REVISION RECORD
FOR THE STATE OF CALIFORNIA

SUPPLEMENT

July 1, 2024

2022 Title 24, Part 9, California Fire Code

General Information:

1. The date of this Supplement is for identification purposes only. See the History Note Appendix on the backside or accompanying page.
2. This supplement is issued by the California Building Standards Commission in order to provide new and/or replacement pages containing recently adopted provisions for the 2022 California Fire Code, California Code of Regulations, Title 24, Part 9. Instructions are provided below.
3. Health and Safety Code Section 18938.5 establishes that only building standards in effect at the time of the application for a building permit may be applied to the project plans and construction. This rule applies to both adoptions of building standards for Title 24 by the California Building Standards Commission, and local adoptions and ordinances imposing building standards. The new building standards provided with the enclosed blue supplement pages must not be enforced before the effective date.
4. Not all code text on the enclosed blue supplement pages is a new building standard. New, amended, or repealed building standards are identified by margin symbols. An explanation of margin symbols is provided in the code before the Table of Contents.
5. You may wish to retain the superseded material with this revision record so that the prior wording of any section can be easily ascertained.

Title 24, Part 9

Remove Existing Pages	Insert Blue-Colored Pages
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xxxiii and xxxiv	xxxiii and xxxiv
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APPENDIX 4-5 and APPENDIX 4-6	APPENDIX 4-5 and APPENDIX 4-6
INDEX-11 and INDEX-12	INDEX-11 and INDEX-12
HIST-1 and HIST-2	HIST-1 and HIST-2

PREFACE

This document is Part 9 of thirteen parts of the official triennial compilation and publication of the adoptions, amendments and repeal of administrative regulations to *California Code of Regulations, Title 24,* also referred to as the *California Building Standards Code.* This part is known as the *California Fire Code.*

The *California Building Standards Code* is published in its entirety every three years by order of the California legislature, with supplements published in intervening years. The California legislature delegated authority to various state agencies, boards, commissions and departments to create building regulations to implement the State's statutes. These building regulations, or standards, have the same force of law, and take effect 180 days after their publication unless otherwise stipulated. The *California Building Standards Code* applies to occupancies in the State of California as annotated.

A city, county, or city and county may establish more restrictive building standards reasonably necessary because of local climatic, geological or topographical conditions. Findings of the local condition(s) and the adopted local building standard(s) must generally be filed with the California Building Standards Commission (or other filing if indicated) to become effective, and may not be effective sooner than the effective date of this edition of the *California Building Standards Code*. Local building standards that were adopted and applicable to previous editions of the *California Building Standards Code* do not apply to this edition without appropriate adoption and the required filing.

Should you find publication (e.g., typographical) errors or inconsistencies in this code or wish to offer comments toward improving its format, please address your comments to:

California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833–2936

Phone: (916) 263–0916
Email: cbsc@dgs.ca.gov

Web page: www.dgs.ca.gov/bsc

ACKNOWLEDGMENTS

The 2022 *California Building Standards Code* (Code) was developed through the outstanding collaborative efforts of the Department of Housing and Community Development, Division of State Architect, Office of the State Fire Marshal, Office of Statewide Health Planning and Development, California Energy Commission, California Department of Public Health, California State Lands Commission, Board of State and Community Corrections and the California Building Standards Commission (Commission).

This collaborative effort included the assistance of the Commission's Code Advisory Committees and many other volunteers who worked tirelessly to assist the Commission in the production of this Code.

Governor Gavin Newsom

Members of the California Building Standards Commission

Secretary Yolanda Richardson – Chair
Rajesh Patel – Vice-Chair

Erick Mikiten
Aaron Stockwell
Peter Santillan
Laura Rambin
Elley Klausbruckner
Juvilyn Alegre
Kent Sasaki

Mia Marvelli – Executive Director
Michael L. Nearman – Deputy Executive Director

For questions on California state agency amendments, please refer to the contact list on page iv.

CALIFORNIA CODE OF REGULATIONS, TITLE 24

California Agency Information Contact List

The following state agencies may propose building standards for publication in Title 24. Request notice of such activity with each agency of interest. See Sections 1.2 through 1.14 of the California Building Code (Part 2 of Title 24) for more detailed information on the regulatory jurisdiction of each state agency.

Board of State and Community Corrections

www.bscc.ca.gov ..... (916) 445-5073

Local Adult and Juvenile Detention Facility Standards

California Building Standards Commission

www.dgs.ca.gov/bsc ..... (916) 263-0916

State Buildings including UC and CSU Buildings, Parking Lot and Walkway Lighting, Green Building Standards for Non-residential Buildings

California Energy Commission

www.energy.ca.gov ..... ***Energy Hotline*** *(800) 772-3300*

Building Efficiency Standards
Appliance Efficiency Standards
Compliance Manual/Forms

California State Lands Commission

www.slc.ca.gov ..... (562) 499-6312

Marine Oil Terminal Standards

California State Library

www.library.ca.gov ..... (916) 323-9843

Department of Consumer Affairs:

Acupuncture Board
www.acupuncture.ca.gov ..... (916) 515-5200

Office Standards

Board of Pharmacy
www.pharmacy.ca.gov ..... (916) 518-3100

Pharmacy Standards

Bureau of Barbering and Cosmetology
www.barbercosmo.ca.gov ..... (800) 952-5210

Barber and Beauty Shop, and College Standards

Bureau of Household Goods and Services
www.bhgs.dca.ca.gov ..... (916) 999-2041

Insulation Testing Standards

Structural Pest Control Board
www.pestboard.ca.gov ..... (800) 737-8188

Structural Standards

Veterinary Medical Board
www.vmb.ca.gov ..... (916) 515-5220

Veterinary Hospital Standards

Department of Food and Agriculture

www.cdfa.ca.gov

Meat & Poultry Packing Plant Standards
Rendering & Collection Center Standards ..... (916) 900-5004

Dairy Standards ..... (916) 900-5008

Department of Housing and Community Development

www.hcd.ca.gov ..... Contact Center (800) 952-8356

Option 5 > Option 2
Residential—Hotels, Motels, Apartments, Single-Family Dwellings, and Permanent Structures in Mobilehome & Special Occupancy Parks

Option 5 > Option 3
Manufactured Housing & Commercial Modular

Option 5 > Option 4
Factory-Built Housing

Option 5 > Option 5
Employee Housing Standards

Northern CA—Option 2 > Option 2 or 3

Southern CA—Option 2 > Option 4 or 5
Mobilehome—Permits & Inspections

Department of Public Health

www.dph.ca.gov .....(916) 449-5661

Organized Camps Standards
Public Swimming Pools Standards

Department of Water Resources

www.water.ca.gov .....DWRwebComment@water.ca.gov

Recycled Water Building Standards

Division of the State Architect

www.dgs.ca.gov/dsa .....(916) 445-8100

Access Compliance

Fire and Life Safety

Structural Safety

Public Schools Standards
Essential Services Building Standards
Community College Standards

State Historical Building Safety Board

Historical Rehabilitation, Preservation, Restoration or Relocation Standards

Office of Statewide Health Planning and Development / California Department of Health Care Access and Information (HCAI)

www.hcai.ca.gov .....(916) 440-8300

Hospital Standards
Skilled Nursing Facility Standards & Clinic Standards

Office of the State Fire Marshal

osfm.fire.ca.gov .....(916) 568-3800

Code Development and Analysis
Fire Safety Standards

How to Distinguish Between Model Code Language and California Amendments

To distinguish between model code language and the incorporated California amendments, including exclusive California standards, California amendments will appear in italics.

***[BSC]** This is an example of a state agency acronym used to identify an adoption or amendment by the agency. The acronyms will appear at California Amendments and in the Matrix Adoption Tables. Sections 1.2 through 1.14 in Chapter 1, Division 1 of this code, explain the used acronyms, the application of state agency adoptions to building occupancies or building features, the enforcement agency as designated by state law (may be the state adopting agency or local building or fire official), the authority in state law for the state agency to make the adoption, and the specific state law being implemented by the agency's adoption. The following acronyms are used in Title 24 to identify the state adopting agency making an adoption.*

Legend of Acronyms of Adopting State Agencies

BSC	*California Building Standards Commission (see Section 1.2)*
BSC-CG	*California Building Standards Commission-CALGreen (see Section 1.2.2)*
BSCC	*Board of State and Community Corrections (see Section 1.3)*
SFM	*Office of the State Fire Marshal (see Section 1.11)*
HCD 1	*Department of Housing and Community Development (see Section 1.8.2.1.1)*
HCD 2	*Department of Housing and Community Development (see Section 1.8.2.1.3)*
HCD 1/AC	*Department of Housing and Community Development (see Section 1.8.2.1.2)*
DSA-AC	*Division of the State Architect-Access Compliance (see Section 1.9.1)*
DSA-SS	*Division of the State Architect-Structural Safety (see Section 1.9.2)*
DSA-SS/CC	*Division of the State Architect-Structural Safety/Community Colleges (see Section 1.9.2.2)*
OSHPD 1	*Office of Statewide Health Planning and Development (see Section 1.10.1)*
OSHPD 1R	*Office of Statewide Health Planning and Development (see Section 1.10.1)*
OSHPD 2	*Office of Statewide Health Planning and Development (see Section 1.10.2)*
OSHPD 3	*Office of Statewide Health Planning and Development (see Section 1.10.3)*
OSHPD 4	*Office of Statewide Health Planning and Development (see Section 1.10.4)*
OSHPD 5	*Office of Statewide Health Planning and Development (see Section 1.10.5)*
DPH	*Department of Public Health (see Section 1.7)*
AGR	*Department of Food and Agriculture (see Section 1.6)*
CEC	*California Energy Commission (see Section 100 in Part 6, the California Energy Code)*
CA	*Department of Consumer Affairs (see Section 1.4):* *Board of Barbering and Cosmetology* *Board of Examiners in Veterinary Medicine* *Board of Pharmacy* *Acupuncture Board* *Bureau of Household Goods & Services* *Structural Pest Control Board (SPCB)*
SL	*State Library (see Section 1.12)*
SLC	*State Lands Commission (see Section 1.14)*
DWR	*Department of Water Resources (see Section 1.13 of Chapter 1 of the California Plumbing Code in Part 2 of Title 24)*

The state agencies are available to answer questions about their adoptions. Contact information is provided on page iv of this code.

To learn more about the use of this code refer to pages viii and ix. Training materials on the application and use of this code are available at the website of the California Building Standards Commission www.dgs.ca.gov/bsc.

California Matrix Adoption Tables

Format of the California Matrix Adoption Tables

The matrix adoption tables, examples of which follow, are non-regulatory aids intended to show the user which state agencies have adopted and/or amended given sections of the model code. An agency's statutory authority for certain occupancies or building applications determines which chapter or section may be adopted, repealed, amended or added. See Chapter 1, Division I, Sections 1.2 through 1.14 for agency authority, building applications and enforcement responsibilities.

The side headings identify the scope of state agencies' adoption as follows:

Adopt the entire IFC chapter without state amendments.

If there is an "X" under a particular state agency's acronym on this row; this means that particular state agency has adopted the entire model code chapter without any state amendments.

Example:

CALIFORNIA FIRE CODE-MATRIX ADOPTION TABLE

(Matrix Adoption Tables are non-regulatory, intended only as an aid to the user.
See Chapter 1 for state agency authority and building applications.)

CHAPTER 2 – DEFINITIONS AND ABBREVIATIONS

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD						BSCC	DPH	AGR	DWR	CA	SL	SLC
				1	2	1-AC	AC	SS	SS/CC	1	1R	2	3	4	5							
Adopt entire chapter			X																			
Adopt entire chapter as amended (amended sections listed below)																						
Adopt only those sections that are listed below								S	A	M	P	L	E									
Chapter/Section																						

Adopt the entire IFC chapter as amended, state-amended sections are listed below:

If there is an "X" under a particular state agency's acronym on this row, it means that particular state agency has adopted the entire model code chapter; with state amendments.

Each state-amended section that the agency has added to that particular chapter is listed. There will be an "X" in the column, by that particular section, under the agency's acronym, as well as an "X" by each section that the agency has adopted.

Example:

CHAPTER 2 – DEFINITIONS AND ABBREVIATIONS

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD						BSCC	DPH	AGR	DWR	CA	SL	SLC
				1	2	1-AC	AC	SS	SS/CC	1	1R	2	3	4	5							
Adopt entire chapter																						
Adopt entire chapter as amended (amended sections listed below)			X																			
Adopt only those sections that are listed below								S	A	M	P	L	E									
Chapter/Section																						
202			X																			

Adopt only those sections that are listed below:

If there is an "X" under a particular state agency's acronym on this row, it means that particular state agency is adopting only specific model code or state-amended sections within this chapter. There will be an "X" in the column under the agency's acronym, as well as an "X" by each section that the agency has adopted.

Example:

CHAPTER 2 – DEFINITIONS AND ABBREVIATIONS

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD						BSCC	DPH	AGR	DWR	CA	SL	SLC
				1	2	1-AC	AC	SS	SS/CC	1	1R	2	3	4	5							
Adopt entire chapter																						
Adopt entire chapter as amended (amended sections listed below)																						
Adopt only those sections that are listed below					X	X		S	A	M	P	L	E									
Chapter/Section																						
202					X	X		S	A	M	P	L	E									
202					X	X			C	O	N	T.										
203					X	X																
203					X	X																

California Matrix Adoption Tables with California Code of Regulations, Title 19, Division 1

State Fire Marshal T-24 Column:
If there is an "X" in the T-24 column under SFM, refer to the California Matrix Adoption Tables explaining how to use the matrix adoption tables.

State Fire Marshal T-19 Column:
If there is an "X" in the T-19 column under SFM, this means that the corresponding section was reprinted from the California Code of Regulations (CCR), Title 19, Division 1 into the *California Fire Code* for the code user's convenience. The corresponding Title-19 sections were listed in the matrix adoption tables in the order that they appear in the *California Fire Code*. The scope, applicability and appeals procedures of CCR, Title 19, Division 1 has not changed. For information regarding the specific purpose and scope of CCR, Title 19, unless otherwise specified, refer to CCR, Title 19, Division 1, Chapter 1, Subchapter 1, Article 1, Sections 1.00 through 1.14.

Example:

CHAPTER 3 – GENERAL PRECAUTIONS AGAINST FIRE

Adopting agency	BSC	BSC-CG	SFM		HCD			DSA			OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1-AC	AC	SS	1	1R	2	3	4	5									
Adopt entire chapter																								
Adopt entire chapter as amended (amended sections listed below)																								
Adopt only those sections that are listed below			X																					
[California Code of Regulations, Title 19, Division 1]				X																				
Chapter/Section							S	A	M	P		L	E											
301		X																						
[T-19 §3.14]				X																				
[T-19 §3.19 (a-g)]				X																				
304		X																						
[T-19 §3.07(a)]				X																				
[T-19 §3.07(b)]				X																				

*The California Code of Regulations (CCR), Title 19, Division 1 provisions that are found in the California Fire Code are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division 1 remains the same.

Marginal Markings

Symbols in the margin indicate the status of code changes as follows:

|| This symbol indicates that a change has been made to a California amendment.

> This symbol indicates deletion of California amendment language.

| This symbol indicates that a change has been made to International Code Council model language.

➡ This symbol indicates deletion of International Code Council model language.

A single asterisk [*] placed in the margin indicates that text or a table has been relocated within the code. A double asterisk [**] placed in the margin indicates that the text or table immediately following it has been relocated there from elsewhere in the code. The following table indicates such relocations in the 2021 edition of the *International Fire Code*.

2021 LOCATION	2018 LOCATION
106.1–106.4	105.4–105.4.6
107	106
108	107
109	108
110	113
111	109
112	110
113	112
114	111
603	604
604	606
605	603
606	607
607	608
608	605
3303	3308
6303.1.5	6303.1.1.2

Coordination of the International Codes

The coordination of technical provisions is one of the strengths of the ICC family of model codes. The codes can be used as a complete set of complementary documents, which will provide users with full integration and coordination of technical provisions. Individual codes can also be used in subsets or as stand-alone documents. To make sure that each individual code is as complete as possible, some technical provisions that are relevant to more than one subject area are duplicated in some of the model codes. This allows users maximum flexibility in their application of the I-Codes.

Development

This 2021 edition presents the code as originally issued, with changes reflected in the 2003 through 2018 editions and further changes approved by the ICC Code Development Process through 2019. A new edition such as this is promulgated every 3 years.

