

Fire Alarm Matrix

(Based Upon the 2019 Title 24 Code Requirements)

Ancillary Function ¹ ----- Occ. Group	Manual Fire Alarm Sys.	Auto Heat/Smoke	Manual & Auto Detection	Audible	Visible	Emerg. Voice/Alarm Comm.	Public Address System	Single Station Smoke Alarm	Smoke Det. (Release Service) ²	Duct Det. ³	Fire/ Smoke Dampers ⁴	Smoke Control System ⁵	Elevator Recall ⁶	Electrical Supervision	Monitor Service ^{7, 8, 9}
A (300+)	X ¹⁰			X	X				X	X	X		X	X	X
A (1,000+)	X ¹⁰				X	X			X	X	X		X	X	X
A (10,000+)	X ¹⁰				X		X		X	X	X		X	X	X
B	X ^{10, 11}	X ¹²		X	X				X	X	X		X	X	X
B Amb. HCF		X ^{12, 13}		X	X				X	X	X		X	X	X
B Education ¹⁴	X	X ¹²		X	X				X	X	X		X	X	X
E ^{15, 16}			X	X ¹⁷	X				X	X	X		X	X	X ¹⁸
E, I-4 Daycare at Pub School		X		X ¹⁷	X				X	X	X		X	X	X
E Private		X ¹⁹		X ¹⁷	X				X	X	X		X	X	X
E Daycare		X ^{19, 20}		X	X				X	X	X		X	X	X
F	X ^{10, 21}	X ¹²		X	X				X	X	X		X	X	X
H	X ²²	X ²³		X	X				X	X	X		X	X	X
H above 10 th Story	X ²⁴			X	X				X	X	X		X	X	X
H - Gas Det.				X ²⁵	X ²⁵									X	X ²⁶
I-1 (Reserved)								X							
I-2, I-2.1 ²⁷			X ¹²	X ²⁸	X ²⁹				X	X	X		X	X	X
I-3			X ^{12, 30}						X	X	X		X	X	X
I-4	X	X ¹²		X	X			X ³¹	X	X	X		X	X	X
I-4 Lrg. Family Daycare	X ³³			X ³³				X ³¹							
L	X			X	X				X	X	X		X	X	X
M	X ^{10, 32}	X ¹²		X	X				X	X	X		X	X	X
R-1		X ¹²	X	X	X			X ³¹	X	X	X		X	X	X
R-2	X	X ¹²		X	X			X ³¹	X	X	X		X	X	X
R-2.1 Licensed		X ¹²	X	X	X			X ³¹	X	X	X		X	X	X
R-3								X ³¹							
R-3.1		X ¹²						X ^{31, 34}	X ³⁵						
R-4		X ¹²	X	X ^a				X ³¹	X				X	X	X
Lrg. Family Daycare	X ³³			X ³³				X ³¹							
Amusement			X			X ^{36, 37}			X	X	X		X	X	X
High-rise		X	X		X	X			X	X	X	X	X	X	X
Atriums	X	X			X	X						X		X	X
High-piled Combustibles		X		X	X							X ³⁸		X	X ³⁹
Aerosol Stg.	X			X	X									X	
Lumber, wood panel, veneer	X			X	X									X	
U.G. Buildings w/ smoke exh.		X	X	X	X	X						X	X	X	X
U.G. Buildings	X ⁴⁰					X ⁴⁰	X		X	X	X		X	X	X
Covered Mall ⁴¹					X	X			X	X	X	X	X	X	X
Res. Aircraft Hangar								X ⁴²							
Air Traffic Control Tower		X		X	X										
Battery Storage ⁴³		X													X
Sound Stage		X										X		X	X ⁴⁴
C ⁴⁵	X	X		X	X										
F.G. Transit ⁴⁶			X			X								X	X
Winery Cave ⁴⁷	X			X	X									X	
Public Lib.														X	X ⁴⁸
Horse Racing Stables ⁴⁹		X													X
Pet Kennels ⁵⁰		X													X
Existing E ⁵¹			X ¹⁵	X	X				X	X	X		X	X	X
Existing I Prot. Soc. Care ⁵²		X		X	X				X	X	X		X	X	X
Existing I-1 ⁵³			X ¹²	X	X				X	X	X		X	X	X
Existing I-2, I-2.1			X ^{12, 54}	X ²⁹	X ³⁰				X	X	X		X	X	X
Existing I-3 ⁵⁵			X ^{12, 31}						X	X	X		X	X	X
Existing R-1 Hotel/Motel ⁵⁶			X ¹²	X	X			X ³¹	X	X	X		X	X	X
Existing R-1 Board/Room			X ^{12, 57}	X	X			X ³¹	X	X	X		X	X	X
