairway shafts and in every elevator lobby and shall be clearly marked. The cabinet shall be locked to provide accessibility only to the Fire Department. All cabinets shall be secured by an approved Knox pad lock. The cabinet and all equipment specified in this section shall conform to Fire Department standards (135-A). Operation of doors to Fire Department cabinets shall activate signals in the Central Monitoring Station, then to the Dispatch Center of the Fire District and in the Fire Control Center if the Fire Control Center is required by other sections of this Chapter. Contents of the cabinet shall be:
1. One (1) two and one-half inch (2 ½") to one and one-half inch (1 ½") gated wye connected to the standpipe; (Elkhart model #B-100 Pyrolite or equivalent).
 2. Two hundred feet (200') of one and one-half inch (1 ½"), six hundred pound (600 lbs.) test. Dura-pak thermoplastic-double jacketed hose.
 3. Pressure gauge (as specified in Section 4-B3); 2 universal spanner wrenches.

4. Two (2) selecto-matic fire nozzles Elkhart model #SM10FH or equivalent.
- B. On the roof level, Fire Department cabinets as described in the above shall be located to provide fire hose lines within thirty feet (30') of all areas of the roof. On the roof there shall be strategically placed anchors to provide for rescue purposes.
 - C. The following equipment shall be supplied and stored in the Fire Control Center.
 1. Two (2) one hundred foot (100') life lines per Fire Department specifications;
 2. Four (4) battery-powered lights and spare batteries per Fire Department specifications with a charging system.
 - D. All appurtenances required by the above sections shall be tested and inspected in accordance with the applicable NFPA standard or nationally recognized good practice as specified by the Chino Valley Independent Fire District. Testing of the required equipment shall be the responsibility of the owner of the building. This shall be performed by a SPM-licensed company.

Section 14.

Automatic Sprinkler Systems

- A. Every high-rise building in excess of fifty-five feet (55') shall also conform to the following additional automatic sprinkler system requirements:
 1. A minimum of two (2) fire pumps independently driven shall be provided, each sized for the sprinkler demand and for an additional minimum five hundred (500) gallons per minute for Fire Department standpipe operations. One of the pumps shall be electrically driven and the other pump shall be diesel fuel operated, or a fuel approved by the AQMD (Air Quality Management District).
 2. In addition to the main water supply, a secondary on-site supply of water equal to the hydraulically calculated sprinkler design demand, plus five hundred (500) gallons per minute additional for the total standpipe system, shall be provided. This supply shall be automatically available if the principal supply fails and shall have a duration of thirty (30) minutes. The on-site supply of water as indicated above shall be maintained in a separate system from the public domestic water system and shall conform to all applicable cross-connection requirements of the automatic sprinkler system and the wet standpipe system.

Section 15.

Fire Control Center

- A. Every high-rise building in excess of fifty-five feet (55') shall be provided with a Fire Control Center located near or adjacent to the main entrance to the building or at any location approved by the Fire Chief and Building Official. The Fire Control Center shall be directly accessible from the outside of the building consistent with standards developed by the Fire Chief and Building Official.

The Fire Control Center shall be designed to accommodate the functional control and Command Personnel required to conduct an emergency activity. There shall be a minimum net floor area of two hundred fifty square feet (250'). This floor area shall not be encumbered upon by any walls, equipment or other appurtenances necessary to the function of the room.

The Fire Control Center shall be separated from the remainder of the building by not less than two (2) hour fire-resistive construction with all openings protected by assemblies having a fire-resistive rating of not less than one and one-half (1 ½) hours.

The Fire Control Center shall be used to house the following equipment:

1. Voice communication control equipment, including equipment necessary to the function of the control suit and their display and status panels.
2. Fire alarm and fire detection control equipment including equipment necessary to the function of the control unit and their display and status panels.
3. Status indicators and controls for elevators.
4. Air handling system status indicators and control switches.
5. Controls for unlocking stairway doors and status board indicating whether said doors are locked or unlocked.
6. Sprinkler valve supervision and water flow detector display panels.
7. Alarm, water flow and trouble signals shall be annunciated by means of an audible signal and a visual display which indicates the building, floor, zone or other designated area from which the alarm, water flow or trouble signal originated.
8. Standby power status display and controls.

9. A telephone connected to the public telephone system adjacent to the Fire Department communication systems. This telephone to be for express use of the Fire Department. Telephones for building occupant use shall be separate.
 10. Intercom to exterior of Fire Control Center to allow for verbal communication without opening the door.
 11. A direct line shall be dedicated to the Fire Department Emergency Dispatch Center.
 12. Supervision indicator of the Fire Department cabinets.
 13. Three (3) certified copies of the building floor plans, mechanical plans, and electrical plans and any Material Safety Data Sheet information.
 14. Three (3) copies of the Fire Department pre-plans.
 15. Other fire protection equipment and systems controls such as:
 - a. Water tank level indicators.
 - b. Fire pump controls and status indicators.
 - c. Fuel level indicator on auxiliary generators.
 16. Any other similar equipment, controls or status indicators as deemed necessary by the Fire Chief and Building Official.
- B. Any equipment that is a status indicator shall be in the form of a graphic annunciator. The graphic annunciator shall be a line diagram of the building with the lights and activation switches in proper perspective on the diagram. The graphic annunciator shall be further keyed to the required building floor plans per floor and location on the floor.
- C. As well as the graphic annunciator, an alpha-numeric printout of all status indications or switch activations along with the date and time of alarm or activation, shall be provided. This printout shall also be coded to provide the location of the activation on the building floor plans per floor and location on the floor.
- D. The Fire Control Center shall not be used for the housing of any boiler, heating unit, generator, combustible storage or similar hazardous equipment or storage.
- E. The Fire Control Center shall have an approved Knox entry system to gain access.

Section 16.

Emergency Helicopter Landing Facility

- A. Each high-rise building in excess of fifty-five feet (55'), as specified in Section 3-A, shall incorporate an emergency helicopter landing facility located on the roof of the building in an area approved by the Fire District.
1. A landing glide slope angle determined by a ratio of eight feet (8') horizontal distance for every one foot (1') of vertical clearance required. Two (2) such approaches shall be available at least ninety degrees (90*) removed from each other.
 2. A clear, unobstructed landing and takeoff area with a minimum dimension of one hundred feet (100') and a reinforced touchdown area having a minimum dimension of fifty feet (50') by fifty feet (50').
 3. If the roof has no parapet wall, a substantial fence or safety net shall be provided around the perimeter of the roof in such manner that it will not restrict or reduce the required landing and takeoff area.
 4. A wind indicating device shall be provided.
 5. The rooftop shall be marked by an emergency marker as required by the Chief of the Fire District.
 6. The rooftop shall be marked with the numerical street address of the building, with the numbers facing the street frontage corresponding to the address. The size of the numbers are to be three feet (3') high and one foot (1') wide.

Section 17.

Plan Review and Update

The copies of the certified-as-built plans, mechanical plans, electrical plans and the Fire Department pre-plans shall be updated any time revisions, additions or deletions to the building are made. The responsibility for these updates will be the building owner's unless the owner and occupant have otherwise agreed between themselves, in which event the occupant shall comply.