Maintenance

The IFC is kept up to date through the review of proposed changes submitted by code enforcement officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The ICC Code Development Process reflects principles of openness, transparency, balance, due process and consensus, the principles embodied in OMB Circular A-119, which governs the federal

1.1.5 Referenced codes. *The codes, standards and publications adopted and set forth in this code, including other codes, standards and publications referred to therein are, by title and date of publication, hereby adopted as standard reference documents of this code. When this code does not specifically cover any subject related to building design and construction, recognized architectural or engineering practices shall be employed. The National Fire Codes, standards and the Fire Protection Handbook of the National Fire Protection Association are permitted to be used as authoritative guides in determining recognized fire prevention engineering practices.*

1.1.6 Nonbuilding standards, orders and regulations. *Requirements contained in the California Fire Code, or in any other referenced standard, code or document, which are not building standards as defined in Health and Safety Code, Section 18909 shall not be construed as part of the provisions of this code. For nonbuilding standards, orders and regulations, see other titles of the California Code of Regulations.*

1.1.7 Order of precedence and use.

1.1.7.1 Differences. *In the event of any differences between these building standards and the standard reference documents, the text of these building standards shall govern.*

1.1.7.2 Specific provisions. *Where a specific provision varies from a general provision, the specific provision shall apply.*

1.1.7.3 Conflicts. *When the requirements of this code conflict with the requirements of any other part of the California Building Standards Code, Title 24, the most restrictive requirements shall prevail.*

1.1.7.3.1. *Detached one- and two-family dwellings, efficiency dwelling units, lodging houses, live/work units, townhouses not more than three stories above grade plane with a separate means of egress, and their accessory structures, may be designed and constructed in accordance with the California Building Code or the California Residential Code, but not both, unless the proposed structure(s) or element(s) exceed the design limitations established in the California Residential Code, and the code user is specially directed by the California Residential Code to use the California Building Code.*

1.1.8 City, county or city and county amendments, additions or deletions. *The provisions of this code do not limit the authority of city, county or city and county governments to establish more restrictive and reasonably necessary differences to the provisions contained in this code pursuant to complying with Section 1.1.8.1. The effective date of amendments, additions or deletions to this code of a city, county or a city and county filed pursuant to Section 1.1.8.1 shall be the date filed. However, in no case shall the amendments, additions or deletions to this code be effective any sooner than the effective date of this code.*

Local modifications shall comply with Health and Safety Code, Section 18941.5 for Building Standards Law, Health and Safety Code, Section 17958 for State Housing Law or Health and Safety Code, Section 13869.7 for Fire Protection Districts.

1.1.8.1 Findings and filings.

1. *The city, county or city and county shall make express findings for each amendment, addition or deletion based upon climatic, topographical or geological conditions.*

   Exception: *Hazardous building ordinances and programs mitigating unreinforced masonry buildings.*

2. *The city, county or city and county shall file the amendments, additions or deletions expressly marked and identified as to the applicable findings. Cities, counties, cities and counties and fire departments shall file the amendments, additions or deletions, and the findings with the California Building Standards Commission at 2525 Natomas Park Drive, Suite 130, Sacramento, CA 95833.*

3. *Findings prepared by fire protection districts shall be ratified by the local city, county or city and county and filed with the California Department of Housing and Community Development, Division of Codes and Standards, P.O. Box 1407, Sacramento, CA 95812-1407 or 2020 West El Camino Avenue, Suite 250, Sacramento, CA 95833-1829.*

1.1.8.2 Locally adopted energy standards—California Energy Code, Part 6

In addition to the provisions of Section 1.1.8.1 of this Part, the provisions of this section apply to cities, counties and city and county amending adopted energy standards affecting buildings and structures subject to the California Energy Code, Part 6.

Applicable provisions of Public Resources Code Section 25402.1 and applicable provisions of Chapter 10 of the California Administrative Code, Part 1 apply to local amendment of energy standards adopted by the California Energy Commission.

1.1.9 Effective date of this code. *Only those standards approved by the California Building Standards Commission that are effective at the time an application for building permit is submitted shall apply to the plans and specifications for, and to the construction performed under, that permit. For the effective dates of the provisions contained in this code, see the History Note page of this code.*

1.1.10 Availability of codes. *At least one complete copy each of Titles 8, 19, 20, 24 and 25 with all revisions shall be maintained in the office of the building official responsible for the administration and enforcement of this code. Each state department concerned and each city, county or city and county shall have an up-to-date copy of the code available for public inspection. See Health and Safety Code, Section 18942(e)(1) and (2).*

1.1.11 Format. *This part fundamentally adopts the California Fire Code by reference on a chapter-by-chapter basis. When a specific chapter of the California Fire Code is not printed in the*

code and is marked "Reserved," such chapter of the California Fire Code is not adopted as a portion of this code. When a specific chapter of the California Fire Code is marked "Not adopted by the State of California," but appears in the code, it may be available for adoption by local ordinance.

***Note:** Matrix Adoption Tables at the front of each chapter may aid the code user in determining which chapter or sections within a chapter are applicable to buildings under the authority of a specific state agency, but they are not to be considered regulatory.*

***1.1.12 Validity.** If any chapter, section, subsection, sentence, clause or phrase of this code is for any reason held to be unconstitutional, contrary to statute, exceeding the authority of the state as stipulated by statutes or otherwise inoperative, such decision shall not affect the validity of the remaining portion of this code.*

SECTION 1.11
OFFICE OF THE STATE FIRE MARSHAL

***1.11.1 SFM—Office of the State Fire Marshal.** Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application:

***Institutional, educational or any similar occupancy.** Any building or structure used or intended for use as an asylum, jail, prison, mental hospital, hospital, sanitarium, home for the elderly, children's nursery, children's home or institution, school or any similar occupancy of any capacity.*

***Authority cited**—Health and Safety Code, Section 13143.*
***Reference**—Health and Safety Code, Section 13143.*

***Assembly or similar place of assemblage.** Any theater, dancehall, skating rink, auditorium, assembly hall, meeting hall, nightclub, fair building or similar place of assemblage where 50 or more persons may gather together in a building, room or structure for the purpose of amusement, entertainment, instruction, deliberation, worship, drinking or dining, awaiting transportation or education.*

***Authority cited**—Health and Safety Code, Section 13143.*
***Reference**—Health and Safety Code, Section 13143.*

Small family daycare homes.

***Authority cited**—Health and Safety Code, Sections 1597.45, 1597.54, 13143 and 17921.*
***Reference**—Health and Safety Code, Section 13143.*

Large family daycare homes.

***Authority cited**—Health and Safety Code, Sections 1597.46, 1597.54 and 17921.*
***Reference**—Health and Safety Code, Section 13143.*

Residential facilities and residential facilities for the elderly.

***Authority cited**—Health and Safety Code, Section 13133.*
***Reference**—Health and Safety Code, Section 13143.*

Any state institution or other state-owned or specified state-occupied building.

***Specified state-occupied buildings.** Any building, structure or area that meets any of the following criteria:*

1. *A building where the state has contracted into a build-to-suit lease.*
2. *A courthouse holding facility or trial court with a detention area.*
3. *A building used by the Department of Corrections and Rehabilitation (CDCR) as a community correctional reentry center.*
4. *100 percent state occupied.*
5. *State-occupied areas in a state-leased building that is a high-rise and is 75 percent of the net area floor space or more occupied by state entities.*
6. *State-occupied areas in a building that contains 5,000 square feet or more space of state-leased Group H or Group L occupancy.*
7. *A state-leased building with facilities with the primary purpose of housing state records and/or state artifacts of historical significance.*
8. *Properties leased by California State University (CSU).* <
9. *State institutions and their real property.*
10. *CAL FIRE occupied areas in leased buildings.*
11. *State-leased facilities where the governing body's fire protection services rely on an all-volunteer fire department.*

***Authority cited**—Health and Safety Code, Sections 13108, 13145, 13146, 16022.5 and 17921.* <
***Reference**—Health and Safety Code, Sections 13108, 13143, 13145, 13146, 16022.5 and 17921.*

High-rise structures.

***Authority cited**—Health and Safety Code, Section 13211.*
***Reference**—Health and Safety Code, Section 13143.*

Motion picture production studios.

***Authority cited**—Health and Safety Code, Section 13143.1.*
***Reference**—Health and Safety Code, Section 13143.*

Organized camps.

***Authority cited**—Health and Safety Code, Section 18897.3.*
***Reference**—Health and Safety Code, Section 13143.*

***Residential.** All hotels, motels, lodging houses, apartment houses and dwellings, including congregate residences and buildings and structures accessory thereto. Multiple-story structures existing on January 1, 1975, let for human habitation, including and limited to, hotels, motels and apartment houses, less than 75 feet (22 860 mm) above the lowest floor*

0CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																X							
[California Code of Regulations, Title 19, Division 1]				X																			
Chapter / Section																							
Additive Manufacturing			X																				
Aged Home or Institution			X																				
Assembly			X																				
Atrium			X																				
Battery Types: Lead-Acid Battery			X																				
Battery Types: Lithium Metal Polymer Battery			X																				
Battery Types: Nickel-Cadmium Battery			X																				
Bedridden Person			X																				
Blasting Agent			X																				
Building			X																				
Bullet Resistant			X																				
Carbon Dioxide Enrichment System			X																				
Capacitor Energy Storage System			X																				
Care and Supervision			X																				
Catastrophically Injured			X																				
Cell			X																				
Cell Complex			X																				
Cell Tiers			X																				
Charter School			X																				
Child Care			X																				
Child-Care Center			X																				
Child or Children			X																				
Chronically Ill			X																				
Clinic Outpatient			X																				
Community Care Facility			X																				
Community Correctional Reentry Centers			X																				
Congregate Living Health Facility (CLHF)			X																				
Congregate Residence			X																				
Courthouse Holding Facility			X																				
Courtroom Dock			X																				
Day-Care			X																				
Day-Care Home, Family			X																				
Day-Care Home, Large Family			X																				

(continued)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																X							
[California Code of Regulations, Title 19, Division 1]				X																			
Chapter / Section																							
Day-Care Home, Small Family			X																				
Day Room			X																				
Detention Elevator			X																				
Detention Treatment Room			X																				
Detoxification Facilities			X																				
Direct Access			X																				
Energy *Storage* Management Systems			X																				
Energy Storage System (ESS)			X																				
Energy Storage System Cabinet			X																				
Energy Storage System Commissioning			X																				
Energy Storage System Decommissioning			X																				
Energy Storage System, Electrochemical			X																				
Energy Storage System, Mobile			X																				
Energy Storage System, Stationary			X																				
Energy Storage System, Walk-in Unit			X																				
Enforcing Agency			X																				
Fire Appliance			X																				
Fireworks			X																				
Fixed Guideway and Passenger Rail Transit Systems			X																				
Flammable Gas			X																				
Full-Time Care			X																				
Group Home			X																				
High-Rise Building			X																				
Highway			X																				
Holding Facility			X																				
Hospitals and Psychiatric Hospitals			X																				
Housing Unit			X																				
Hydrogen Fueled Vehicles			X																				
Infant			X																				
Inflatable Amusement Device			X																				
Laboratory			X																				
Laboratory Suite			X																				
Listed			X																				
Lodging House			X																				
Mass Timber			X																				

(continued)

CHAPTER 2 – DEFINITIONS—continued

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																X							
[California Code of Regulations, Title 19, Division 1]				X																			
Chapter / Section																							
Mechanical-Access Enclosed Parking			X																				
Mobile Fueling			X																				
Mortar			X																				
Non-Accessible Area			X																				
Nonambulatory Persons			X																				
Noncombustible			X																				
Nonpatient Care Suite			X																				
Nursing Homes			X																				
Occupancy Classification			X																				
Permanent Portable Building			X																				
Persons With Intellectual Disabilities, Profoundly or Severely			X																				
Photovoltaic (PV) Panel System, Ground Mounted			X																				
Photovoltaic (PV) Support Structure, Elevated			X																				
Protective Social Care Facility			X																				
Proximate Audience			X																				
Puzzle Room			X																				
Railway			X																				
Relocatable Building (Public School)			X																				
Residential Care Facility for the Chronically Ill (RCF/CI)			X																				
Residential Care Facility For The Elderly (RCFE)			X																				
Residential Facility (RF)			X																				
Restraint			X																				
Roadside Hydrogen Service Vehicles			X																				
Secure Interview Rooms			X																				
Small Arms Ammunition [T-19 §1559.19(a)]				X																			
Small Management Yard			X																				
Special Amusement Area			X																				
Spray Room			X																				
State-Owned/Leased Building			X																				
Tank in an Underground Area			X																				

(continued)

CHAPTER 2 – DEFINITIONS—continued

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																**X**							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
Temporary Holding Cell, Room or Area			X													X							
Temporary Holding Facility			X																				
Tenable Environment			X																				
Tent [T-19 §3.10(a) – (c)]				X																			
Terminally Ill			X																				
Toddler			X																				
Waiting Room			X																				
Wildland Urban Interface Area			X																				
Winery Caves			X																				

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

[A] BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of the *California Building Code*, or a duly authorized representative.

BULK OXYGEN SYSTEM. An assembly of equipment, such as oxygen storage containers, pressure regulators, safety devices, vaporizers, manifolds and interconnecting piping, that has a storage capacity of more than 20,000 cubic feet (566 m^3) of oxygen at *normal temperature and pressure (NTP)* including unconnected reserves on hand at the site. The bulk oxygen system terminates at the point where oxygen at service pressure first enters the supply line. The oxygen containers can be stationary or movable, and the oxygen can be stored as a gas or liquid.

BULK PLANT OR TERMINAL. That portion of a property where flammable or combustible liquids are received by tank vessel, pipelines, tank car or tank vehicle and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, pipeline, tank car, tank vehicle, portable tank or container.

BULK TRANSFER. The loading or unloading of flammable or combustible liquids from or between tank vehicles, tank cars or storage tanks.

BULLET RESISTANT. Constructed so as to resist penetration of a bullet of 150-grain M2 ball ammunition having a nominal muzzle velocity of 2,700 feet per second (fps) (824 mps) when fired from a 30-caliber rifle at a distance of 100 feet (30 480 mm), measured perpendicular to the target.

CANOPY. A structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration, and may be structurally independent or supported by attachment to a building on one end and by not less than one stanchion on the outer end.

CAPACITOR ENERGY STORAGE SYSTEM. A stationary, rechargeable energy storage system consisting of capacitors, chargers, controls and associated electrical equipment designed to provide electrical power to a building or facility. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.

CARBON DIOXIDE ENRICHMENT SYSTEM. A system where carbon dioxide gas is intentionally introduced into an indoor environment, typically for the purpose of stimulating plant growth.

CARBON DIOXIDE EXTINGUISHING SYSTEM. A system supplying carbon dioxide (CO_2) from a pressurized vessel through fixed pipes and nozzles. The system includes a manual- or automatic-actuating mechanism.

CARBON MONOXIDE ALARM. A single- or multiple-station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.

CARBON MONOXIDE DETECTOR. A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

CARE AND SUPERVISION. *Any one or more of the following activities provided by a person or facility to meet the needs of the clients:*

1. *Assistance in dressing, grooming, bathing and other personal hygiene.*
2. *Assistance with taking medication.*
3. *Central storing and/or distribution of medications.*
4. *Arrangement of and assistance with medical and dental care.*
5. *Maintenance of house rules for the protection of clients.*
6. *Supervision of client schedules and activities.*
7. *Maintenance and/or supervision of client cash resources or property.*
8. *Monitoring food intake or special diets.*
9. *Providing basic services required by applicable law and regulation to be provided by the licensee in order to obtain and maintain a community-care facility license.*

[BG] CARE SUITE. In Group I-2 occupancies, a group of treatment rooms, care recipient sleeping rooms and the support rooms or spaces and circulation space within the suite where staff are in attendance for supervision of all care recipients within the suite, and the suite is in compliance with the requirements of Section 407.4.4 of the *California Building Code*. <

CARTON. A cardboard or fiberboard box enclosing a product.

CATASTROPHICALLY INJURED. *As termed, means a person whose origin of disability was acquired through trauma or nondegenerative neurologic illness, for whom it has been determined by the Department of Health Services Certification and Licensing that active rehabilitation would be beneficial.*

CEILING LIMIT. The maximum concentration of an airborne contaminant to which one may be exposed. The ceiling limits utilized are those published in DOL 29 CFR Part 1910.1000. The ceiling Recommended Exposure Limit (REL-C) concentrations published by the US National Institute for Occupational Safety and Health (NIOSH), Threshold Limit Value-Ceiling (TLV-C) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), Ceiling Workplace Environmental Exposure Level (WEEL-Ceiling) Guides published by the American Industrial Hygiene Association (AIHA), and other approved, consistent measures are allowed as surrogates for hazardous substances not listed in DOL 29 CFR Part 1910.1000.

CELL. *(Detention or correctional facility). A sleeping or housing unit in a detention or correctional facility for the confinement of not more than two inmates or prisoners.*

CELL COMPLEX. *A cluster or group of cells or dormitories in a jail, prison or other detention facility, together with rooms used for accessory purposes, all of which open into the cell complex, and are used for functions such as dining, counseling, exercise, classrooms, sick call, visiting, storage, staff*

offices, control rooms or similar functions, and interconnecting corridors all within the cell complex.

CELL TIERS. *Cells, dormitories and accessory spaces. Cell tiers are located one level above the other, and do not exceed two levels per floor. A cell tier shall not be considered a story or mezzanine.*

[A] CHANGE OF OCCUPANCY. Either of the following shall be considered as a change of occupancy where this code requires a greater degree of safety, accessibility, structural strength, fire protection, means of egress, ventilation or sanitation than is existing in the current building or structure:

1. Any change in the occupancy classification of a building or structure.
2. Any change in the purpose of, or a change in the level of activity within, a building or structure.

CHARTER SCHOOL. *A Charter School is a public school providing instruction from kindergarten through 12th grade, established pursuant to Education Code, Title 2, Division 4, Part 26.8, Section 47600, et seq.*

CHEMICAL. An element, chemical compound or mixture of elements or compounds or both.