Existing R-2 ⁵⁸			X ¹²	X	X			X ³¹	X	X	X		X	X	X
Existing R-4 ⁵⁹			X ¹²	X	X			X ³¹	X	X	X		X	X	X
Existing R-1, R-2 High-rise	X ⁶⁰	X ⁶⁰		X	X	X		X ³¹	X	X	X	X	X	X	X
Existing High-rise ⁶¹			X		X	X			X	X	X	X	X	X	X

a. hearing impaired R-4 occupancies 907.5.2.3.4

- 1 - Connect ancillary functions to fire alarm system panels. (Ref. NFPA 72 definitions for dedicated function fire panels.)
- 2 - CBC Sec. 711.6.6 – Smoke-Activated Doors
- 3 - CMC Sec. 601.6 (Note: Supply side only)
 - a - (Ref: CBC Sec. 907.2.12.1.2 for High-rise buildings)
- 4 - CBC Sec. 711.6 – Ducts and Air Transfer Openings
- 5 - Smoke Control Systems
 - a - CBC Sec. 402.7.G– Covered Malls (When required for atriums)
 - b - CBC Sec. 403.1.6 – High-rise Buildings (New)
 - c - CBC Sec. 404.5 – Atriums
 - d - CBC Sec. 405.5 – Underground Buildings
 - e - CEBC Sec. 313.24 – Group R1 and R2 High-rise Buildings (Existing)
 - f - CEBC Sec. 314.24 – High-rise Buildings (Existing)
- 6 - CFC Sec. 907.3.3 – Smoke-Detection Recall (3007.6.3 Lobby doorways – Ref. 711.6.6 Smoke-activated doors)
 - a - CBC Sec. 905.5 – Shunt trip. CFC 606.8.5
- 7 - CFC Sec. 903.4.1 – Sprinkler system monitoring
 - a - CFC Sec. 907.1.6 – Required fire alarm systems shall be monitored by an approved supervising station. (Ref. 3 Exceptions)
- 8 - CFC Sec. 903.4.2 – Audible sprinkler flow alarm on the exterior of the building in an approved location.
- 9 - CFC Sec. 907.2, Exception 1: The single manual fire alarm box is no longer required.
- 10 - Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system and the alarm notification appliances will activate upon sprinkler water flow. CFC 903.3.1.1
- 11 - CFC Sec. 907.2.2 – 1. Manual fire alarm system for occupant load of 500 or more persons. 2. More than 100 persons above or below the lowest level of exit discharge. 3. Fire area contains a Group B ambulatory health care facility. 4. Group B containing educational facilities.
- 12 - CBC Sec. 1010.1.9.8 – Delayed Egress Locks
- 13 - CFC 907.2.2.1 – Electronically supervised smoke detection installed within ambulatory health care facility and in public use areas outside of tenant spaces, including public corridors and elevator lobbies. Exception – Automatic sprinkler system will activate notification appliances upon sprinkler water flow.
- 14 - CFC 907.2.2.2 – Every Group B building used for educational purposes (shall apply to, but not limited to every community college and university) shall be provided with a manual or automatic fire alarm system. Exception – Privately owned trade or vocational schools or any firm or company which provides educational facilities and instructions for its employees.
