Fire Alarm Systems

2025 California Fire Code - Sections 901 & 907

Purpose. Fire alarm and detection systems are intended to detect fire or fire-related conditions, initiate required fire-safety functions, notify occupants, and transmit alarm, supervisory, and trouble signals where required. This handout summarizes commonly applicable requirements in the 2025 California Fire Code (CFC), California Building Code (CBC), California Code of Regulations (CCR) Title 19, and NFPA 72 as amended by California.

1. When Fire Alarm Systems Are Required

CFC Section 907.2 requires approved fire alarm systems in new buildings and structures where the occupancy or special condition falls within Sections 907.2.1 through 907.2.29. The exact requirement can depend on occupant load, number of stories, sleeping or dwelling units, use, special hazards, and whether the building is sprinklered.

Occupancy / Condition	Common 2025 CFC Trigger
Group A - Assembly	Manual fire alarm where the assembly occupant load is 300 or more, or where more than 100 Group A occupants are above or below the lowest level of exit discharge. See §907.2.1 and its exceptions.
Group B - Business	Manual fire alarm where the combined Group B occupant load of all floors is 500 or more; where more than 100 Group B occupants are above or below the lowest level of exit discharge; or where the fire area contains an ambulatory care facility. See §907.2.2.
Group E - Educational	California requires an automatic/manual fire alarm system using emergency voice/alarm communication where the Group E occupant load is 50 or more, where there is more than one classroom, or where one or more rooms are used for Group E or I-4 child-care purposes. Additional California school provisions apply. See §907.2.3.
Group F - Factory	Manual fire alarm where the conditions in §907.2.4 are met, including a Group F occupancy two or more stories in height and the specified 500-person occupant-load condition. Lithium-ion or lithium-metal battery manufacturing can trigger specialized detection under §907.2.4.1.
Group H - High Hazard	Manual fire alarm is required in Group H-5 occupancies and occupancies used for manufacture of organic coatings. Additional automatic detection is required for specified hazardous-material conditions. See §907.2.5.
Group I - Institutional	Manual fire alarm is generally required, with automatic smoke detection and specialized staff-notification provisions depending on the Group I classification. See §907.2.6.
Group M - Mercantile	Manual fire alarm where the combined Group M occupant load of all floors is 500 or more, or where more than 100 Group M occupants are above or below the lowest level of exit discharge. See §907.2.7.
Group R-1 - Transient Residential	Manual fire alarm, corridor smoke detection where applicable, and smoke alarms are required in accordance with §§907.2.8.1 through 907.2.8.3.

Occupancy / Condition	Common 2025 CFC Trigger
Groups R-2 / R-2.1 / R-2.2	Requirements vary by residential classification. For Group R-2, a manual system is triggered by conditions such as dwelling/sleeping units three or more stories above the lowest exit discharge, more than one story below the highest level of exit discharge, more than 16 units, or congregate residences with more than 16 occupants. See §907.2.9.
Group S Public / Self-Storage	A manual fire alarm system is required in public- and self-storage occupancies three stories or greater in height for interior corridors and interior common areas. See §907.2.10.1.

Special-use triggers. Section 907 also contains specific requirements for smoke alarms, special amusement buildings, high-rise buildings, atriums, high-piled combustible storage, aerosol storage, lumber/wood-product facilities, underground and deep-underground buildings, mall buildings, residential aircraft hangars, airport traffic-control towers, lithium-battery conditions, organized camps, and transit systems. These conditions must be checked independently when applicable.

Code references: 2025 CFC §§907.2.1-907.2.29

2. Plans, Permits & California-Listed Equipment

- Construction documents must clearly show the location, nature and extent of the proposed fire alarm work and demonstrate compliance with the CFC, CBC, and applicable laws and regulations.
- Fire alarm shop drawings must be prepared in accordance with NFPA 72 and submitted for review and approval before installation.
- Plans and shop drawings must use NFPA 170 fire-safety symbols unless another symbol set is approved by the enforcing agency.
- Fire alarm systems and components must be California State Fire Marshal listed and approved for the purpose for which they are installed.
- Permits are required where applicable under CFC §§901.3, 105.5 and 105.6.