CHEMICAL FUME HOOD. A ventilated enclosure designed to contain and exhaust fumes, gases, vapors, mists and particulate matter generated within the hood.

CHEMICAL NAME. The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry, the Chemical Abstracts Service rules of nomenclature, or a name which will clearly identify a chemical for the purpose of conducting an evaluation.

CHILD-CARE CENTER. *Any facility of any capacity other than a large or small family day-care home as defined in these regulations in which less than 24-hour-per-day nonmedical supervision is provided for children in a group setting.*

CHILD CARE. *For the purposes of these regulations, means the care of children during any period of a 24-hour day where permanent sleeping accommodations are not provided. The time-period shall not be more than 24 hours. Note: "Child care" shall not be construed to preclude the use of cots or mats for napping purposes, provided all employees, attendants and staff personnel are awake and on duty in the area where napping occurs.*

CHILD OR CHILDREN. *A person or persons under the age of 18 years.*

[M] CHIMNEY. A primarily vertical structure containing one or more flues for the purpose of carrying gaseous products of combustion and air from a fuel-burning appliance to the outdoor atmosphere.

Factory-built chimney. A listed and labeled chimney composed of factory-made components, assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

Masonry chimney. A field-constructed chimney composed of solid masonry units, bricks, stones, or concrete.

Metal chimney. A field-constructed chimney of metal.

CHRONICALLY ILL. *See "Terminally ill."*

CLEAN AGENT. Electrically nonconducting, volatile or gaseous fire extinguishant that does not leave a residue upon evaporation.

[BG] CLINIC, OUTPATIENT. Buildings or portions thereof used to provide medical care on a less-than-24-hour basis to persons who are not *classified as non-ambulatory or bedridden or* rendered incapable of self-preservation by the services provided.

CLOSED CONTAINER. A container sealed by means of a lid or other device such that liquid, vapor or dusts will not escape from it under ordinary conditions of use or handling.

CLOSED SYSTEM. The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

COLD DECK. A pile of unfinished cut logs.

COMBUSTIBLE DUST. Finely divided solid material which is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust will pass through a US No. 40 standard sieve.

COMBUSTIBLE FIBERS. Readily ignitable and free-burning materials in a fibrous or shredded form, such as cocoa fiber, cloth, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, rags, sisal, Spanish moss, straw, tow, wastepaper, certain synthetic fibers or other like materials. This definition does not include densely packed baled cotton.

COMBUSTIBLE GAS DETECTOR. An instrument that samples the local atmosphere and indicates the presence of ignitable vapors or gases within the flammable or explosive range expressed as a volume percent in air.

COMBUSTIBLE LIQUID. A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

The category of combustible liquids does not include compressed gases or cryogenic fluids or liquids that do not have a fire point when tested in accordance with ASTM D92.

Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

Class IIIB. Liquids having closed cup flash points at or above 200°F (93°C).

[BF] FIRE-RESISTANT JOINT SYSTEM. An assemblage of specific materials or products that are designed, tested and fire-resistance rated in accordance with either ASTM E1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.

FIREWORKS. Any composition or device for the purpose of producing a visible or an audible effect for entertainment purposes by combustion, deflagration or detonation that meets the definition of 1.3G fireworks or 1.4G fireworks.

Fireworks, 1.3G. Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as Fireworks, UN 0335 by the DOTn.

Fireworks, 1.4G. Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion or deflagration that complies with the construction, chemical composition and labeling regulations of the DOTn for Fireworks, UN 0336, and the US Consumer Product Safety Commission as set forth in CPSC 16 CFR Parts 1500 and 1507.

Note: *Fireworks shall have the same meaning as defined in Health and Safety Code Sections 12511 and 12512 which have been reprinted as follows:*

12511. "Fireworks" means any device containing chemical elements and chemical compounds capable of burning independently of the oxygen of the atmosphere and producing audible, visual, mechanical or thermal effects which are useful as pyrotechnic devices or for entertainment.

The term "fireworks" includes, but is not limited to, devices designated by the manufacturer as fireworks, torpedoes, skyrockets, roman candles, rockets, Daygo bombs, sparklers, party poppers, paper caps, chasers, fountains, smoke sparks, aerial bombs and fireworks kits.

12512. "Fireworks kit" means any assembly of materials or explosive substances, which is designed and intended by the seller to be assembled by the person receiving such material or explosive substance and when so assembled would come within the definition of fireworks in Section 12511.

FIREWORKS DISPLAY. A presentation of fireworks for a public or private gathering.

[BG] FIXED BASE OPERATOR (FBO). A commercial business granted the right by the airport sponsor to operate on an airport and provide aeronautical services such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance and flight instruction.

FIXED GUIDEWAY AND PASSENGER RAIL TRANSIT SYSTEMS. *(See California Building Code, Section 443.)*

[BE] FIXED SEATING. Furniture or fixtures designed and installed for the use of sitting and secured in place including bench-type seats and seats with or without back or arm rests.

[BF] FLAME SPREAD. The propagation of flame over a surface.

[BF] FLAME SPREAD INDEX. A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84 or UL 723.

FLAMMABLE CRYOGENIC FLUID. A cryogenic fluid that is flammable in its vapor state.

FLAMMABLE FINISHES. Coatings to articles or materials in which the material being applied is a flammable liquid, combustible liquid, combustible powder, fiberglass resin or flammable or combustible gel coating.

FLAMMABLE GAS. A material which is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] *subdivided as follows:*

1. *Category 1A.*
   - *1.1. A gas which is* ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
   - *1.2. A gas with* a flammable range at 14.7 psia (101 kPa) with air of not less than 12 percent, regardless of the lower limit *unless data shows compliance with Category 1B.*
2. *Category 1B.*

   A gas which meets the flammability criteria for Category 1A, is not pyrophoric or chemically unstable, and meets one or more of the following:
   - *2.1. A lower flammability limit of more than 6 percent by volume in air; or*
   - *2.2. A fundamental burning velocity of less than 3.9 in./s (10 cm/s).*

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

Where not otherwise specified, the term "flammable gas" includes both Category 1A and 1B.

FLAMMABLE LIQUEFIED GAS. A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

FLAMMABLE LIQUID. A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:

Class IA. Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C).

Class IB. Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

Class IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

The category of flammable liquids does not include compressed gases or cryogenic fluids or liquids that do not have a fire point when tested in accordance with ASTM D92.

FLAMMABLE MATERIAL. A material capable of being readily ignited from common sources of heat or at a temperature of 600°F (316°C) or less.

FLAMMABLE SOLID. A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption of moisture, spontaneous chemical change or retained heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.0866 inch (2.2 mm) per second along its major axis.

FLAMMABLE VAPOR AREA. An area in which the concentration of flammable constituents (vapor, gas, fume, mist or dust) in air exceeds 25 percent of their lower flammable limit (LFL) because of the flammable finish processes operation. It shall include:

1. The interior of spray booths.
2. The interior of ducts exhausting from spraying processes.
3. Any area in the direct path of spray or any area containing dangerous quantities of air-suspended powder, combustible residue, dust, deposits, vapor or mists as a result of spraying operations.
4. The area in the vicinity of dip tanks, drain boards or associated drying, conveying or other equipment during operation or shutdown periods.

The fire code official is authorized to determine the extent of the flammable vapor area, taking into consideration the material characteristics of the flammable materials, the degree of sustained ventilation and the nature of the operations.

FLAMMABLE VAPORS OR FUMES. The concentration of flammable constituents in air that exceeds 25 percent of their lower flammable limit (LFL).

FLASH POINT. The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D56, ASTM D93 or ASTM D3278.

FLEET VEHICLE MOTOR FUEL-DISPENSING FACILITY. That portion of a commercial, industrial, governmental or manufacturing property where liquids used as fuels are stored and dispensed into the fuel tanks of motor vehicles that are used in connection with such businesses, by persons within the employ of such businesses.

[BE] FLIGHT. A continuous run of rectangular treads, winders or combination thereof from one landing to another.

FLOAT. A floating structure normally used as a point of transfer for passengers and goods, or both, for mooring purposes.

[BE] FLOOR AREA, GROSS. The floor area within the inside perimeter of the exterior walls of the building under consideration, exclusive of vent shafts and courts, without deduction for corridors, stairways, ramps, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no openings or interior courts.

[BE] FLOOR AREA, NET. The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

FLUE SPACES.

Longitudinal flue space. The flue space between rows of storage perpendicular to the direction of loading.

Transverse flue space. The space between rows of storage parallel to the direction of loading.

FLUIDIZED BED. A container holding powder coating material that is aerated from below so as to form an air-supported expanded cloud of such material through which the preheated object to be coated is immersed and transported.

FOAM-EXTINGUISHING SYSTEM. A special system discharging a foam made from concentrates, either mechanically or chemically, over the area to be protected.

[BE] FOLDING AND TELESCOPIC SEATING. Tiered seating having an overall shape and size that is capable of being reduced for purposes of moving or storing and is not a building element.

FUEL CELL POWER SYSTEM, STATIONARY. A stationary energy generation system that converts the chemical energy of a fuel and oxidant to electric energy (DC or AC electricity) by an electrochemical process.

Field-fabricated fuel cell power system. A stationary fuel cell power system that is assembled at the job site and is not a preengineered or prepackaged factory-assembled fuel cell power system.

Preengineered fuel cell power system. A stationary fuel cell power system consisting of components and modules that are produced in a factory, and shipped to the job site for assembly.

Prepackaged fuel cell power system. A stationary fuel cell power system that is factory assembled as a single, complete unit and shipped as a complete unit for installation at the job site.

FUEL LIMIT SWITCH. A mechanism, located on a tank vehicle, that limits the quantity of product dispensed at one time.

FULL-TIME CARE *shall mean the establishment and routine care of persons on an hourly, daily, weekly, monthly, yearly or permanent basis, whether for 24-hours per day or less, and where sleeping accommodations are provided.*

FUMIGANT. A substance which by itself or in combination with any other substance emits or liberates a gas, fume or vapor utilized for the destruction or control of insects, fungi, vermin, germs, rats or other pests, and shall be distinguished from insecticides and disinfectants which are essentially effective in the solid or liquid phases. Examples are methyl bromide, ethylene dibromide, hydrogen cyanide, carbon disulfide and sulfuryl fluoride.

FUMIGATION. The utilization within an enclosed space of a fumigant in concentrations that are hazardous or acutely toxic to humans.

beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

> ***NON-PATIENT CARE SUITE.*** *In Group I-2 occupancies, a group of rooms or spaces within a suite for use as administrative, business and professional offices.*

NORMAL TEMPERATURE AND PRESSURE (NTP). A temperature of 70°F (21°C) and a pressure of 1 atmosphere [14.7 psia (101 kPa)].

[BE] NOSING. The leading edge of treads of stairs and of landings at the top of stairway flights.

NOTIFICATION ZONE. See "Zone, notification."

NUISANCE ALARM. An alarm caused by mechanical failure, malfunction, improper installation or lack of proper maintenance, or an alarm activated by a cause that cannot be determined.

[BG] NURSING HOMES. Facilities that provide care, including both intermediate care facilities and skilled nursing facilities, where any of the persons are incapable of self-preservation *or classified as nonambulatory or bedridden.*.

OCCUPANCY CLASSIFICATION. For the purposes of this code, certain occupancies are defined as follows:

[BG] Group A, Assembly. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption; or awaiting transportation *or Motion Picture and Television Production Studio Sound Stages, Approved Production Facilities and production locations. Any building or structure or portion thereof used or intended to be used for the showing of motion pictures when an admission fee is charged and when such building or structure is open to the public and has a capacity of 10 or more persons.*

[BG] Accessory with places of religious worship. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 per room or space are not considered separate occupancies.

[BG] Assembly Group A-1. Group A occupancy includes assembly uses, usually with fixed seating, intended for the production and viewing of performing arts or motion pictures including, but not limited to:

Motion picture and television production studio Sound Stages, Approved Production Facilities and production locations. (With live audiences).

Motion picture theaters

Symphony and concert halls

Television and radio studios admitting an audience

Theaters

[BG] Assembly Group A-2. Group A-2 occupancy includes assembly uses intended for food and/or drink consumption including, but not limited to:

Banquet halls

Casinos (gaming areas)

Night clubs

Restaurants, cafeterias and similar dining facilities (including associated commercial kitchens)

Taverns and bars

[BG] Assembly Group A-3. Group A-3 occupancy includes assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A, including, but not limited to:

Amusement arcades

Art galleries

Bowling alleys

Community halls

Courtrooms

Dance halls (not including food or drink consumption)

Exhibition halls

Funeral parlors

Greenhouses with public access for the conservation and exhibition of plants

Gymnasiums (without spectator seating)

Indoor swimming pools (without spectator seating)

Indoor tennis courts (without spectator seating)

Lecture halls

Libraries

Museums

Places of religious worship

Pool and billiard parlors

Waiting areas in transportation terminals

[BG] Assembly Group A-4. Group A-4 occupancy includes assembly uses intended for viewing of indoor sporting events and activities with spectator seating including, but not limited to:

Arenas

Skating rinks

Swimming pools

Tennis courts

[BG] Assembly Group A-5. Group A-5 occupancy includes assembly uses intended for participation in or viewing outdoor activities including, but not limited to:

Amusement park structures

Bleachers

Fixed guideway transit systems. [SFM] *Fixed guideway transit system buildings shall conform to the requirements of this code for their occupancy classification in addition to the provisions set forth in Section 443 of the California Building Code.*

Grandstands

Stadiums

Subterranean spaces for winery facilities in natural or manmade caves. [SFM] *For fire and life safety requirements, see Section 446 of the California Building Code.*

[BG] Associated with Group E occupancies. A room or space used for assembly purposes that is associated with a Group E occupancy is not considered a separate occupancy.

[BG] Small assembly spaces. The following rooms and spaces shall not be classified as assembly occupancies:

1. A room or space used for assembly purposes with an occupant load of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
2. A room or space used for assembly purposes that is less than 750 square feet (70 m^2) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.

[BG] Small buildings and tenant spaces. A building or tenant space used for assembly purposes with an occupant load of less than 50 persons shall be classified as a Group B occupancy.

[BG] Special amusement areas. Special amusement areas shall comply with Section 411 of the *California Building Code*.

[BG] Group B, Business. Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

Airport traffic control towers

> Ambulatory care facilities

Animal hospitals, kennels and pounds

Banks

Barber and beauty shops

Car wash

Civic administration

> Clinic-outpatient

Dry cleaning and laundries: pick-up and delivery stations and self-service

Educational occupancies for students above the 12th grade

Electronic data processing

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m^2) in area.

Laboratories: testing and research *and **[SFM]** instruction.*

Motor vehicle showrooms

Post offices

Print shops

Professional services (architects, attorneys, dentists, physicians, engineers, etc.)

Radio and television stations

Telephone exchanges

Training and skill development not in a school or academic program (This shall include, but not be limited to, tutoring centers, martial arts studios, gymnastics and similar uses regardless of the ages served, and where not classified as a Group A occupancy).

[BG] Airport traffic control towers. Airport traffic control towers shall comply with Section 412.2 of the *California Building Code*.

[BG] Ambulatory care facilities. Ambulatory care facilities shall comply with Section 422 of the *California Building Code*.

Group C (CAMPS, ORGANIZED). *An organized camp is a site with programs and facilities established for the primary purpose of providing an outdoor group living experience with social, spiritual, educational or recreational objectives, for five days or more during one or more seasons of the year. See California Building Code Section 450, Group C occupancy.*

[BG] Group E, Educational. Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, *more than six* persons at any one time for educational purposes through the 12th grade.

Exception: *A residence used as a home school for the children who normally reside at the residence. Such residences shall remain classified as Group R-2, or Group R-3 occupancies.*

[BG] Accessory to places of religious worship. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 303.1.4 of the *California Building Code* and have occupant loads of less than 100 per room or space shall be classified as Group A-3 occupancies.

[BG] Group E, *child*-care facilities. This group includes buildings and structures or portions thereof occupied by more than *six* children *36 months* of age *and older* who receive educational, supervision or personal care services for *fewer* than 24 hours per day.

Exception: [SFM] *A child-care facility not otherwise classified as a Group R-3 occupancy, where occupants are not capable of responding to an emergency situation without physical assistance from the staff shall be classified as Group I-4. A maximum of five infants and toddlers are allowed in a Group E child care.*

[BG] Within places of worship. Rooms and spaces within places of worship providing such care during religious functions shall be classified as part of the primary occupancy *where not licensed for child-care purposes by the Department of Social Services.*

[BG] Storm shelters in Group E occupancies. Storm shelters shall be provided for Group E occupancies where required by Section 423.4 of the *California Building Code*.

[BG] Group F, Factory Industrial. Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H high-hazard or Group S storage occupancy.

[BG] Factory Industrial F-1 Moderate-hazard occupancy. Factory industrial uses that are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

Aircraft (manufacturing, not to include repair)

Appliances

Athletic equipment

Automobiles and other motor vehicles

Bakeries

Beverages; over 16-percent alcohol content

Bicycles

Boats

Brooms or brushes

Business machines

Cameras and photo equipment

Canvas or similar fabric

Carpets and rugs (includes cleaning)

Clothing

Construction and agricultural machinery

Disinfectants

Dry cleaning and dyeing

Electric generation plants

Electronics

Energy storage systems (ESS) in dedicated-use buildings

Engines (including rebuilding)

Food processing and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities more than 2,500 square feet (232 m^2) in area.