- 15 - CFC Sec. 907.2.3 – Applicable to facilities with occupant loads of 50 or more persons or containing more than one classroom or one or more rooms used for day care purposes. (See Exceptions 1 & 2 & 3 for manual fire alarm boxes.)
- 16 - CFC 907.2.3.2 – Assembly occupancies with an occupant load of less than 1,000 and located within a Group E occupancy campus or building shall be provided with an alarm system as required for the Group E occupancy.
- 17 - CFC 907.1.2.4 – An audible alarm notification appliance shall be mounted on the exterior of buildings to alert occupants in and around playground areas.
- 18 - CFC Sec. 907.2.3.5 – School fire alarm systems shall be monitored in accordance with Section 907.1.6.3
- 19 - Exception: Automatic detection not required where an approved automatic sprinkler system is installed and occupant notification appliances will activate on sprinkler water flow and manual activation is provided from a normally occupied location.
- 20 - CFC 907.2.3.9.2 – Smoke detectors shall be installed in every room used for sleeping or napping.
- 21 - CFC Sec. 907.2.4 – 1. Manual fire alarm system where two or more stories in height and; 2. Combined occupant load of 500 or more persons above or below the lowest level of exit discharge.
- 22 - CFC Sec. 907.2.5 – Manual fire alarm system in Group H-5 occupancies and occupancies used to manufacture organic coatings.
- 23 - CFC 907.2.5.1 – Manual fire alarm boxes on each side of the 2-hour fire-smoke barrier and at each exit above the 11th story and above.
- 24 - CFC Sec. 907.2.5 – An automatic smoke detection system for highly toxic gases, organic peroxides and oxidizers per Chapters 1.6, 1.7 and 1.8
- 25 - CFC Sec. 908 – Emergency Alarm Systems - Gas detection systems and emergency audible/visual notification. (i.e. blue strobe)
- 26 - CFC Sec. 908.1.1 – for gas detection system monitoring at a constantly attended control station.
- 27 - CFC 907.2.6.2, Exception: Where an entire facility is used for the housing of persons, none of whom are physically or mentally handicapped or nonambulatory, and are between the ages of 18 and 64, are exempt from the installation of an automatic fire alarm system.
- 28 - CFC Sec. 907.2.6.3 – Non-patient areas.
- 29 - CFC Sec. 907.2.6.3 – Throughout & in lieu of audible appliances in patient areas.
- 30 - Ref. CFC 907.2.6.3 for manual fire alarm box locations, 907.2.6.3 smoke detection (Exceptions), and staff notification requirements.
- 31 - Smoke alarms as per CFC Sec. 907.2.10.
- 32 - CFC Sec. 907.2.7 – 1. Manual fire alarm system for occupant load of 500 or more persons. 2. More than 100 persons above or below the lowest level of exit discharge. (Ref. CFC 907.2.7.1 for Group M occupant notification.)
- 33 - CBC Sec. 455.5 (Not a fire alarm system) [For I-4 Day Cares: Ref. to CFC 907.2.6, Exception - then refer to CFC 907.2.6.4]
- 34 - CFC Sec. 907.2.10.2 (4) – Additionally, provide smoke alarms throughout all habitable areas of the dwelling unit except kitchens.
- 35 - CBC Sec. 435.8.3 – When required by specific egress provisions, doors shall be maintained self-closing or shall be maintained automatic closing by actuation of a smoke alarm in accordance with Sec. CBC 711.6.6.
- 36 - CFC Sec. 907.2.11.1 – Alarm system shall immediately sound an alarm in the building at a constantly supervised location from which emergency action can be initiated. (Ref. Sec. CFC 907.2.11.2 for prerecorded message requirements.)
- 37 - CFC Sec. 907.2.11.3 – Emergency voice/alarm communication system may also be allowed to serve as a public address system.