California listing note. The Office of the State Fire Marshal Building Materials Listing program is the California listing program used for fire alarm systems and devices. A nationally listed product is not automatically sufficient if California State Fire Marshal listing is required.

Code references: 2025 CFC §§901.2, 901.3, 907.1.1-907.1.3; NFPA 72; NFPA 170; CCR Title 19

3. Initiating Devices & Manual Fire Alarm Boxes

Where a fire alarm system is required, occupant notification can be initiated by manual fire alarm boxes, automatic fire detectors, automatic sprinkler waterflow devices, and automatic fire-extinguishing systems as required by CFC §907.4.

Manual Box Item	2025 CFC Requirement
Exit location	Manual fire alarm boxes must be located not more than 5 feet from the entrance to each exit.
Travel distance	In buildings not protected throughout by an NFPA 13 or NFPA 13R sprinkler system as identified by §907.4.2.1, additional boxes are required so travel distance to the nearest box does not exceed 200 feet.
Mounting height	The activating handle or lever must be 42 to 48 inches above the floor, subject to the California accessibility provision referenced by the CFC.
Color	Manual fire alarm boxes must be red.

Manual Box Item	2025 CFC Requirement
Access	Boxes must remain readily accessible, unobstructed, unobscured and visible at all times.
Operation	Manual fire alarm boxes must be operable with one hand, including boxes fitted with protective covers.
Unmonitored systems	Where the system is not monitored by an approved supervising station, an approved permanent sign must be installed adjacent to each manual box stating “WHEN ALARM SOUNDS-CALL FIRE DEPARTMENT,” unless the manufacturer permanently provides the required information on the box.

Baseline manual box requirement. For fire alarm systems that employ automatic fire detectors or waterflow detection, CFC §907.2 generally requires at least one manual fire alarm box at an approved location, subject to the listed exceptions for dedicated elevator/sprinkler-monitoring systems, certain R-2 systems, and approved alternatives.

Code references: 2025 CFC §§907.2, 907.4, 907.4.2.1-907.4.2.7

4. Automatic Detection & Fire-Safety Functions

- Where automatic smoke detection is required, smoke detectors are used unless ambient conditions prohibit their use; approved heat detectors may be used where permitted by §907.4.3.
- In areas that are not continuously occupied, a smoke detector must be provided at each fire alarm control unit, notification-appliance-circuit power extender, and supervising-station transmitting equipment location; a heat detector is permitted where ambient conditions prohibit smoke detection.
- Automatic detectors used to perform fire-safety functions must be connected to the building fire alarm control unit where a fire alarm system is required, and must perform the intended function upon actuation.
- Duct smoke detectors must be listed for the air velocity, temperature and humidity in the duct. Where the building is monitored, duct detector activation generally reports as a supervisory signal rather than a fire alarm signal.
- Duct smoke detectors cannot be used as a substitute for required open-area smoke detection.
- Fire-safety-function wiring to auxiliary equipment must be monitored for integrity in accordance with NFPA 72.

Code references: 2025 CFC §§907.3, 907.3.1, 907.3.4, 907.4.1, 907.4.3

5. Occupant Notification - Audible, Visible & Voice

Upon activation, a required fire alarm system must initiate the required occupant notification and annunciate at the fire alarm control unit or other approved, constantly attended location.

Notification Feature	Key Requirement
Audible level	Audible appliances must provide at least 15 dBA above the average ambient sound level or 5 dBA above the maximum sound level lasting at least 60 seconds, whichever is greater, in every occupiable space.
Maximum audible level	The combined ambient and alarm sound pressure level must not exceed 110 dBA at the minimum hearing distance. Where average ambient noise exceeds 105 dBA, visible notification is required and audible notification is not required.
Fire alarm signal	The standard evacuation signal is the ANSI S3.41 three-pulse temporal pattern, unless an existing signaling scheme is approved.
Sleeping-room signal	In Group R-1, R-2 and I-1 sleeping rooms, the fire alarm system audible signal must be a 520-Hz low-frequency signal complying with NFPA 72.