Furniture

Hemp products

Jute products

Laundries

Leather products

Machinery

Metals

Millwork (sash and door)

Motion picture and television production studio Sound Stages, Approved Production Facilities and production locations (without live audiences)

Motion pictures and television filming (without spectators)

Musical instruments

Optical goods

Paper mills or products

Photographic film

Plastic products

Printing or publishing

Refuse incineration

Shoes

Soaps and detergents

Textiles

Tobacco

Trailers

Upholstering

Water/sewer treatment facilities

Wood; distillation

Woodworking (cabinet)

[BG] Aircraft manufacturing facilities. Aircraft manufacturing facilities shall comply with Section 412.6 of the *California Building Code*.

[BG] Factory Industrial F-2 Low-hazard Occupancy. Factory industrial uses involving the fabrication or manufacturing of noncombustible materials that, during finishing, packaging or processing do not involve a significant fire hazard, shall be classified as Group F-2 occupancies and shall include, but not be limited to, the following:

Beverages; up to and including 16-percent alcohol content

Brick and masonry

Ceramic products

Foundries

Glass products

Gypsum

Ice

Metal products (fabrication and assembly)

Group H, High-hazard. High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in control areas complying with Section 5003.8.3, based on the maximum allowable quantity limits for control areas set forth in Tables 5003.1.1(1) and 5003.1.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this code and the requirements of Section 415 of the *California Building Code*. Hazardous materials stored or used on top of roofs or canopies shall be classified as outdoor storage or use and shall comply with this code.

High-hazard Group H-1. Buildings and structures containing materials that pose a detonation hazard shall be classified as Group H-1. Such materials shall include, but not be limited to, the following:

Detonable pyrophoric materials

Explosives:

Division 1.1

Division 1.2

Division 1.3

Division 1.4

Division 1.5

Division 1.6

Organic peroxides, unclassified detonable

Oxidizers, Class 4

Unstable (reactive) materials, Class 3 detonable, and Class 4

High-hazard Group H-2. Buildings and structures containing materials that pose a deflagration hazard or a hazard from accelerated burning shall be classified as Group H-2. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103.4 kPa)

Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3 of the *California Building Code*

Cryogenic fluids, flammable

Category 1A flammable gases

Category 1B flammable gases having a burning velocity greater than 3.9 inches per second (10 cm/s)

Organic peroxides, Class I

Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103.4 kPa)

Pyrophoric liquids, solids and gases, nondetonable

Unstable (reactive) materials, Class 3, nondetonable

Water-reactive materials, Class 3

High-hazard Group H-3. Buildings and structures containing materials that readily support combustion or that pose a physical hazard shall be classified as Group H-3. Such materials shall include, but not be limited to, the following:

Category 1B flammable gases having a burning velocity of 3.9 inches per second (10 cm/s) or less.

Class I, II or IIIA flammable or combustible liquids that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103.4 kPa) or less

Combustible fibers, other than densely packed baled cotton, where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3 of the *California Building Code*

Consumer fireworks, 1.4G (Class C, Common)

Cryogenic fluids, oxidizing

Flammable solids

Organic peroxides, Class II and III

Oxidizers, Class 2

Oxidizers, Class 3, that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103 kPa) or less

Oxidizing gases

Unstable (reactive) materials, Class 2

Water-reactive materials, Class 2

High-hazard Group H-4. Buildings and structures containing materials that are health hazards shall be classified as Group H-4. Such materials shall include, but not be limited to, the following:

Corrosives

Highly toxic materials

Toxic materials

High-hazard Group H-5. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those listed in Tables 5003.1.1(1) and 5003.1.1(2) shall be classified as Group H-5. Such facilities and areas shall be designed and constructed in accordance with Section 415.11 of the *California Building Code.*

Multiple hazards. Buildings and structures containing a material or materials representing hazards that are classified in one or more of Groups H-1, H-2, H-3 and H-4 shall conform to the code requirements for each of the occupancies so classified.

Occupancies containing explosives not classified as H-1. The following occupancies containing explosive materials shall be classified as follows:

1. Division 1.3 explosive materials that are used and maintained in a form where either confinement or configuration will not elevate the hazard from a mass fire hazard to mass explosion hazard shall be allowed in Group H-2 occupancies.
2. Articles, including articles packaged for shipment, that are not regulated as a Division 1.4 explosive under Bureau of Alcohol, Tobacco, Firearms and Explosives regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles shall be allowed in H-3 occupancies.

Uses other than Group H. The storage, use or handling of hazardous materials as described in one or more of the following items shall not cause the occupancy to be classified as Group H, but it shall be classified as the occupancy that it most nearly resembles:

1. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Chapter 24 of this code and Section 416 of the *California Building Code.*
2. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to Chapter 57.
3. Closed piping system containing flammable or combustible liquids or gases utilized for the operation of machinery or equipment.
4. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems employing equipment listed by an approved testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour fire barriers in accordance with Section 707 of the *California Building Code* or 1-hour horizontal assemblies in accordance with Section 711 of the *California Building Code*, or both.
5. Cleaning establishments that utilize a liquid solvent having a flash point at or above 200°F (93°C).
6. Liquor stores and distributors without bulk storage.
7. Refrigeration systems.
8. The storage or utilization of materials for agricultural purposes on the premises.
9. Stationary storage battery systems installed in accordance with Section 1207.
10. Corrosive personal or household products in their original packaging used in retail display.
11. Commonly used corrosive building materials.
12. Buildings and structures occupied for aerosol product storage, aerosol cooking spray products or plastic aerosol 3 products shall be classified as Group S-1, provided that such buildings conform to the requirements of Chapter 51.
13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per control area in Group M or S occupancies complying with Section 5003.8.3.5.1.
14. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided that such storage conforms to the quantity limits and requirements of this code.
15. Stationary fuel cell power systems installed in accordance with this code.
16. Capacitor energy storage systems in accordance with this code.
17. ***[SFM]*** *Group L occupancies as defined in Section 453 of the California Building Code.*
18. Distilling or brewing of beverages conforming to the requirements of this code.
19. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements of this code.

[BG] Group I, Institutional. Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which care or supervision is provided to persons who are or are not capable of self-preservation without physical assistance or in which persons are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-2, I-3 or I-4. *Restraint shall not be permitted in any building except in Group I-2 occupancies constructed for such use in accordance with Section 407.1.1 of the California Building Code and Group I-3 occupancies constructed for such use, in accordance with Section 408.1.2 of the California Building Code.* <

Where occupancies house both ambulatory and nonambulatory persons, the more restrictive requirements shall apply.

[BG] Institutional Group I-1. *Not used. (See Group R-2.1 or Section 310.1 of the California Building Code)*

[BG] Institutional Group I-2. Institutional Group I-2 occupancy shall include buildings and structures used for medical care on a 24-hour basis for more than five persons who are not capable of self-preservation *or classified as nonambulatory or bedridden*. This group shall include, but not be limited to, the following:

Detoxification facilities

Hospitals

Nursing homes

Psychiatric hospitals <

[BG] Five or fewer persons receiving medical care. A facility with five or fewer persons receiving medical care shall be classified as Group R-3*.1* or shall comply with the *California Residential Code* provided that an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or with Section *R313* of the *California Residential Code*.

[BG] Institutional Group I-3. Institutional Group I-3 occupancy shall include buildings *or portions of buildings* and structures which are inhabited *by one or more* persons who are under restraint or security. A Group I-

3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control *which includes persons restrained*. This group shall include, but not be limited to, the following:

Correctional centers

Courthouse holding facilities

Detention centers

Detention treatment rooms

Jails

Juvenile halls

Prerelease centers

Prisons

Reformatories

Secure interview rooms

Temporary holding facilities

Buildings of Group I-3 shall be classified as one of the following occupancy conditions and shall comply with Section 408 of the *California Building Code*:

[BG] Condition 1. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and other spaces where access or occupancy is permitted to the exterior via means of egress without restraint. A Condition 1 facility is permitted to be constructed as Group R.

[BG] Condition 2. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked exits.

[BG] Condition 3. This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping units and group activity spaces, where egress is impeded by remote-controlled release of means of egress from such smoke compartment to another smoke compartment.

[BG] Condition 4. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

[BG] Condition 5. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Staff-controlled manual release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

Condition 6. *This occupancy condition shall include buildings containing only one temporary holding facility with five or less persons under restraint or security where the building is protected throughout with a monitored automatic sprinkler system installed in accordance with Section 903.3.1.1 and where the temporary holding facility is protected throughout with an automatic fire alarm system with notification appliances. A Condition 6 building shall be permitted to be classified as a Group B occupancy.*

Condition 7. *This occupancy condition shall include buildings containing only one temporary holding facility with nine or less persons under restraint or security where limited to the first or second story, provided the building complies with Section 408.1.2.6 of the California Building Code. A Condition 7 building shall be permitted to be classified as a Group B occupancy.*

Condition 8. *This occupancy condition shall include buildings containing not more than four secure interview rooms located within the same fire area where not more than six occupants under restraint are located in the same fire area. A Condition 8 building shall be permitted to be classified as a Group B occupancy, provided the requirements in Section 408.1.2.7 of the California Building Code are met.*

[BG] Institutional Group I-4, day care facilities. Institutional Group I-4 shall include buildings and structures occupied by more than *six clients* of any age who receive custodial care for *fewer* than 24 hours by persons other than parents or guardians; relatives by blood, marriage, or adoption; and in a place other than the home of the *clients* cared for. This group shall include, but not be limited to, the following:

Adult day care

Child care *(not classified as a Group E)*

Group L Laboratories. [SFM] *Group L occupancy includes the use of a building or structure, or a portion thereof containing one or more laboratory suites as defined in Section 453 of the California Building Code.*

[BG] Group M, Mercantile. Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

Department stores

Drug stores

Greenhouses with public access that maintain plants for display and sale

Markets

Motor fuel-dispensing facilities

Retail or wholesale stores

Sales rooms

[BG] Motor fuel-dispensing facilities. Motor fuel-dispensing facilities shall comply with Section 406.7 of the *California Building Code*.

[BG] Quantity of hazardous materials. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored or displayed in a single control area of a Group M occupancy shall not exceed the quantities in Table 5704.3.4.1.

[BG] Group R, Residential. Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *California Residential Code* in accordance with Section 101.2 of the *California Building Code*. Group R occupancies not constructed in accordance with the *California Residential Code* as permitted by Sections 310.4.1 and 310.4.2 of the *California Building Code* shall comply with Section 420 of the *California Building Code*.

[BG] Residential Group R-1. Residential Group R-1 occupancies containing sleeping units where the occupants are primarily transient in nature, including:

Boarding houses (transient) with more than 10 occupants

Congregate residences (transient) with more than 10 occupants

Hotels (transient)

Motels (transient)

[BG] Residential Group R-2. Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

Apartment houses

Large family child care
Small family child care

Congregate residences (nontransient) with more than 16 occupants

Boarding houses (nontransient)

Convents

Dormitories

Fraternities and sororities

Monasteries

Hotels (nontransient)

Live/work units

Motels (nontransient)

Vacation timeshare properties

Residential Group R-2.1. *Residential Group R-2.1 occupancies shall include buildings, structures or parts thereof housing clients, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services.*

This occupancy may contain more than six nonambulatory and/or bedridden clients. (See Appendix Chapter 4, Section 435 Special Provisions for Licensed 24-Hour Care Facilities in a Group R-2.1, R-3.1 or R-4 occupancy). This group shall include, but not be limited to, the following:

Assisted living facilities such as:
Residential Care Facilities
Residential Care Facilities for the Elderly (RCFEs)
Adult Residential Facilities
Congregate Living Health facilities
Group homes
Residential Care Facilities for the Chronically Ill
Congregate Living Health Facilities for the Terminally Ill

Social rehabilitation facilities such as:
Halfway houses
Community Correctional Centers
Community Treatment Programs
Work Furlough Programs
Alcoholism or drug abuse recovery or treatment facilities

Residential Group R-2.2 (CDCR Only). *Residential occupancies operated by CDCR in a community located facility that provides housing and community based program services for non-transient ambulatory participants in a non- licensed facility with 24/7 supervision Community Correctional Reentry Centers.*

[BG] Residential Group R-3. Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, *R-2.1, R-2.2, R-3.1,* R-4 or I, including:

Buildings that do not contain more than two dwelling units

Congregate residences (nontransient) with 16 or fewer occupants

Boarding houses (nontransient)

Convents

Dormitories

Fraternities and sororities

Monasteries

Congregate residences (transient) with 10 or fewer occupants

Boarding houses (transient)

Lodging houses (transient) with five or fewer guestrooms and 10 or fewer occupants

Adult care facilities that provide accommodations for six or fewer clients of any age for less than 24 hours.

Licensing categories that may use this classification include, but are not limited to:
Adult Day Programs

Child-care facilities that provide accommodations for six or fewer clients of any age for less than 24 hours.

Licensing categories that may use this classification include, but are not limited to:

Day-Care Center for Mildly Ill Children
Adult Day Programs
Infant Care Center
School Age Child Day-Care Center.

Congregate residences (nontransient) with 16 or fewer occupants

Congregate residences (transient) with 10 or fewer occupants

Alcoholism or drug abuse recovery homes (ambulatory only)

Family Day-Care Homes that provide accommodations for 14 or fewer children, in the provider's own home for less than 24-hours.

Adult care and child-care facilities that are within a single-family home are permitted to comply with the California Residential Code.

[BG] Care facilities within a dwelling. Care facilities for five or fewer persons receiving care that are within a single-family dwelling are permitted to comply with the *California Residential Code* provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or Section P2904 of the *California Residential Code*.

[BG] Lodging houses. Owner-occupied lodging houses with five or fewer guestrooms and 10 or fewer total occupants shall be permitted to be constructed in accordance with the *California Residential Code* provided that an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or Section *R313* of the *California Residential Code*.

Residential Group R-3.1. *Residential Group R-3.1 occupancies may include facilities licensed by a governmental agency for a residentially based 24-hour care facility providing accommodations for six or fewer clients of any age. Clients may be classified as ambulatory, nonambulatory or bedridden. A Group R-3.1 occupancy shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in Appendix Chapter 4, Section 425, Special Provisions For Licensed 24-Hour Care Facilities in a Group R-2.1, R-3.1 or R-4 occupancy. This group may include:*

Adult Residential Facilities

Congregate Living Health Facilities

Intermediate Care Facilities for the Developmentally Disabled Habilitative

Intermediate Care Facilities for the Developmentally Disabled Nursing

Nurseries for the full-time care of children under the age of six, but not including "infants" as defined in Chapter 2

Residential Care Facilities for the Elderly (RCFEs)

Small Family Homes and Residential Care Facilities for the Chronically Ill

Exception: *Group Homes licensed by the Department of Social Services which provide nonmedical board, room and care for six or fewer ambulatory children or children two years of age or younger, and which do not have any nonambulatory clients shall not be subject to regulations found in Appendix Chapter 4, Section 435.*

Pursuant to Health and Safety Code Section 13143 with respect to these exempted facilities, no city, county or public district shall adopt or enforce any requirement for the prevention of fire or for the protection of life and property against fire and panic unless the requirement would be applicable to a structure regardless of the special occupancy. Nothing shall restrict the application of state or local housing standards to such facilities if the standards are applicable to residential occupancies and are not based on the use of the structure as a facility for ambulatory children. For the purpose of this exception, ambulatory children do not include relatives of the licensee or the licensee's spouse.

[BG] Residential Group R-4. Residential Group R-4 shall include buildings, structures or portions thereof for more than *six ambulatory clients*, but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive custodial care. *The persons receiving care are capable of self-preservation. Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in the California Building Code. This occupancy classification may include a maximum six non-ambulatory or bedridden clients (see Appendix Chapter 4, Section 435, Special Provisions For Licensed 24-Hour Care Facilities in a Group R-2.1, R-3.1 or R-4 occupancy).* This group shall include, but not be limited to, the following:

Assisted living facilities such as:

Residential care facilities
Residential Care Facilities for the Elderly (RCFEs)
Adult Residential Facilities
Congregate Living Health facilities
Group homes

Social rehabilitation facilities such as:

Halfway houses
Community Treatment Programs
Work Furlough Programs
Alcoholism or drug abuse recovery or treatment facilities

fied family care homes," "out-of-home placement facilities," and "halfway houses."

PROXIMATE AUDIENCE. An audience closer to pyrotechnic devices than allowed by *Chapter 56.*

[B] PSYCHIATRIC HOSPITALS. See "Hospitals and psychiatric hospitals."

PUBLIC TRAFFIC ROUTE (PTR). Any public street, road, highway, navigable stream or passenger railroad that is used for through traffic by the general public.

[A] PUBLIC WAY. A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).

[BE] PUBLIC-USE AREAS. Interior or exterior rooms or spaces that are made available to the general public.

PUZZLE ROOM. *A type of special amusement area in which occupants are encouraged to solve a challenge to escape from a room or series of rooms.*

PYROPHORIC. A chemical with an autoignition temperature in air, at or below a temperature of 130°F (54°C).

PYROTECHNIC ARTICLE. A pyrotechnic device for use in the entertainment industry, which is not classified as fireworks.

PYROTECHNIC COMPOSITION. A chemical mixture that produces visible light displays or sounds through a self-propagating, heat-releasing chemical reaction which is initiated by ignition.