- 38 - Smoke vents. CFC 907.2.11.4
- 39 - CFC Sec. 906.5 – The fire detection system shall be monitored in accordance with Sec. 907. (Required whether or not building is sprinklered.) 40
- 40 - CFC Sec. 907.2.18 – Where the lowest level is more than 60 ft. below lowest level of exit discharge.
- 41 - CFC Sec. 907.2.19 – In covered mall buildings exceeding 50,000 ft².
- 42 - CFC Sec. 907.2.20 – Minimum one listed smoke alarm and interconnected into the residential smoke alarm or other sounding device that will be audible in all sleeping areas of the dwelling.
- 43 - CFC Sec. 907.2.22 – In areas containing stationary storage battery systems having a capacities exceeding the values shown in CFC Table 1206.2.
- 44 - CFC Sec. 907.2.24.1 & 907.2.24.2 – Detectors shall be connected to an approved supervising station or a local alarm at a constantly attended location in accordance to 907.6.6
- 45 - CBC Sec. 450.8 – See. Sec. 907.2.25 for specific requirements and exceptions.
- 46 - CBC Sec. 443.2.5 – See Sec. 907.2.26 for specific requirements and exceptions.
- 47 - CBC Sec. 446.10 – Type 3 winery caves. (CFC Sec. 907.2.27)
- 48 - CBC Sec. 449.2 – Public libraries required to have automatic fire sprinkler systems must be connected to a remote station protection signaling system conforming to NFPA 72.
- 49 - CBC Sec. 440.1 – Fire alarm system requirements in buildings used by an association regulated by the California Horse Racing Board, see Title 4, Division 4, Article 17, Section 1927.
- 50 - CBC Sec. 441 – Fire alarm system connected to a central station required when in lieu of automatic sprinkler system per H&S Code Section 122125.
- 51 - CFC Sec. 907.2.25, Exceptions: 1) A single classroom building of 1,000 ft.² or less and not closer than 100 ft. from another building; or 2) An occupant load less than 50.
- 52 - CEBC CA Part 10 Existing Building Code Sec. 315.1 – Existing protective social care homes or facilities established prior to March 4, 1972.
 - a - CEBC Sec. 315.8, Exception: When an approved automatic sprinkler system is installed conforming to Section 903.2.6 a separate fire alarm system need not be provided.
- 53 - CFC Sec. 907.2.25 – exceptions.
- 54 - CFC Sec. 907.2.25 – Projects requiring OSHPD approval in existing I-2 and I-2.1 occupancies located in buildings defined as hospitals per H&S Sec. 1250 not equipped with a sprinkler system throughout shall have an automatic fire alarm system which responds to the product of combustion other than heat. (See Exception)
- 55 - CFC Sec. 907.2.25 – An automatic and manual fire alarm system shall be installed in accordance with Sec. 907.2.6.3.
- 56 - CFC Sec. 907.2.25 CBC Sec. – In existing hotels/motels more than three stories or with more than 20 sleeping units. (Ref. 2 exceptions)
- 57 - CFC Sec. 907.2.25 – exceptions.
- 58 - CFC Sec. 907.2.25 – In existing apartments three or more stories in height containing more than 100 sleeping units. (Ref. 4 exceptions)
- 59 - CFC Sec. 1103.7.7 – Ref. 2 exceptions, NOT PUBLISHED IN 2019 CFC!!!!
- 60 - CFC Sec. 907.2.25 – Provide an automatic or manually operated fire alarm system to warn all occupants simultaneously.
- 61 - Ref. CFC Sec. 907.2.25 for specific requirements to existing high-rise structures.

Note: This matrix is simply a tool developed to assist in quickly determining when various fire alarm features are required for specific occupancy classifications. Due to the complexity of the Codes, use of this matrix should not preclude the user from verifying the accuracy of its content prior to applying requirements contained in Title 24 Parts 2 & 9 & 10 and as may also be further amended within various jurisdictions.