Notification Feature	Key Requirement
Visible notification	Visible notification appliances are required in public-use and common-use areas as specified by §907.5.2.3, with additional California accessibility requirements in CBC Chapter 11B.
Emergency voice/alarm	Where required, emergency voice/alarm communication systems must comply with NFPA 72 and provide approved alert tones and voice instructions. High-rise and certain Group I-2 buildings have additional floor/paging-zone requirements.

Code references: 2025 CFC §§907.5, 907.5.2.1-907.5.2.3; CBC Chapter 11B; NFPA 72

6. Annunciation, Identification, Zones & Monitoring

- Where required, the fire alarm system must identify the specific initiating-device address, location, device type, floor level where applicable, and status such as normal, alarm, trouble and supervisory. CFC §907.6.3 contains limited exceptions.
- Initiating-device status must be annunciated at an approved on-site location.
- Where occupant notification is required for evacuation, notification zones generally operate simultaneously throughout the building, except where the CFC permits special zoning such as high-rise buildings and approved hospital/convalescent fire plans.
- Fire alarm systems required by the CFC or CBC must be monitored by an approved supervising station in accordance with NFPA 72, subject to the exceptions in §907.6.6.
- Direct transmission from “monitor-it-yourself” transmitters to a public safety answering point is not permitted unless approved by the fire code official.
- Termination of required monitoring service requires written notice to the fire code official in accordance with CFC §901.9.
- Group E school systems have additional California monitoring and supervising-station listing requirements under §907.6.6.4.

Code references: 2025 CFC §§901.9, 907.6.3, 907.6.4, 907.6.6-907.6.6.4

7. Wiring & Power Supply

- Fire alarm wiring must comply with the California Electrical Code and NFPA 72.
- Wireless protection systems using radio-frequency transmitting devices must comply with the NFPA 72 requirements for supervision of low-power wireless systems.
- Primary and secondary fire alarm power supplies must be provided in accordance with NFPA 72.
- High-rise fire alarm network communication circuits between multiple control units have additional Class A or Class X and metallic-raceway requirements in CFC §907.6.1.1.

Code references: 2025 CFC §§907.6.1, 907.6.1.1 and 907.6.2; California Electrical Code; NFPA 72

8. Acceptance Testing & Closeout

- Required fire alarm systems and components must be acceptance-tested in accordance with NFPA 72 and as approved by the fire code official.
- The fire code official must be notified before required acceptance testing.
- A building or portion of a building cannot be occupied until required fire protection and life-safety systems have been tested and approved.
- A completed NFPA 72 record of completion must verify that the system was installed and tested in accordance with the approved plans and specifications.
- Operating, testing and maintenance instructions, record drawings (“as-builts”), and equipment specifications must be provided at an approved location.

Code references: 2025 CFC §§901.5, 901.5.1, 907.7-907.7.3; NFPA 72

9. Inspection, Testing & Maintenance

Required fire alarm and detection systems must remain operable and be inspected, tested and maintained in accordance with CFC §§901.6 and 907.8, CCR Title 19, and NFPA 72. The 2025 CFC specifically lists NFPA 72 as the inspection, testing and maintenance standard for fire alarm systems.

- Testing must follow the schedules in NFPA 72, or be performed more frequently where required by the fire code official.
- Where approved because of safety considerations, inaccessible devices or equipment may be tested during scheduled shutdowns, but not less than every 18 months.
- Smoke-detector sensitivity must be checked within one year after installation and every alternate year thereafter. After the second calibration test, qualifying detectors may have the interval extended to not more than 5 years if required sensitivity and nuisance-alarm conditions are satisfied.
- The building owner is responsible for maintaining fire and life-safety systems in operable condition. Service personnel must meet NFPA 72 qualification requirements for inspection, testing and maintenance.
- Inspection, testing and maintenance records must be maintained.