PYROTECHNIC SPECIAL EFFECT. A visible or audible effect for entertainment created through the use of pyrotechnic materials and devices.

PYROTECHNIC SPECIAL-EFFECT MATERIAL. A chemical mixture used in the entertainment industry to produce visible or audible effects by combustion, deflagration or detonation. Such a chemical mixture predominantly consists of solids capable of producing a controlled, self-sustaining and self-contained exothermic chemical reaction that results in heat, gas sound, light or a combination of these effects. The chemical reaction functions without external oxygen.

PYROTECHNICS. Controlled exothermic chemical reactions timed to create the effects of heat, hot gas, sound, dispersion of aerosols, emission of visible light or a combination of such effects to achieve the maximum effect from the least volume of pyrotechnic composition.

QUANTITY-DISTANCE (Q-D). The quantity of explosive material and separation distance relationships providing protection. These relationships are based on levels of risk considered acceptable for the stipulated exposures and are tabulated in the appropriate Q-D tables. The separation distances specified afford less than absolute safety:

Inhabited building distance (IBD). The minimum separation distance between an operating building or magazine containing explosive materials and an inhabited building or site boundary.

Intermagazine distance (IMD). The minimum separation distance between magazines.

Intraline distance (ILD) or Intraplant distance (IPD). The distance to be maintained between any two operating buildings on an explosives manufacturing site when at least one contains or is designed to contain explosives, or the distance between a magazine and an operating building.

RADIO FREQUENCY (RF). A measurement representing the oscillation rate of the electromagnetic radiation spectrum, or electromagnetic radio waves, from public safety frequency bands as specified by the fire code official.

RAILWAY. A steam, electric or other railroad or railway that carriers passengers for hire. *Also see Chapter 56 for "railway" as it relates to explosives.*

[BE] RAMP. A walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope).

RAMP, EXIT ACCESS. See "Exit access ramp."

RAMP, EXTERIOR EXIT. See "Exterior exit ramp."

RAMP, INTERIOR EXIT. See "Interior exit ramp."

RAW PRODUCT. A mixture of natural materials such as tree, brush trimmings, or waste logs and stumps.

[M] READY ACCESS (TO). That which enables a device, appliance or equipment to be directly reached, without requiring the removal or movement of any panel or similar obstruction [see "Access (to)"].

READY BOX. A weather-resistant container with a self-closing or automatic-closing cover that protects fireworks shells from burning debris. Tarpaulins shall not be considered as ready boxes.

[A] RECORD DRAWINGS. Drawings ("as builts") that document the location of all devices, appliances, wiring, sequences, wiring methods and connections of the components of a fire alarm system as installed.

RECREATIONAL FIRE. An outdoor fire burning materials other than rubbish where the fuel being burned is not contained in an incinerator, outdoor fireplace, portable outdoor fireplace, barbeque grill or barbeque pit and has a total fuel area of 3 feet (914 mm) or less in diameter and 2 feet (610 mm) or less in height for pleasure, religious, ceremonial, cooking, warmth or similar purposes.

REDUCED FLOW VALVE. A valve equipped with a restricted flow orifice and inserted into a compressed gas cylinder, portable tank or stationary tank that is designed to reduce the maximum flow from the valve under full-flow conditions. The maximum flow rate from the valve is determined with the valve allowed to flow to atmosphere with no other piping or fittings attached.

REFINERY. A plant in which flammable or combustible liquids are produced on a commercial scale from crude petroleum, natural gasoline or other hydrocarbon sources.

REFRIGERANT. The fluid used for heat transfer in a refrigeration system; the refrigerant absorbs heat and transfers it at a higher temperature and a higher pressure, usually with a change of state.

[M] REFRIGERATING (REFRIGERATION) SYSTEM. A combination of interconnected refrigerant-containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat.

[A] REGISTERED DESIGN PROFESSIONAL. An architect or engineer, registered or licensed to practice professional architecture or engineering, as defined by the statutory requirements of the professional registration laws of the state in which the project is to be constructed.

[BG] RELIGIOUS WORSHIP, PLACE OF. A building or portion thereof intended for the performance of religious services.

RELOCATABLE BUILDING (PUBLIC SCHOOL). *Any building with an integral floor structure which is capable of being readily moved. (See Education Code Section 17350.) Relocatable buildings that are to be placed on substandard foundations not complying with the requirements of Part 2, Title 24, C.C.R., require a statement from the school district stating that the durability requirements for those foundations may be waived and acknowledging the temporary nature of the foundations.*

RELOCATABLE POWER TAP. A relocatable electrical enclosure that provides one or more receptacle outlets and that is provided with an attached power supply cord and attachment plug for connection to a permanently installed receptacle outlet (also called a "multiplug adaptor").

REMOTE EMERGENCY SHUTOFF DEVICE. The combination of an operator-carried signaling device and a mechanism on the tank vehicle. Activation of the remote emergency shutoff device sends a signal to the tanker-mounted mechanism and causes fuel flow to cease.

REMOTE SOLVENT RESERVOIR. A liquid solvent container enclosed against evaporative losses to the atmosphere during periods when the container is not being utilized, except for a solvent return opening not larger than 16 square inches (10 322 mm^2). Such return allows pump-cycled used solvent to drain back into the reservoir from a separate solvent sink or work area.

REMOTELY LOCATED, MANUALLY ACTIVATED SHUTDOWN CONTROL. A control system that is designed to initiate shutdown of the flow of gases or liquids that is manually activated from a point located some distance from the delivery system.

REPAIR GARAGE. A building, structure or portion thereof used for servicing or repairing motor vehicles.

RESIDENTIAL CARE FACILITY FOR THE CHRONICALLY ILL (RCF/CI). *As termed, means a housing arrangement with a maximum capacity of 25 residents that provides a range of services to residents who have chronic, life-threatening illnesses.*

RESIDENTIAL CARE FACILITY FOR THE ELDERLY (RCFE). *As defined in Health and Safety Code Section §1569.2, shall mean a facility with a housing arrangement chosen voluntarily by persons 60 years of age or over, or their authorized representative, where varying levels and intensities of care and supervision, protective supervision or personal care are provided, based on their varying needs, as determined in order to be admitted and to remain in the facility. Persons under 60 years of age with compatible needs, as determined by the Department of Social Services in regulations, may be allowed to be admitted or retained in a residential-care facility for the elderly.*

Pursuant to Health and Safety Code Section §13133, regulations of the State Fire Marshal pertaining to Group R-2.1 occupancies classified as Residential Facilities (RF) and Residential-care Facilities for the Elderly (RCFE) shall apply uniformly throughout the state and no city, county, city and county, including a charter city or charter county, or fire protection district shall adopt or enforce any ordinance or local rule or regulation relating to fire and panic safety which is in consistent with these regulations. A city, county, city and county, including a charter city or charter county may pursuant to Health and Safety Code Section §13143.5, or a fire protection district may pursuant to Health and Safety Code Section §13869.7, adopt standards more stringent than those adopted by the state fire marshal that are reasonably necessary to accommodate local climate, geological or topographical conditions relating to roof coverings for Residential-care Facilities for the Elderly.

RESIDENTIAL FACILITY (RF). *As defined in Section §1502 of the Health and Safety Code, shall mean any family home, group care facility or similar facility determined by the director of Social Services, for 24-hour nonmedical care of persons in need of personal services, supervision or assistance essential for sustaining the activities of daily living or for the protection of the individual. Such facilities include small family homes and social rehabilitation facilities.*

Pursuant to Health and Safety Code Section §13133, regulations of the state fire marshal pertaining to Group R, Division 2 Occupancies classified as Residential Facilities (RF) and Residential-care Facilities for the Elderly (RCFE) shall apply uniformly throughout the state and no city, county, city and county, including a charter city or charter county or fire protection district shall adopt or enforce any ordinance or local rule or regulation relating to fire and panic safety which is in consistent with these regulations. A city, county, city and county, including a charter city or charter county may pursuant to Health and Safety Code Section §13143.5, or a fire protection district may pursuant to Health and Safety Code Section §13869.7, adopt standards more stringent than those adopted by the state fire marshal that are reasonably necessary to accommodate local climate, geological or topographical conditions relating to roof coverings for Residential-care Facilities for the Elderly.

RESIN APPLICATION AREA. An area where reinforced plastics are used to manufacture products by hand lay-up or spray-fabrication methods.

RESPONSIBLE PERSON. A person trained in the safety and fire safety considerations concerned with hot work. Responsible for reviewing the sites prior to issuing permits as part of the hot work permit program and following up as the job progresses.

located more than 4-feet above the floor, where it can be easily identified. Emergency procedures information shall be printed with a minimum of $^{3}/_{16}$-inch nondecorative lettering providing a sharp contrast to the background.

404.6.3.1.1 *Emergency procedures information shall include, but not be limited to, that described in Section 404.6.1.2.*

404.6.4 Emergency Director. *Owner(s) and operator(s) of hotels, motels, lodging houses, high-rise office buildings and Group I, Division 1 and 2 occupancies as defined in the California Building Code (except honor farms and conservation camps) shall appoint a Fire Safety Director, who shall:*

1. *Report to owner(s) or operator(s).*
2. *Coordinate fire safety activities of the facility with the authority having jurisdiction.*
3. *Conduct, or cause to be conducted, all training as described in Sections 404.6.5 through 404.6.5.3 for all building employees and maintain records of dates, subjects and attendance of each training session.*
4. *Develop and maintain a written facility emergency plan acceptable to the authority having jurisdiction. Upon request, the facility emergency plan shall be made physically available at the respective facility to the authority having jurisdiction. Facility emergency plans shall include, but not be limited to the following:*
   - *4.1. Fire department emergency telephone number 911.*
   - *4.2. Other emergency response telephone numbers.*
   - *4.3. Evacuation or relocation plan for the building occupants.*
   - *4.4. Duties of the Fire Safety Director and other designated emergency personnel.*
   - *4.5. Building employee responsibilities in case of emergency, including individual assignment and reporting responsibilities.*
   - *4.6. Procedures to identify and assist the nonambulatory and physically disabled.*
5. *Assure that the requirements of Section 404.6.4, item 4, subsection 4.6, procedures to identify and assist the nonambulatory and physically disabled are accomplished as follows:*
   - *5.1. Hotels, motels and lodging houses shall comply with subsection (b)(3);*
   - *5.2. Owner(s) or operator(s) of high-rise office buildings shall maintain a list of all permanent building tenants who have disabilities. Building owner(s) or operator(s) shall be notified in writing by those who have disabilities. Information provided in the list shall include any special emergency evacuation needs and permanent work location of such physically disabled persons. The list shall be located in the building manager's office;*
   - *5.3 Group I, Division 1 and 2 occupancies as defined in the California Building Code (except honor farms and conservation camps) shall comply with normal hospital policies of assisting patients and guests during an emergency evacuation.*

404.6.5 Training. *Hotels, motels, lodging houses and high-rise office buildings shall conduct annually, emergency procedures training for all building employees. Group I, Division 1 and 2 occupancies as defined in the California Building Code (except honor farms and conservation camps) shall conduct quarterly fire emergency training for all building employees.*

404.6.5.1 *Fire Safety Directors and their designated emergency personnel shall receive training in the identification and use of facility fire safety equipment, communication procedures, people movement procedures, fire prevention practices and their duties outlined in their respective emergency plan. The training curriculum shall be approved by, and made available to the authority having jurisdiction.*

404.6.5.2 *All building employees shall receive training covering the identification and use of facility fire safety equipment, fire prevention practices and appropriate procedures to follow in the event of a fire.*

404.6.5.3 *Actual evacuation or relocation of building occupants pursuant to procedures contained in the emergency plan shall be conducted at least annually for all building employees. Appropriate records, including dates, floors or building involved, and persons conducting evacuation or relocation procedures shall be maintained and made immediately available to the authority having jurisdiction upon their request. The authority having jurisdiction shall be notified not less than 48 hours in advance of such planned evacuation or relocation.*

Exception: *In hotels, motels, lodging houses and Group I, Division 1 and 2 occupancies as defined in the California Building Code, guests and patients are not required to participate in evacuation or relocation of the building. In hotels, motels, lodging houses, Group I, Division 1 and 2 occupancies as defined in the California Building Code, and high-rise office buildings, on-duty personnel who have security or maintenance related responsibilities, and designated management personnel approved by the fire authority having jurisdiction shall not be required to participate in any drill but, they shall provide an alternate method approved by the authority having jurisdiction to measure their knowledge of their respective duties pursuant to the emergency plan.*

404.6.6 *Emergency procedures signage posted prior to the effective date of these regulations may be continued in use until one year after such effective date of these regulations.*

SECTION 405
EMERGENCY EVACUATION DRILLS

405.1 General. Emergency fire and evacuation drills complying with Sections 405.3 through 405.10 shall be conducted not less than annually where fire safety and evacuation plans are required by Section 403 or where required by the fire code official. Lockdown plan drills shall be conducted in accordance with the approved plan. Such drills shall not be substituted for fire and evacuation drills required by Section 405.3. Drills shall be designed in cooperation with the local authorities.

405.2 Occupant participation. Emergency fire and evacuation drills shall involve the actual evacuation of occupants to a selected assembly point and shall provide occupants with experience in exiting through required exits.

Exceptions:

1. In ambulatory care facilities and Group I-2, the movement of care recipients to a safe area or to the exterior of the building is not required.
2. In Group *R-2.1*, the assembly point for residents is permitted to be within an adjacent smoke compartment.
3. In Group R-4, actual exiting from emergency escape and rescue openings shall not be required. Opening the emergency escape and rescue openings and signaling for help shall be an acceptable alternative.
4. In Group I-3, Conditions 2 through 5 where a defend-in-place response is permitted, the assembly point for detainees is permitted to be within an adjacent smoke compartment.
5. In Group I-3, Conditions 2 through 5, movement of detainees is not required to an assembly point where there are security concerns.

405.3 Frequency. Required emergency evacuation drills shall be held at the intervals specified in Table 405.3 or more frequently where necessary to familiarize all occupants with the drill procedure.

[California Code of Regulations, Title 19, Division 1, §3.13(a)(1)] Fire Drills. (Group E Occupancies)

(a) Group E Occupancies.

(1) General. Every person and public officer managing, controlling or in charge of any public, private or parochial school shall cause the fire alarm signal to be sounded upon the discovery of fire. Every person and public officer managing, controlling or in charge of any public, private or parochial school, other than a two-year community college, shall cause the fire alarm signal to be sounded not less than once every calendar month at the elementary and intermediate levels, and not less than twice yearly at the secondary level, in the manner prescribed in California Code of Regulations, Title 24, Part 2, Section 907.

A fire drill shall be held at the secondary level not less than twice every school year.

TABLE 405.3
FIRE AND EVACUATION DRILL
FREQUENCY AND PARTICIPATION

GROUP OR OCCUPANCY	FREQUENCY	PARTICIPATION
Group A	Quarterly	Staff
Group B[a]	Annually	All occupants
Group B (Ambulatory care facilities)	Quarterly on each shift	Staff
Group B[a] (Clinic, outpatient)	Annually	Staff
Group E	*See Section 403.4*	All occupants
Group F	Annually	Employees
Group I-2	Quarterly on each shift	Staff
Group I-3	Quarterly on each shift[a]	Staff
Group I-4	Monthly on each shift	All occupants
Group R-1	Quarterly on each shift	Employees
Group R-2[b]	*See Section 403.9.2*	All occupants
Group R-4	Semiannually on each shift	All occupants

a. Emergency evacuation drills are required in Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.

b. Emergency evacuation drills in Group R-2 college and university buildings shall be in accordance with Section 403.9.2.1. Other Group R-2 occupancies shall be in accordance with Section 403.9.2.2.

405.4 Leadership. Responsibility for the planning and conduct of drills shall be assigned to competent persons designated to exercise leadership.

405.5 Time. Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in case of fire.

Exceptions:

1. In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill termination points and frequency.
2. In Groups I-2, I-3, *R-2.1* and R-4, where staff-only emergency evacuation drills are conducted after visiting hours or where care recipients are expected to be asleep, a coded announcement shall be an acceptable alternative to audible alarms.

405.6 Recordkeeping. Records shall be maintained of required emergency evacuation drills and include the following information:

1. Identity of the person conducting the drill.
2. Date and time of the drill.
3. Notification method used.
4. Employees on duty and participating.
5. Number of occupants evacuated.
6. Special conditions simulated.

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 5 – FIRE SERVICE FEATURES

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
503			†																				
[T-19 §3.05 (a)]				X																			
503.5.2			X																				
[T-19 §3.05 (b)]				X																			
504.4			X																				
507.2.1			X																				
507.3			X																				
507.5			X																				
507.5.1			X																				
507.5.3			X																				
508.1			X																				
508.1.2			X																				
508.1.5			X																				
508.1.6			X																				
508.18			X																				
510.3			†																				
510.4.2			X																				
510.5			X																				

This state agency does not adopt sections identified with the following symbol: †

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

510.3 Permit required. A construction permit for the installation of or modification to in-building, two-way emergency responder communication coverage systems and related equipment is required as specified in Section 105.6.4. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

510.4 Technical requirements. Equipment required to provide in-building, two-way emergency responder communication coverage shall be listed in accordance with UL 2524. Systems, components and equipment required to provide the in-building, two-way emergency responder communication coverage system shall comply with Sections 510.4.1 through 510.4.2.8.

