CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 9 – FIRE PROTECTION SYSTEMS

Adopting Agency		BSC	SFM	HCD			**DSA**		OSHPD				CSA	DHS	AGR	DWR	CEC	CA	SL	SLC
Adopt Entire Chapter				1	2	1/AC	**AC**	SS	1	2	3	4								
Adopt entire Chapter as amended (amended sections listed below)																				
Adopt only those sections that are listed below							**X**													
Chapter / Section	Codes																			
907.3.2	CA						**X**													
907.9.1 w/ Exc. 1 & 2	CA						**X**													
907.9.1.1	CA						**X**													
907.9.1.2	IBC						**X**													
907.9.1.3	IBC						**X**													
Table 907.9.1.3	CA						**X**													
907.9.1.4	CA						**X**													
907.9.1.5	CA						**X**													
907.9.2	CA						**X**													
907.9.2.1	CA						**X**													

CHAPTER 9 – FIRE PROTECTION SYSTEMS

SECTION 907
FIRE ALARM AND DETECTION SYSTEMS

[F] 907.3 Manual fire alarm boxes.

[F] 907.3.1 Location.

[F] 907.3.2 Height. The height of the manual fire alarm boxes shall be a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm), measured vertically, from the floor level to the *highest point of the* activating handle or lever of the box. *Manual fire alarm boxes shall also comply with Section 1117B.6 Item 4.*

DSA

CBC Section 1117B.6, Item 4 requires controls and operating mechanisms to be operable with one hand without tight grasping, pinching or twisting of the wrist (must be operable by persons with limited manual dexterity). The maximum force to activate controls shall be no greater than 5 pounds-force.

Exception: [DSA-AC] *In existing buildings there is no requirement to retroactively relocate existing manual fire alarm boxes to a minimum of 42 inches (1067 mm) and a maximum of 48 inches (1219 mm) from the floor level to the activating handle or lever of the box.*

[F] 907.9 Alarm notification appliances.

[F] 907.9.1 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 907.9.1.1 through *907.9.1.5*.

DSA

In a new facility, *ADA Standards for Accessible Design* 4.1.3(14), 4.1.6 and 4.28 require that both audible and visual alarms be installed if emergency warning systems are provided.

DSA

[Reference: ADAAG 4.28.3 Visual Alarms and for more in-depth discussion visit http://www.access-board.gov/adaag/about/bulletins/alarms.htm] There are two major categories of fire alarms:

1. *Self-contained units*, as exemplified by the single-station residential smoke detector unit--battery-operated or hard-wired to building electrical power--which produces an alarm signal at the fixture itself when activated by an integral sensing device, and
2. *Building-wide systems*, integrated--often zoned--alarms whose local signals are remotely initiated, either automatically from detectors or manually from pull-stations spread throughout a facility.

ADA Standards for Accessible Design requires that when either type is installed, it must have a visual alarm component.

1. The lamp shall be a xenon strobe type or equivalent.
2. The color shall be clear or nominal white (i.e., unfiltered or clear filtered white light).
3. The maximum pulse duration shall be two-tenths of one second (0.2 sec) with a maximum duty cycle of 40 percent. The pulse duration is defined as the time interval between initial and final points of 10 percent of maximum signal.
4. The intensity shall be a minimum of 75 candela. With regard to light intensity in sleeping areas, ADAAG simply referred to 75 candela. However, in a later technical bulletin dated July 1992, the USDOJ specifically referenced the UL research calling for 110 candela or 177 candela to awaken the hearing impaired.
5. The flash rate shall be a minimum of 1 Hz and a maximum of 3 Hz.
6. The appliance shall be placed 80 in. above the highest floor level within the space or 6 in.

below the ceiling, whichever is lower.

7. In general, no place in any room or space required to have a visual signal appliance shall be more than 50 ft. from the signal (in the horizontal plane). In large rooms and spaces exceeding 100 ft. across, without obstructions 6 ft. above the finish floor, such as auditoriums, devices may be placed around the perimeter, spaced a maximum 100 ft. apart, in lieu of suspending appliances from the ceiling.
8. No place in common corridors or hallways in which visual alarm signaling appliances are required shall be more than 50 ft. from the signal.

However, the technical provisions for visible alarms apply to normative conditions. Signal intensity and placement in very small and very large rooms and in spaces with high ceilings, irregular geometry, dark or non-reflective walls, or very high ambient lighting levels may best be determined by specialized consultants employing photometric calculation for system design rather than by a literal application of the requirements. For these reasons, Equivalent Facilitation permits alternative designs that achieve substantially equivalent or greater accessibility.

Lamp intensity (like sound) decreases in inverse relation to the square of its distance from the viewer. Thus, by varying lamp intensity and spacing, system designers can tailor an installation to the physical conditions of the space being served. It is impossible to provide specific guidance for the design of non-standard installations based upon the photometric calculations necessary to demonstrate equivalent facilitation. Such applications should generally be designed by experienced electrical engineers or fire alarm consultants under performance specifications for coverage and illumination levels derived from the technical requirements and ambient conditions in the space. For example, a 75 cd strobe at 50 feet raises the ambient light by 0.03 at 0 degrees in the horizontal plane. Equivalent design configurations should, therefore, result in approximately the same increase at all positions within the covered space.