Smoke alarm replacement. Separate single- and multiple-station smoke alarms must be replaced when they fail operability testing, reach the manufacturer's end-of-life condition, have an unknown manufacture date, or exceed 10 years from the marked manufacture date unless the manufacturer requires earlier replacement.

Code references: 2025 CFC §§901.6, 901.6.1, 907.8-907.10.1; CCR Title 19; NFPA 72

10. When a Required Fire Alarm System Is Out of Service

- The fire department and fire code official must be notified immediately when a required fire protection system is out of service.
- Where required by the fire code official, the building must be evacuated or an approved fire watch must be provided for occupants left unprotected until the system is restored.
- A fire watch must have at least one approved means to notify the fire department, and the fire watch's only duty is constant patrol of the protected premises and watching for fires.
- The building owner must assign an impairment coordinator; if no one is specifically designated, the owner is the impairment coordinator.
- Out-of-service tags must be placed as directed, including at the fire alarm control unit and fire alarm annunciator, and at other identified fire-protection-system locations as applicable.
- Required monitoring service cannot simply be discontinued without written notice to the fire code official under §901.9.

Code references: 2025 CFC §§901.7-901.7.3 and 901.9

11. Fire Alarm Systems, Smoke Alarms & Carbon Monoxide Detection

These devices are related but are not interchangeable code concepts:

- A building fire alarm system is the system regulated primarily by CFC §907 and NFPA 72, typically including a control unit, initiating devices, notification appliances, supervising-station transmission, and related fire-safety functions where required.
- Single- and multiple-station smoke alarms are separately regulated by CFC §907.2.11 and §907.10 and by the applicable residential/building-code provisions.
- Carbon monoxide detection is regulated separately by CFC §915. Where a new building is required to have both a fire alarm system and carbon monoxide detectors, the carbon monoxide detectors must be connected to the fire alarm system in accordance with NFPA 72.

Code references: 2025 CFC §§907.2.11, 907.10, 915.3.2-915.3.4; NFPA 72

12. Comprehensive Compliance Check

☐ Required fire alarm trigger has been identified for the occupancy and special use.
☐ Plans and NFPA 72 shop drawings have been submitted and approved before installation.
☐ All fire alarm equipment and components are California State Fire Marshal listed and approved.
☐ Manual fire alarm boxes meet required exit location, travel-distance, mounting-height, color and access requirements.
☐ Automatic detectors and duct detectors are correctly selected and connected for the required fire-safety functions.
☐ Audible, visible and voice notification is designed for the occupancy, accessibility requirements and ambient conditions.
☐ Required 520-Hz sleeping-room notification is provided where applicable.
☐ Required annunciation, device identification, zoning and supervising-station monitoring are provided.
☐ Wiring and primary/secondary power supplies comply with the California Electrical Code and NFPA 72.
☐ Acceptance testing, record of completion, as-built drawings and operating/maintenance documents are complete.
☐ Required NFPA 72 inspection, testing and maintenance records are current.
☐ Any fire alarm impairment is managed under CFC §901.7 and monitoring termination is handled under §901.9.

Applicable Code References

Reference	Application
2025 California Fire Code, Title 24, Part 9	Chapter 9; §§901, 907 and 915
2025 California Building Code, Title 24, Part 2	Chapter 9 and Chapter 11B, as applicable
NFPA 72-2022	National Fire Alarm and Signaling Code, as amended by California
NFPA 170	Standard for Fire Safety and Emergency Symbols
California Electrical Code, Title 24, Part 3	Fire alarm wiring and electrical requirements
California Code of Regulations, Title 19, Division 1	California listing, operation and maintenance provisions applicable to fire alarm systems

Important. This handout summarizes commonly applicable requirements for public information. The adopted code, California amendments, referenced standards, approved plans, local amendments, and determinations of the fire code official govern where a conflict or project-specific condition exists.