510.4.1 Emergency responder communication coverage system signal strength. The building shall be considered to have acceptable in-building, two-way emergency responder communication system coverage where signal strength measurements in 95 percent of all areas and 99 percent of areas designated as critical areas by the fire code official on each floor of the building meet the signal strength requirements in Sections 510.4.1.1 through 510.4.1.3.

510.4.1.1 Minimum signal strength into the building. The minimum inbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the fire code official. The inbound signal level shall be a minimun of -95dBm throughout the coverage area and sufficient to provide not less than a Delivered Audio Quality (DAQ) of 3.0 or an equivalent Signal-to-Interference-Plus-Noise Ratio (SINR) applicable to the technology for either analog or digital signals.

510.4.1.2 Minimum signal strength out of the building. The minimum outbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the fire code official. The outbound signal level shall be sufficient to provide not less than a DAQ of 3.0 or an equivalent SINR applicable to the technology for either analog or digital signals.

510.4.1.3 System performance. Signal strength shall be sufficient to meet the requirements of the applications being utilized by public safety for emergency operations through the coverage area as specified by the fire code official in Section 510.4.2.2.

510.4.2 System design. The in-building, two-way emergency responder communication coverage system shall be designed in accordance with Sections 510.4.2.1 through 510.4.2.8 and NFPA *1225*.

510.4.2.1 Amplification systems and components. Buildings and structures that cannot support the required level of in-building, two-way emergency responder communication coverage shall be equipped with systems and components to enhance the radio signals and achieve the required level of in-building, two-way emergency responder communication coverage specified in Sections 510.4.1 through 510.4.1.3. In-building, two-way emergency responder communication systems utilizing radio-frequency-emitting devices and cabling shall be approved by the fire code official. Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use.

510.4.2.2 Technical criteria. The fire code official shall maintain a document providing the specific technical information and requirements for the in-building, two-way emergency responder communication coverage system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, the effective radiated power of radio sites, the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design.

510.4.2.3 Standby power. In-building, two-way emergency responder communication radio coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the in-building, two-way emergency responder communication coverage system at 100-percent system capacity for a duration of not less than 12 hours.

510.4.2.4 Signal booster requirements. If used, signal boosters shall meet the following requirements:

1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet.
2. Battery systems used for the emergency power source shall be contained in a NEMA 3R or higher-rated cabinet.
3. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation.
4. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20dB greater than the system gain under all operating conditions.
5. Active RF-emitting devices used for in-building, two-way emergency responder communication coverage systems shall have built-in oscillation detection and control circuitry.
6. The installation of amplification systems or systems that operate on or provide the means to cause interference on any in-building, two-way emergency responder communication coverage network shall be coordinated and approved by the fire code official.

510.4.2.5 System monitoring. The in-building, two-way emergency responder communication coverage system shall be monitored by a listed fire alarm control

unit, or where approved by the fire code official, shall sound an audible signal at a constantly attended on-site location. Automatic supervisory signals shall include the following:

1. Loss of normal AC power supply.
2. System battery charger(s) failure.
3. Malfunction of the donor antenna(s).
4. Failure of active RF-emitting device(s).
5. Low-battery capacity at 70-percent reduction of operating capacity.
6. Failure of critical system components.
7. The communications link between the fire alarm system and the in-building, two-way emergency responder communication coverage system.
8. Oscillation of active RF-emitting device(s).

510.4.2.6 Additional frequencies and change of frequencies. The in-building, two-way emergency responder communication coverage system shall be capable of modification or expansion in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority.

510.4.2.7 Design documents. The fire code official shall have the authority to require "as-built" design documents and specifications for in-building, two-way emergency responder communication coverage systems. The documents shall be in a format acceptable to the fire code official.

510.4.2.8 Radio communication antenna density. Systems shall be engineered to minimize the near-far effect. In-building, two-way emergency responder communication coverage system designs shall include sufficient antenna density to address reduced gain conditions.

Exception: Systems where all portable devices within the same band use active power control features.

510.5 Installation requirements. The installation of the in-building, two-way emergency responder communication coverage system shall be in accordance with NFPA *1225* and Sections 510.5.2 through 510.5.5.

510.5.1 Mounting of the donor antenna(s). To maintain proper alignment with the system designed donor site, donor antennas shall be permanently affixed on the building or where approved, mounted on a movable sled with a clearly visible sign stating "MOVEMENT OR REPOSITIONING OF THIS ANTENNA IS PROHIBITED WITHOUT APPROVAL FROM THE FIRE CODE OFFICIAL." The antenna installation shall be in accordance with the applicable requirements in the *California Building Code* for weather protection of the building envelope.

510.5.2 Approval prior to installation. Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC or other radio licensing authority shall not be installed without prior coordination and approval of the fire code official.

510.5.3 Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include both of the following:

1. A valid FCC-issued general radio operators license.
2. Certification of in-building system training issued by an approved organization or approved school, or a certificate issued by the manufacturer of the equipment being installed.

These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the fire code official is provided.

510.5.4 Acceptance test procedure. Where an in-building, two-way emergency responder communication coverage system is required, and upon completion of installation, the building owner shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 95 percent. The test procedure shall be conducted as follows:

1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas.
2. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system or equipment approved by the fire code official.
3. Failure of more than one test area shall result in failure of the test.
4. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 95-percent coverage requirement.
5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered to be a failure of that test area. Additional test locations shall not be permitted.
6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building owner so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 6 – BUILDING SERVICES AND SYSTEMS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				X																			
Chapter / Section																							
603.1.2			X																				
603.4			X																				
[T-19 §3.17 (a)(b)]				X																			
603.5.1.1			X																				
603.8			X																				
604.2.4 - *604.2.5*			X																				
604.5.3			X																				
604.6.3			X																				
604.4 - 604.4.4			X																				
605.4			X																				
605.4.1			X																				
605.4.2.3			X																				
605.4.2.5			X																				
605.4.3			X																				
606.1			X																				

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

Plumbing Code. The design, construction, installation, operation, alteration, repair and maintenance of nonportable solid fuel-fired and oil-fired appliances and systems shall comply with the provisions of this section and the *California Mechanical Code*. The construction and use of portable fuel-fired appliances not connected to a fixed fuel piping system, such as blow torches, melting pots and weed burners, shall comply with this section.

605.1.1 Installation of nonportable fuel-fired appliances. The installation of nonportable fuel-fired appliances shall be made in accordance with the manufacturer's installation instructions and applicable federal, state and local rules and regulations.

605.1.2 Electrical wiring and equipment. Electrical wiring and equipment used in connection with fuel-fired appliances and equipment shall be installed and maintained in accordance with Section 603 and *the California Electrical Code.*

605.1.3 Fuel oil. The grade of fuel oil used in an oil burner shall be that for which the oil burner is approved and as stipulated by the oil burner manufacturer's instructions. Oil containing gasoline shall not be used. Waste crankcase oil shall be an acceptable fuel in Group F, M and S occupancies where utilized in equipment listed and labeled for use with waste oil and where such equipment is installed in accordance with the manufacturer's instructions and the terms of its listing.

605.1.4 Access. The installation of fuel-fired equipment shall be provided with access to equipment for cleaning hot surfaces; removing burners; replacing motors, controls, air filters, chimney and vent connectors, draft regulators and other working parts; and for adjusting, cleaning and lubricating parts.

605.1.5 Testing, diagrams and instructions. After installation of the fuel-fired equipment, operation and combustion performance tests shall be conducted to determine that the equipment is in proper operating condition and that all accessory equipment, controls, and safety devices function properly.

605.1.5.1 Diagrams. Contractors installing industrial oil-burning systems shall furnish not less than two copies of diagrams showing the main oil lines and controlling valves, one copy of which shall be posted at the oil-burning equipment and another at an approved location that will be available in case of emergency.

605.1.5.2 Operating instructions. After completing the installation, the installer shall instruct the owner or operator in the proper operation of the equipment. The installer shall furnish the owner or operator with the manufacturer's operating instructions.

605.1.6 Clearances. Working clearances between fuel-fired appliances and electrical panelboards and equipment shall be in accordance with *the California Electrical Code*. Clearances between oil-fired equipment and oil supply tanks shall be in accordance with *the California Electrical Code.*

605.2 Abatement of unsafe conditions. The fire code official is authorized to order that measures be taken to prevent the operation of any existing stove, oven, furnace, incinerator, boiler or any other heat-producing device or appliance found to be defective or in violation of code requirements for existing appliances after giving notice to this effect to any person, owner, firm or agent or operator in charge of the same. The fire code official is authorized to take measures to prevent the operation of any device or appliance without notice when inspection shows the existence of an immediate fire hazard or when imperiling human life. The defective device shall remain withdrawn from service until all necessary repairs or alterations have been made or replaced in accordance with Section 605.1.

605.2.1 Chimneys and appliances. Chimneys, vents, incinerators, smokestacks or similar devices for conveying smoke or hot gases to the outer air and the appliances such as stoves, furnaces, fireboxes or boilers to which such devices are connected, shall be maintained so as not to create a fire hazard.

605.2.1.1 Masonry chimneys. Masonry chimneys that, upon inspection, are found to be without a flue liner and that have open mortar joints which will permit smoke or gases to be discharged into the building, or which are cracked as to be dangerous, shall be repaired or relined with a listed chimney liner system installed in accordance with the manufacturer's instructions and the *California Mechanical Code* or a flue lining system installed in accordance with the requirements of the *California Building Code* and appropriate for the intended class of chimney service.

605.2.1.2 Metal chimneys. Metal chimneys that are corroded or improperly supported shall be repaired or replaced in accordance with the *California Mechanical Code*.

605.2.1.3 Decorative shrouds. Decorative shrouds installed at the termination of factory-built chimneys or vents shall be removed except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed in accordance with the chimney or vent manufacturer's instructions and the *California Mechanical Code* or *International Fuel Gas Code*.

605.2.1.4 Factory-built chimney and vent systems. Existing factory-built chimneys and vent systems that are damaged, corroded or improperly supported shall be repaired or replaced in accordance with the *California Mechanical Code*.

605.2.1.5 Connectors. Existing chimney and vent connectors that are damaged, corroded or improperly supported shall be repaired or replaced in accordance with the *California Mechanical Code.*

605.3 Chimneys and vents. Masonry chimneys shall be constructed in accordance with the *California Building Code*. Factory-built chimneys and vent systems serving solid-fuel-fired appliances or oil-fired appliances shall be installed in accordance with the *California Mechanical Code*. Metal chimneys shall be constructed and installed in accordance with the *California Mechanical Code*. Factory-built chimneys and vent systems serving gas-fired appliances shall be installed in accordance with the *International Fuel Gas Code*.

605.4 Fuel oil storage systems. Fuel oil storage systems for *combustion engines and gas turbines* shall be installed and maintained in accordance with this code. Tanks and fuel-oil piping systems *for building heating systems* shall be installed in accordance with *this section and NFPA 31. Tanks and fuel oil piping systems for generators and fire pumps shall be installed in accordance with Section 605.4.2 or Chapter 57.*

605.4.1 Fuel oil storage in outside, above-ground tanks. Where connected to a fuel-oil piping system, the maximum amount of fuel oil storage allowed outside above ground without additional protection shall be 660 gallons (2498 L). The storage of fuel oil above ground *for building heating systems* in quantities exceeding 660 gallons (2498 L) shall comply with NFPA 31. *The storage of fuel oil above ground for combustion engines and gas turbines in portable tanks exceeding a capacity of 660 gallons (2498 L) shall comply with Chapter 57.*

605.4.1.1 Approval. Outdoor fuel oil storage tanks shall be in accordance with UL 142 or UL 2085.

605.4.2 Fuel oil storage inside buildings. Fuel oil storage inside buildings shall comply with Sections 605.4.2.2 through 605.4.2.8 or Chapter 57.

605.4.2.1 Approval. Indoor fuel oil storage tanks shall be in accordance with UL 80, UL 142 or UL 2085.

605.4.2.2 Quantity limits. One or more fuel oil storage tanks containing Class II or III combustible liquid shall be permitted in a building. The aggregate capacity of all tanks shall not exceed the following:

1. 660 gallons (2498 L) in unsprinklered buildings, where stored in a tank complying with UL 80, UL 142 or UL 2085.
2. 1,320 gallons (4996 L) in buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1, where stored in a tank complying with UL 142. The tank shall be listed as a secondary containment tank, and the secondary containment shall be monitored visually or automatically.
3. 3,000 gallons (11 356 L) in buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1, where stored in protected above-ground tanks complying with UL 2085 and Section 5704.2.9.7. The tank shall be listed as a secondary containment tank, as required by UL 2085, and the secondary containment shall be monitored visually or automatically.

605.4.2.3 Restricted use and connection. Tanks installed in accordance with Section 605.4.2 shall be used only to supply fuel oil to fuel-burning equipment, generators or fire pumps installed in accordance with Section 605.4.2.5. Connections between tanks and equipment supplied by such tanks *for building heating systems* shall be made using closed piping systems in accordance with *NFPA 31. Connections between tanks and equipment supplied by such tanks for generators or fire pumps shall be made using closed piping systems in accordance with NFPA 30.*

605.4.2.4 Applicability of maximum allowable quantity and control area requirements. The quantity of combustible liquid stored in tanks complying with Section 605.4.2 shall not be counted towards the maximum allowable quantity set forth in Table 5003.1.1(1), and such tanks shall not be required to be located in a control area.

605.4.2.5 Installation. Tanks and piping systems *for building heating systems* shall be installed in accordance with *NFPA 31. Tanks and piping systems for generators or fire pumps shall be installed in accordance with NFPA 37.*

605.4.2.6 Separation. Rooms containing fuel oil tanks for internal combustion engines shall be separated from the remainder of the building by fire barriers, horizontal assemblies, or both, with a minimum 1-hour fire-resistance rating with 1-hour fire-protection-rated opening protectives constructed in accordance with the *California Building Code*.

Exception: Rooms containing protected above-ground tanks complying with Section 5704.2.9.7 shall not be required to be separated from surrounding areas.

605.4.2.7 Spill containment. Tanks exceeding 60-gallon (227 L) capacity or an aggregate capacity of 1,000 gallons (3785 L) that are not provided with integral secondary containment shall be provided with spill containment sized to contain a release from the largest tank.

605.4.2.8 Tanks in basements. Tanks in basements shall be located not more than two stories below grade plane.

605.4.3 Underground storage of fuel oil. The storage of fuel oil in underground storage tanks shall comply with UL 58 or UL 1316. *Fuel oil in underground storage tanks for building heating systems shall* be installed in accordance with NFPA 31. *Fuel oil in underground storage tanks for combustion engines and gas turbines shall be installed in accordance with Chapter 57.*

605.5 Portable unvented heaters. Portable unvented fuel-fired heating equipment shall be prohibited in occupancies in Groups A, E, I, R-1, R-2, *R-2.1*, *R-2.2*, R-3, *R-3.1* and R-4 and ambulatory care facilities.

Exceptions:

1. Portable unvented fuel-fired heaters listed in accordance with UL 647 are permitted to be used in one- and two-family dwellings, where operated and maintained in accordance with the manufacturer's instructions.
2. Portable outdoor gas-fired heating appliances in accordance with Section 605.5.2.

605.5.1 Prohibited locations. Unvented fuel-fired heating equipment shall not be located in, or obtain combustion air from, any of the following rooms or spaces: sleeping rooms, bathrooms, toilet rooms or storage closets.

605.5.2 Portable outdoor gas-fired heating appliances. Portable gas-fired heating appliances located outdoors shall be in accordance with Sections 605.5.2.1 through 605.5.2.3.4.

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 8 – INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
[T-19 §1172]				X																			
[T-19 §1173]				X																			
[T-19 §1174]				X																			
[T-19 §1191]				X																			
[T-19 §1196]				X																			
[T-19 §1201]				X																			
[T-19 §1202]			X	X																			
[T-19 §3.21(a)(b)]				X																			
Table 803.3			X																				
803.5.1.2			X																				
803.5.1.3			X																				
804.1			X																				
804.3.3.1			X																				
804.3.3.2			X																				
804.3.3.3			X																				
805			†																				
805.1 *Reserved*			X																				
805.2.1.2			X																				
805.4.1.2			X																				
806			†	X																			
[T-19 §3.08]				X																			
807			†	X																			
[T-19 §3.08]				X																			
[T-19 §1273.1]				X																			
[T-19 §1273.2]				X																			
807.3			X																				
[T-19 §1321.1]				X																			
[T-19 §1324]				X																			
[T-19 §1325]				X																			
[T-19 §1326]				X																			
[T-19 §1327]				X																			
807.5.1.2			X																				
807.5.3			X																				
807.5.3.1			X																				
807.5.3.2			X																				
807.5.3.3			X																				
807.5.3.4			X																				
807.5.7			X																				
807.5.7.1			X																				
808			†																				
808.1			X																				
[T-19 §3.19 (b)(c)]				X																			

This state agency does not adopt sections identified with the following symbol: †

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

TABLE 803.3
INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY[k]

GROUP	SPRINKLERED[l]			NONSPRINKLERED		
	Interior exit stairways and ramps and exit passageways[a, b]	Corridors and enclosure for exit access stairways and ramps	Rooms and enclosed spaces[c]	Interior exit stairways and ramps and exit passageways[a, b]	Corridors and enclosure for exit access stairways and ramps	Rooms and enclosed spaces[c]
A-1 and A-2	B	B	C	A	A[d]	B[e]
A-3[f], A-4, A-5	B	B	C	A	A[d]	C
B, E, M, R-1, R-4	B	C[m]	C	A	B[m]	C
F	C	C	C	B	C	C
H, *L*	B	B	C[g]	A	A	B
I-2	B	B	B[h, i]	A	A	B
I-3	A	A[j]	C	A	A	B
I-4	B	B	B[h, i]	A	A	B
R-2	C	C	C	B	B	C
R-2.1	*B*	*C*	*C*	*A*	*B*	*B*
R-3, *R-3.1*	C	C	C	C	C	C
S	C	C	C	B	B	C
U	No Restrictions			No Restrictions		

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2.