Given concerns for economy (lower-candela lamps are less expensive to purchase and connect) and lamp standardization within a building (lower-candela lamps are more available and simplify inventorying), specifiers may be motivated to standardize on a minimum-candela fixture, achieving coverage in large rooms by close spacing of low- intensity lamps. Where a single lamp can provide the necessary intensity and coverage, multiple lamps should not be installed because of their potential effect on persons with photosensitive epilepsy, unless the multiple lamps in the same view are synchronized.

Exceptions:

1. *In other than Group I-2 and I-2.1,* visible alarm notification appliances are not required in alterations, except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed.

DSA

The US Access Board has provided guidance which indicates visual alarms are required where an existing alarm system is upgraded or replaced. (See Guide to ADAAG Provisions, Bulletin #2-Visual Alarms, and Preamble to the ADA and ABA Accessibility Guidelines.)

2. Visible alarm notification appliances shall not be required in *enclosed exit stairways, exterior exit stairs, and exterior exit ramps*.

DSA

In certain areas, it could be hazardous or distracting to install visual alarms.

907.9.1.1 Public and common *use* areas. Visible alarm notification appliances shall be provided in public *use* areas and common *use* areas*, including but not limited to:*

1. *Sanitary facilities including restrooms, bathrooms and shower rooms.*
2. *Corridors.*
3. *Music practice rooms.*
4. *Band rooms.*
5. *Gymnasiums.*
6. *Multipurpose rooms.*
7. *Occupational shops.*
8. *Occupied rooms where ambient noise impairs hearing of the fire alarm.*
9. *Lobbies.*
10. *Meeting rooms.*
11. *Classrooms.*

DSA

This list is not exhaustive. In new construction, all public- and common-use areas shall have visible alarms if audible alarms are provided.

[F] 907.9.1.2 Employee work areas. Where employee work areas have audible alarm coverage, the notification appliance circuits serving the employee work areas shall be initially designed with a minimum of 20 percent spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing impaired employees.

DSA

Under the ADA, employees with disabilities are entitled to "reasonable accommodation" within the workplace. Initially designing employee work stations areas with the potential to add visible notification appliances in the future could avoid costly retrofits when current employees become temporarily or permanently disabled, or when new employees with disabilities are hired.

[F] 907.9.1.3 Groups I-1 and R-1. Group I-1 and R-1 sleeping units in accordance with Table 907.9.1.3 shall be provided with a visible alarm notification appliance, activated by both the in-room smoke alarm and the building fire alarm system.

DSA

See *ADA Standards for Accessible Design* 4.28.4 Auxiliary Alarms. Units and sleeping accommodations shall have a visual alarm connected to the building emergency alarm system or shall have a standard 110-volt electrical receptacle into which such an alarm can be connected and a means by which a signal from the building emergency alarm system can trigger such an auxiliary alarm. When visual alarms are in place, the signal shall be visible in all areas of the unit or room. Instructions for use of the auxiliary alarm or receptacle shall be provided. The referenced CBC sections under Table 907.9.1.3 direct the user to additional requirements in Chapter 11B Section 1111B.4.5 and Tables 11B-3 and 11B-4 for persons with hearing impairments.

[F] TABLE 907.9.1.3
VISIBLE AND AUDIBLE ALARMS

NUMBER OF SLEEPING UNITS	SLEEPING UNITS WITH VISIBLE AND AUDIBLE ALARMS
6 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22

501 to 1,000	5% of total
1,001 and over	50 plus 3 for each 100 over 1,000

[DSA-AC & SFM] *Also see Chapter 11B, Section 1111B.4.5, Table 11B-3, and Table 11B-4.*

[F] 907.9.1.4 Group R-2. In Group R-2 occupancies required by Section 907 to have a fire alarm system, all dwelling units and sleeping units shall be provided with the capability to support visible alarm notification appliances in accordance with *NFPA 72.*

[F] 907.9.1.5 Groups I-1, R-3.1 and R-4. *Protective social care facilities which house persons who are hearing impaired, shall be provided with notification appliances for the hearing impaired installed in accordance with NFPA 72 and which shall activate upon initiation of the fire alarm system or the smoke alarms.*

907.9.2 Audible alarms. Audible alarm notification appliances shall be provided and shall sound a distinctive sound that is not to be used for any purpose other than that of a fire alarm. The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having duration of at least 60 seconds, whichever is greater, in every occupied space within the building. The minimum sound pressure levels shall be: *75* dBA in occupancies in Groups R and I-1; 90 dBA in mechanical equipment rooms and 60 dBA in other occupancies. The maximum sound pressure level for audible alarm notification appliances shall be *110* dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than *95* dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.

In Group I-2 occupancies, audible appliances placed in patient areas shall be only chimes or similar sounding devices for alerting staff.

Exception: Visible alarm notification appliances shall be allowed in lieu of audible alarm notification appliances in *patient* areas of Group I-2 occupancies.

[F] 907.9.2.1 Audible alarm signal. *The audible signal shall be the standard fire alarm evacuation signal, ANSI S3.41 Audible Emergency Evacuation Signal, "three pulse temporal pattern," as described in NFPA 72.*

Exception: *The use of the existing evacuation signaling scheme shall be permitted where approved by the enforcing agency.*