NP=Not Permitted ***[SFM]***

a. Class C interior finish materials shall be allowed for wainscoting or paneling of not more than 1,000 square feet of applied surface area in the grade lobby where applied directly to a noncombustible base or over furring strips applied to a noncombustible base and fireblocked as required by Section 803.11 of the *California Building Code*.

b. *In other than Group I-2 occupancies in buildings less than three stories above grade plane of other than Group I-3, Class B interior finish for nonsprinklered buildings and Class C interior finish for sprinklered buildings shall be permitted in interior exit stairways and ramps.*

b. In exit enclosures of buildings less than three stories in height of other than Group I-3, Class B interior finish for nonsprinklered buildings and Class C for sprinklered buildings shall be permitted.

c. Requirements for rooms and enclosed spaces shall be based on spaces enclosed by partitions. Where a fire-resistance rating is required for structural elements, the enclosing partitions shall extend from the floor to the ceiling. Partitions that do not comply with this shall be considered as enclosing spaces and the rooms or spaces on both sides shall be considered as one. In determining the applicable requirements for rooms and enclosed spaces, the specific occupancy thereof shall be the governing factor, regardless of the group classification of the building or structure.

d. Lobby areas in Group A-1, A-2 and A-3 occupancies shall be not less than Class B materials.

e. Class C interior finish materials shall be allowed in Group A occupancies with an occupant load of 300 persons or less.

f. In places of religious worship, wood used for ornamental purposes, trusses, paneling or chancel furnishing shall be allowed.

g. Class B material is required where the building exceeds two stories.

h. Class C interior finish materials shall be allowed in administrative spaces.

i. Class C interior finish materials shall be allowed in rooms with a capacity of four persons or less.

j. Class B materials shall be allowed as wainscoting extending not more than 48 inches above the finished floor in corridors.

k. Finish materials as provided for in other sections of this code.

l. Applies where the vertical exits, exit passageways, corridors or rooms and spaces are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

m. Corridors in ambulatory care facilities shall have a Class B or better interior finish material.

(b) Framed Rigid Combustible Decorative Material. Rigid combustible decorative material and assemblies of materials not more than $^1/_4$ inch in thickness used for folding doors, room dividers, decorative screens and similar applications, and which are installed with all edges protected, shall conform to the following:

(1) All exposed edges shall be protected with frames of metal or other noncombustible material, or solid wood of minimum $^1/_4$ inch dimension.

(2) The total square foot area of the material shall not exceed ten percent of that of the floor area of the room in which the material is installed.

(3) When tested as follows, no flames shall reach the top edge of the specimen.

The test shall be conducted in a draft free area, on a specimen of the material 12 inches by 12 inches suspended at a 45 degree angle from the horizontal with the upper and lower edges in a horizontal plane. The test flame shall be 3 inches long from a Bunsen Burner of approximately $^1/_2$ inch inside diameter with the air supply completely shut off. The burner shall be so positioned so that its top is 1 inch vertically below a point on the lower surface of the test specimen, 1 inch up from its lower horizontal edge, and mid-way between the inclined edges. The exposure to the test flame and the duration of test shall be for a period of 2 minutes.

803.5.1 Room corner test for textile wall coverings and expanded vinyl wall coverings. Textile wall coverings and expanded vinyl wall coverings shall meet the criteria of Section 803.5.1.1 when tested in the manner intended

for use in accordance with the Method B protocol of NFPA 265 using the product mounting system, including adhesive. Test specimen preparation and mounting shall be in accordance with ASTM E2404.

803.5.1.1 Acceptance criteria for NFPA 265 Method B test protocol. Where testing to NFPA 265, the interior finish shall comply with the following:

1. During the 40-kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (203 by 305 mm) walls.
3. Flashover, as defined in NFPA 265, shall not occur.
4. For newly introduced wall coverings, the total smoke released throughout the test shall not exceed 1,000 m^2.

803.5.1.2 Unframed rigid combustible decorative material. *Rigid combustible decorative material and assemblies of materials not more than $^1/_4$ inch in thickness used for folding doors, room dividers, decorative screens and similar applications, which do not create concealed spaces and which are installed with exposed edges, shall be flame resistant in accordance with SFM Standard 12-7-5 contained in Title 24, Part 12, California Referenced Standards Code.*

803.5.1.3 Framed rigid combustible decorative material. Rigid combustible decorative material and assemblies of materials not more than $^1/_4$ inch in thickness used for folding doors, room dividers, decorative screens and similar applications, and which are installed with all edges protected, shall conform to SFM Standard 12-7-5 contained in Title 24, Part 12, California Referenced Standards Code.

803.5.2 Acceptance criteria for wall and ceiling coverings. Textile wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E84 or UL 723, and be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E2404.

803.6 Textile ceiling coverings. Where used as interior ceiling finish materials, textile ceiling coverings, including materials having a woven, nonwoven, napped, tufted, looped or similar surface and carpet or similar textile materials, shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or 803.5.2.

803.7 Expanded vinyl wall coverings. Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1, 803.5.1 or 803.5.2.

803.8 Expanded vinyl ceiling coverings. Where used as interior ceiling finish materials, expanded vinyl ceiling coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or 803.5.2.

[BF] 803.9 High-density polyethylene (HDPE) and polypropylene (PP). Where high-density polyethylene or polypropylene is used as an interior finish, it shall comply with Section 803.1.1.

[BF] 803.10 Site-fabricated stretch systems. Where used as newly installed interior wall or interior ceiling finish materials, site-fabricated stretch systems containing all three components described in the definition in Chapter 2 shall be tested in the manner intended for use, and shall comply with the requirements of Section 803.1.1 or 803.1.2. If the materials are tested in accordance with ASTM E84 or UL 723, specimen preparation and mounting shall be in accordance with ASTM E2573.

803.11 Foam plastic materials. Foam plastic materials shall not be used as interior wall and ceiling finish unless specifically allowed by Section 803.11.1 or 803.11.2. Foam plastic materials shall not be used as interior trim unless specifically allowed by Section 804.2.

803.11.1 Foam plastic combustibility characteristics. Foam plastic materials shall be allowed on the basis of fire tests that substantiate their combustibility characteristics for the use intended under actual fire conditions, as indicated in Section 2603.9 of the *California Building Code*. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.

803.11.2 Thermal barrier for foam plastics. Foam plastic material shall be allowed if it is separated from the interior of the building by a thermal barrier in accordance with Section 2603.4 of the *California Building Code.*

803.12 Facings or wood veneers intended to be applied on site over a wood substrate. Facings or veneers intended to be applied on site over a wood substrate shall comply with one of the following:

1. The facing or veneer shall meet the criteria of Section 803.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, described in Section 5.8.9 of NFPA 286.
2. The facing or veneer shall have a Class A, B or C flame spread index and smoke-developed index based on the requirements of Table 803.3, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2404.

803.13 Laminated products factory produced with an attached wood substrate. Laminated products factory produced with an attached wood substrate shall comply with one of the following:

1. The laminated product shall meet the criteria of Section 803.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, of actual use.
2. The laminated product shall have a Class A, B or C flame spread index and smoke-developed index based on the requirements of Table 803.3, in accordance with

ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2579.

803.14 Thickness exemption. Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls or ceilings shall not be required to be tested.

803.15 Heavy timber exemption. Exposed portions of building elements complying with the requirements of Type IV construction in accordance with the *California Building Code* shall not be subject to interior finish requirements.

SECTION 804
INTERIOR WALL AND CEILING TRIM AND INTERIOR FLOOR FINISH IN NEW AND EXISTING BUILDINGS

804.1 Interior trim. Combustible trim in new and existing buildings, excluding handrails and guards, shall not exceed 10 percent of the specific wall or ceiling areas to which it is attached. Other than foam plastic, material used as interior trim shall *have minimum Class B flame spread and 450 smoke-developed index in Group I-3 and for all other occupancies shall* comply with Section 804.1.1 or 804.1.2. Foam plastic used as interior trim shall comply with Section 804.2.

804.1.1 Testing in accordance with NFPA 286. Interior trim material shall be tested in accordance with NFPA 286 and comply with the acceptance criteria in Section 803.1.1.1. Where the interior trim material has been tested as an interior finish in accordance with NFPA 286 and complies with the acceptance criteria in Section 803.1.1.1, it shall not be required to be tested for flame spread index and smoke-developed index in accordance with ASTM E84 or UL 723.

804.1.2 Testing in accordance with ASTM E84 or UL 723. Material, other than foam plastic, used as interior trim shall have minimum Class C flame spread and smoke-developed indices, when tested in accordance with ASTM E84 or UL 723, as described in Section 803.1.2.

804.2 Foam plastic interior trim. Foam plastic used as interior trim shall comply with Sections 804.2.1 through 804.2.4.

804.2.1 Density. The minimum density of the interior trim shall be 20 pounds per cubic foot (320 kg/m^3).

804.2.2 Thickness. The maximum thickness of the interior trim shall be $^1/_2$ inch (12.7 mm) and the maximum width shall be 8 inches (203 mm).

804.2.3 Area limitation. The interior trim shall not constitute more than 10 percent of the specific wall or ceiling area to which it is attached.

804.2.4 Flame spread. The flame spread index shall not exceed 75 where tested in accordance with ASTM E84 or UL 723. The smoke-developed index shall not be limited.

Exception: Where the interior trim material has been tested as an interior finish in accordance with NFPA 286 and complies with the acceptance criteria in Section 803.1.1.1, it is not required to be tested for flame spread index in accordance with ASTM E84 or UL 723.

804.3 New interior floor finish. New interior floor finish and floor covering materials in new and existing buildings shall comply with Sections 804.3.1 through 804.3.3.2.

Exception: Floor finishes and coverings of a traditional type, such as wood, vinyl, linoleum or terrazzo, and resilient floor covering materials that are not composed of fibers.

804.3.1 Classification. Interior floor finish and floor covering materials required by Section 804.3.3.2 to be of Class I or II materials shall be classified in accordance with ASTM E648 or NFPA 253. The classification referred to herein corresponds to the classifications determined by ASTM E648 or NFPA 253 as follows: Class I, 0.45 watts/cm^2 or greater; Class II, 0.22 watts/cm^2 or greater.

804.3.2 Testing and identification. Interior floor finish and floor covering materials shall be tested by an *approved* agency in accordance with ASTM E648 or NFPA 253 and identified by a hang tag or other suitable method so as to identify the manufacturer or supplier and style, and shall indicate the interior floor finish or floor covering classification in accordance with Section 804.3.1. Carpet-type floor coverings shall be tested as proposed for use, including underlayment. Test reports confirming the information provided in the manufacturer's product identification shall be furnished to the fire code official upon request.

804.3.3 Interior floor finish requirements. New interior floor covering materials shall comply with Sections 804.3.3.1 and 804.3.3.2, and interior floor finish materials shall comply with Section 804.3.1.

804.3.3.1 ***Test requirement.*** *In all occupancies, interior floor finish and interior floor covering materials shall comply with the requirements of ASTM Standard E648, and having a specific optical density smoke rating not to exceed 450 per ASTM E662. For Group I-3 occupancies and Group I-2 areas where patients are restrained, see Section 804.3.3.3.*

804.3.3.2 Minimum critical radiant flux. In all occupancies, new interior floor finish and floor covering materials in enclosures for stairways and ramps, exit passageways, corridors and rooms or spaces not separated from corridors by full-height partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux. The minimum critical radiant flux shall be not less than Class I in Groups I-2 *and* I-3 *areas where restraint is not used and R-2.1* and not less than Class II in Groups A, B, E, H, I-4, M, R-1, R-2, *R-2.2* and S. <

Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials shall be permitted in any area where Class I materials are required and materials complying with *ASTM Standard E648, and having a specific optical density smoke rating not to exceed 450 per ASTM E662 are permitted in any area where Class II materials are required.*

For Group I-3 areas occupied by inmates or Group I-2 areas where patients are restrained, see Section 804.3.3.3.

804.3.3.3 Group I-2 and Group I-3 floor surfaces. *Interior floor finish and floor coverings occupied by inmates or patients whose personal liberties are restrained shall be noncombustible. Carpet or other floor covering materials may be used in areas protected by an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1. Carpet or other floor coverings shall comply with the requirements of ASTM Standard E648; the minimum critical radiant flux shall be not less than Class I and the specific optical density smoke rating shall not exceed 450 per ASTM E662. Carpeting and carpet padding shall be tested as a unit in accordance with floor covering radiant panel test meeting Class 1 and has a critical radiant flux limit of not less than 0.45 watt per centimeter square. The carpeting and padding shall be identified by a hang-tag or other suitable method as to manufacturer and style and shall indicate the classification of the material based on the limits set forth above.*

804.4 Interior floor-wall base. Interior floor-wall base that is 6 inches (152 mm) or less in height shall be tested in accordance with ASTM E648 or NFPA 253 and shall be not less than Class II. Where a Class I floor finish is required, the floor-wall base shall be Class I. The classification referred to herein corresponds to the classifications determined by ASTM E648 or NFPA 253 as follows: Class I, 0.45 watt/cm^2 or greater; Class II, 0.22 watts/cm^2 or greater.

Exception: Interior trim materials that comply with Section 804.1.

SECTION 805
UPHOLSTERED FURNITURE AND MATTRESSES IN NEW AND EXISTING BUILDINGS

805.1 ***Reserved.***

805.2 Group I-2 and Group B ambulatory care facilities. The requirements in Sections 805.2.1 through 805.2.2 shall apply to Group I-2 occupancies and Group B ambulatory care facilities.

805.2.1 Upholstered furniture. Newly introduced upholstered furniture shall meet the requirements of Sections 805.2.1.1 through 805.2.1.3.

805.2.1.1 Ignition by cigarettes. Newly introduced upholstered furniture shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with one of the following: (a) mocked-up composites of the upholstered furniture shall have a char length not exceeding 1.5 inches (38 mm) when tested in accordance with NFPA 261 or (b) the components of the upholstered furniture shall meet the requirements for Class I when tested in accordance with NFPA 260.

Exception: Upholstered furniture belonging to the patients in sleeping rooms of Group I-2, Condition 1 occupancies, provided that a smoke detector is installed in such rooms. Battery-powered, single-station smoke alarms shall be allowed.

805.2.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E1537 or California Technical Bulletins *116 and 117*, as follows:

1. The peak rate of heat release for the single upholstered furniture item shall not exceed 80 kW.

   Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

2. The total heat released by the single upholstered furniture item during the first 10 minutes of the test shall not exceed 25 MJ.

   Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

805.2.1.3 Identification. Upholstered furniture shall bear the label of an approved agency, confirming compliance with the requirements of Sections 805.2.1.1 and 805.2.1.2.

805.2.2 Mattresses. Newly introduced mattresses shall meet the requirements of Sections 805.2.2.1 through 805.2.2.3.

805.2.2.1 Ignition by cigarettes. Newly introduced mattresses shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with DOC 16 CFR Part 1632 and shall have a char length not exceeding 2 inches (51 mm).

805.2.2.2 Heat release rate. Newly introduced mattresses shall have limited rates of heat release when tested in accordance with ASTM E1590 or California Technical Bulletin 129, as follows:

1. The peak rate of heat release for the single mattress shall not exceed 100 kW.

   Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

2. The total heat released by the single mattress during the first 10 minutes of the test shall not exceed 25 MJ.

   Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

805.2.2.3 Identification. Mattresses shall bear the label of an approved agency, confirming compliance with the requirements of Sections 805.2.2.1 and 805.2.2.2.

805.3 Group I-3, detention and correction facilities. The requirements in Sections 805.3.1 through 805.3.2 shall apply to detention and correction facilities classified in Group I-3.

805.3.1 Upholstered furniture. Newly introduced upholstered furniture shall meet the requirements of Sections 805.3.1.1 through 805.3.1.3

805.3.1.1 Ignition by cigarettes. Newly introduced upholstered furniture shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with one of the following:

1. Mocked-up composites of the upholstered furniture shall have a char length not exceeding 1.5 inches (38 mm) when tested in accordance with NFPA 261.
2. The components of the upholstered furniture shall meet the requirements for Class I when tested in accordance with NFPA 260.

805.3.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E1537, as follows:

1. The peak rate of heat release for the single upholstered furniture item shall not exceed 80 kW.
2. The total heat released by the single upholstered furniture item during the first 10 minutes of the test shall not exceed 25 MJ.

805.3.1.3 Identification. Upholstered furniture shall bear the label of an approved agency, confirming compliance with the requirements of Sections 805.3.1.1 and 805.3.1.2.

805.3.2 Mattresses. Newly introduced mattresses shall meet the requirements of Sections 805.3.2.1 through 805.3.2.3.

805.3.2.1 Ignition by cigarettes. Newly introduced mattresses shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with DOC 16 CFR Part 1632 and shall have a char length not exceeding 2 inches (51 mm).

805.3.2.2 Fire performance tests. Newly introduced mattresses shall be tested in accordance with Section 805.3.2.2.1 or 805.3.2.2.2.

805.3.2.2.1 Heat release rate. Newly introduced mattresses shall have limited rates of heat release when tested in accordance with ASTM E1590 or California Technical Bulletin 129, as follows:

1. The peak rate of heat release for the single mattress shall not exceed 100 kW.
2. The total heat released by the single mattress during the first 10 minutes of the test shall not exceed 25 MJ.

805.3.2.2.2 Mass loss test. Newly introduced mattresses shall have a mass loss not exceeding 15 percent of the initial mass of the mattress where tested in accordance with the test in Annex A3 of ASTM F1085.

805.3.2.3 Identification. Mattresses shall bear the label of an approved agency, confirming compliance with the requirements of Sections 805.3.2.1 and 805.3.2.2.

805.4 Group R-2 college and university dormitories. The requirements of Sections 805.4.1 through 805.4.2.3 shall apply to college and university dormitories classified in Group R-2, including decks, porches and balconies.

805.4.1 Upholstered furniture. Newly introduced upholstered furniture shall meet the requirements of Sections 805.4.1.1 through 805.4.1.3.

805.4.1.1 Ignition by cigarettes. Newly introduced upholstered furniture shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with one of the following:

1. Mocked-up composites of the upholstered furniture shall have a char length not exceeding $1^1/_2$ inches (38 mm) when tested in accordance with NFPA 261.
2. The components of the upholstered furniture shall meet the requirements for Class I when tested in accordance with NFPA 260.

805.4.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E1537 or California Technical Bulletins *116 and 117*, as follows:

1. The peak rate of heat release for the single upholstered furniture item shall not exceed 80 kW.

   Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

2. The total heat released by the single upholstered furniture item during the first 10 minutes of the test shall not exceed 25 MJ.

   Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

805.4.1.3 Identification. Upholstered furniture shall bear the label of an approved agency, confirming compliance with the requirements of Sections 805.4.1.1 and 805.4.1.2.

805.4.2 Mattresses. Newly introduced mattresses shall meet the requirements of Sections 805.4.2.1 through 805.4.2.3.

805.4.2.1 Ignition by cigarettes. Newly introduced mattresses shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with DOC 16 CFR Part 1632 and shall have a char length not exceeding 2 inches (51 mm).

805.4.2.2 Heat release rate. Newly introduced mattresses shall have limited rates of heat release when tested in accordance with ASTM E1590 or California Technical Bulletin 129, as follows:

1. The peak rate of heat release for the single mattress shall not exceed 100 kW.

   Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler

system installed in accordance with Section 903.3.1.1.

2. The total heat released by the single mattress during the first 10 minutes of the test shall not exceed 25 MJ.

Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.

805.4.2.3 Identification. Mattresses shall bear the label of an approved agency, confirming compliance with the requirements of Sections 805.4.2.1 and 805.4.2.2.

SECTION 806
NATURAL DECORATIVE VEGETATION IN NEW AND EXISTING BUILDINGS

806.1 Natural cut trees. Natural cut trees, where allowed by this section, shall have the trunk bottoms cut off not less than 0.5 inch (12.7 mm) above the original cut and shall be placed in a support device complying with Section 806.1.2.

806.1.1 Restricted occupancies. Natural cut trees shall be prohibited within ambulatory care facilities and Group A, E, I-2, I-3, I-4, M, R-1, R-2 and R-4 occupancies.

Exceptions:

1. Trees located in areas protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 shall not be prohibited in Groups A, E, M, R-1 and R-2.
2. Trees shall be allowed within dwelling units in Group R-2 occupancies.

806.1.2 Support devices. The support device that holds the tree in an upright position shall be of a type that is stable and that meets all of the following criteria:

1. The device shall hold the tree securely and be of adequate size to avoid tipping over of the tree.
2. The device shall be capable of containing a minimum two-day supply of water.
3. The water level, when full, shall cover the tree stem not less than 2 inches (51 mm). The water level shall be maintained above the fresh cut and checked not less than once daily.

806.1.3 Dryness. The tree shall be removed from the building whenever the needles or leaves fall off readily when a tree branch is shaken or if the needles are brittle and break when bent between the thumb and index finger. The tree shall be checked daily for dryness.

806.1.4 Fire-retardant treatments for natural cut trees. Where fire-retardant treatments are applied to natural cut trees, the fire-retardant treatment shall be tested by an approved agency and *shall be treated and maintained in a flame-retardant condition by means of a flame-retardant solution or process approved by the State Fire Marshal, as set forth in California Code of Regulations, Title 19, Division 1, Chapter 8.*

[California Code of Regulations, Title 19, Division 1, §3.08]. Decorative Materials.

In every Group A, E, I, R-1, R-2, R-2.1, R-3.1 and R-4 occupancy, all drapes, hangings, curtains, drops and all other decorative material, including Christmas trees, that would tend to increase the fire and panic hazard shall be made from a nonflammable material, or shall be treated and maintained in a flame-retardant condition by means of a flame-retardant solution or process approved by the State Fire Marshal, as set forth in California Code of Regulations, Title 19, Division 1, Chapter 8. Exits, exit lights, fire alarm sending stations, wet standpipe hose cabinets and fire extinguisher locations shall not be concealed, in whole or in part, by any decorative material.

Exceptions:

(a) Cubical curtains and individual patient room window curtains and drapes in Group I, R-2.1, R-3.1 and R-4 occupancies.

(b) Window curtains and drapes within dwelling units of Group R-1 and R-2 occupancies.

(c) Christmas trees within dwelling units of Group R-1 and R-2 occupancies.

806.2 Obstruction of means of egress. The required width of any portion of a means of egress shall not be obstructed by decorative vegetation. Natural cut trees shall not be located within an exit, corridor, or a lobby or vestibule.

806.3 Open flame. Candles and open flames shall not be used on or near decorative vegetation. Natural cut trees shall be kept a distance from heat vents and any open flame or heat-producing devices not less than the height of the tree.

806.4 Electrical fixtures and wiring. The use of unlisted electrical wiring and lighting on natural vegetation, including natural cut trees, shall be prohibited.

SECTION 807
DECORATIVE MATERIALS AND ARTIFICIAL DECORATIVE VEGETATION IN NEW AND EXISTING BUILDINGS

807.1 General. The following requirements shall apply to all occupancies:

1. Furnishings or decorative materials of an explosive or highly flammable character shall not be used.
2. Fire-retardant coatings in existing buildings shall be maintained so as to retain the effectiveness of the treatment under service conditions encountered in actual use.
3. Furnishings or other objects shall not be placed to obstruct exits, access thereto, egress therefrom or visibility thereof.
4. The permissible amount of noncombustible decorative materials shall not be limited.

finish in accordance with Section 803 of the *California Building Code.*

807.5.1.2.1 Motion picture and television production studio sound stages. *Approved production facilities and production locations with live audiences.*

807.5.1.2.2 Foam plastics, decorations, textile and film materials. *Foam plastics, textile and film materials and other decorative materials and materials containing foam plastics shall be in accordance with the following:*

1. *Exhibit booth construction shall have a maximum heat-release rate of 100 kilowatts when tested in accordance with UL 1975.*
2. *Decorative objects, including but not limited to mannequins, murals and signs, shall have a maximum heat-release rate of 150 kilowatts when tested in accordance with UL 1975.*

   Exception: *When the aggregate area of murals, signs or similar decorative objects occupies less than 10 percent of the floor or wall area, this requirement may be waived by the fire chief.*
3. *Theater, motion picture and television stage settings with or without horizontal projections and simulated caves or caverns shall have a maximum heat-release rate of 100 kilowatts when tested in accordance with UL 1975.*

807.5.1.3 Wood use in places of religious worship. In places of religious worship, wood used for ornamental purposes, trusses, paneling or chancel furnishing shall not be limited.

807.5.1.4 Pyroxylin plastic. Imitation leather or other material consisting of or coated with a pyroxylin or similarly hazardous base shall not be used.

807.5.2 Group E. Group E occupancies shall comply with Sections 807.5.2.1 through 807.5.2.3.

807.5.2.1 Storage in corridors and lobbies. Clothing and personal effects shall not be stored in corridors and lobbies.

Exceptions:

1. Corridors protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.
2. Corridors protected by an approved fire alarm system installed in accordance with Section 907.
3. Storage in metal lockers, provided the minimum required egress width is maintained.

807.5.2.2 Artwork in corridors. Artwork and teaching materials shall be limited on the walls of corridors to not more than 20 percent of the wall area.

807.5.2.3 Artwork in classrooms. Artwork and teaching materials shall be limited on walls of classrooms to not more than 50 percent of the specific wall area to which they are attached.

807.5.3 Groups I-2 *and R-2.1*. In Group I-2 *and R-2.1* occupancies, combustible decorative materials shall comply with Sections 807.5.3.1 through 807.5.3.4. <

807.5.3.1 Group *R-2.1* within units. In Group *R-2.1* occupancies, equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, within sleeping units and dwelling units, combustible decorative materials placed on walls shall be limited to not more than 50 percent of the wall area to which they are attached.

807.5.3.2 In Group *R-2.1* for areas other than within units. In Group *R-2.1* occupancies, equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, combustible decorative materials placed on walls in areas other than within dwelling and sleeping units shall be limited to not more than 30 percent of the wall area to which they are attached.

807.5.3.3 In Groups I-2 *and R-2.1*. In Groups I-2 *and R-2.1* occupancies equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, combustible decorative materials placed on walls shall be limited to not more than 30 percent of the wall area to which they are attached. <

807.5.3.4 Other areas in Groups I-2 *and R-2.1*. In Groups I-2 *and R-2.1* occupancies, in areas not equipped throughout with an approved automatic sprinkler system, combustible decorative materials shall be of such limited quantities that a hazard of fire development or spread is not present. < <

807.5.4 Group I-3. In Group I-3, combustible decorative materials are prohibited.

807.5.5 Group I-4. Group I-4 occupancies shall comply with the requirements in Sections 807.5.5.1 through 807.5.5.3.

807.5.5.1 Storage in corridors and lobbies. Clothing and personal effects shall not be stored in corridors and lobbies.

Exceptions:

1. Corridors protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.
2. Corridors protected by an approved fire alarm system installed in accordance with Section 907.
3. Storage in metal lockers, provided that the minimum required egress width is maintained.

807.5.5.2 Artwork in corridors. Artwork and teaching materials shall be limited on walls of corridors to not more than 20 percent of the wall area.

807.5.5.3 Artwork in classrooms. Artwork and teaching materials shall be limited on walls of classrooms to

not more than 50 percent of the specific wall area to which they are attached.

807.5.6 Dormitories in Group R-2. In Group R-2 dormitories, within sleeping units and dwelling units, the combustible decorative materials shall be of limited quantities such that a hazard of fire development or spread is not present.

807.5.7 Group F-1 motion picture and television production studio sound stages, approved production facilities and production locations without live audiences.

807.5.7.1 Foam plastics, decorations, textile and film materials. *Foam plastics, textile and film materials and other decorative materials and materials containing foam plastics shall be in accordance with the following:*

1. *Exhibit booth construction shall have a maximum heat-release rate of 100 kilowatts when tested in accordance with UL 1975.*
2. *Decorative objects, including but not limited to mannequins, murals and signs, shall have a maximum heat-release rate of 150 kilowatts when tested in accordance with UL 1975.*

   Exception: *When the aggregate area of murals, signs or similar decorative objects occupies less than 10 percent of the floor or wall area, this requirement may be waived by the fire chief.*
3. *Theater, motion picture and television stage settings with or without horizontal projections and simulated caves or caverns shall have a maximum heat-release rate of 100 kilowatts when tested in accordance with UL 1975.*

SECTION 808
FURNISHINGS OTHER THAN UPHOLSTERED FURNITURE AND MATTRESSES OR DECORATIVE MATERIALS IN NEW AND EXISTING BUILDINGS

808.1 Wastebaskets and linen containers in Group I-2 and I-3 occupancies and Group B ambulatory care facilities. Wastebaskets, linen containers and other waste containers, including their lids, located in Group I-2, I-3 *and R-2.1* occupancies and Group B ambulatory care facilities shall be constructed of noncombustible materials or of materials that meet a peak rate of heat release not exceeding 300 kW/m^2 when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation. Metal wastebaskets and other metal waste containers with a capacity of 20 gallons (75.7 L) or more shall be listed in accordance with UL 1315 and shall be provided with a noncombustible lid. Portable containers exceeding 32 gallons (121 L) shall be stored in an area classified as a waste and linen collection room and constructed in accordance with Table 509.1 of the *California Building Code.*

Exception: Recycling containers complying with Section 808.1.2 are not required to be stored in waste and linen collection rooms.

[California Code of Regulations, Title 19, Division 1, §3.19(b) and (c) Housekeeping.

Every building or portion of a building governed by California Code of Regulations, Title 19, Division 1 regulations shall be maintained in a neat orderly manner, free from any condition that would create a fire or life hazard or a condition which would add to or contribute to the rapid spread of fire. Provisions shall be made for the proper storage and disposal of waste materials and rubbish consistent with the following:

(b) All combustible waste material and rubbish shall be stored in approved containers or shall be stored in a manner approved by the enforcing agency as being consistent with standard fire prevention practices until such waste material and rubbish is removed from the premises or otherwise disposed of in a proper manner.

(1) Containers with a capacity exceeding 5.33 cubic feet (40 gallons) (0.15 m^3) shall comply with the provisions of California Code of Regulations, Title 24, Part 9, Section 304.3.

(2) Wastebaskets and linen containers in Group I-2 and I-3 occupancies shall comply with the provisions of California Code of Regulations, Title 24, Part 9, Section 808.

(c) Approved self-closing metal containers or listed disposal containers by an approved testing or listing agency shall be provided and maintained in all rooms or locations where oily rags, oily waste, paint rags or similar materials subject to spontaneous ignition are used, or are stored temporarily. Such containers shall be emptied daily.

808.1.1 Capacity density. The average capacity density of containers located in an individual room or space, other than waste and linen collection rooms, shall not be greater than 0.5 gal/ft^2 (20.4 L/m^2).

808.1.2 Recycling clean waste containers. Recycling clean waste containers, including their lids, shall not exceed an individual capacity of 96 gallons (363 L).

808.2 Waste containers with a capacity of 20 gallons or more in Group R-2 college and university dormitories. Waste containers, including their lids, located in Group R-2 college and university dormitories, and with a capacity of 20 gallons (75.7 L) or more, shall be constructed of noncombustible materials or of materials that meet a peak rate of heat release not exceeding 300 kW/m^2 when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation. Metal wastebaskets and other metal waste containers with a capacity of 20 gallons (75.7 L) or more shall be listed in accordance with UL 1315 and shall be provided with a noncombustible lid. Portable containers exceeding 32 gallons (121 L) shall be stored in an area classified as a waste and linen collection room constructed in accordance with Table 509.1 of the *California Building Code.*

808.3 Signs. Foam plastic signs that are not affixed to interior building surfaces shall have a maximum heat release rate of 150 kW when tested in accordance with UL 1975, or when

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 9 – FIRE PROTECTION AND LIFE SAFETY SYSTEMS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
901.5			X																				
901.6			X																				
[T-19 §1.14]				X																			
[T-19 §3.24]				X																			
[T-19 §904 (a)]				X																			
[T-19 §904 (a)(1)]				X																			
[T-19 §904 (b)]				X																			
[T-19 §904.2 (a)]				X																			
[T-19 §904.2 (b)]				X																			
[T-19 §904.2 (h)]				X																			
[T-19 §904.2 (i)]				X																			
901.6.1			X																				
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Table 901.6.1			X																				
[T-19 §904.1 (b)]				X																			
[T-19 §904.2 (c)]				X																			
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[T-19 §904.1 (c)]				X																			
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[T-19 §904.2 (e)]				X																			
[T-19 §904.2 (f)]				X																			
901.7			X																				
902.1			X																				
[T-19 §902.4 (b)]				X																			
Fire Appliance			X																				
[T-19 §902.9 (a)]				X																			
[T-19 §902.12 (a)]				X																			
[T-19 §902.15 (a)]				X																			
[T-19 §902.18 (a)]				X																			
[T-19 §902.19 (a)]				X																			
903.1.1			X																				
903.2			X																				
903.2.1.2			X																				
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903.2.4.1			X																				
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903.2.6.1			X																				

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Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
903.2.6.2			X																				
903.2.7			X																				
903.2.8			X																				
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903.2.8.3			X																				
903.2.8.4			X																				
903.2.10.2			X																				
Table 903.2.11.6			X																				
903.2.13 – 903.2.21			X																				
903.3.1.1			X																				
903.3.1.1.1			X																				
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904.1.1			†																				
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904.13			X																				
905.2			X																				
905.3			X																				
905.3.1			X																				
905.3.9			X																				
905.3.10			X																				
905.3.11			X																				

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Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
905.3.11.1				X																			
905.3.11.2				X																			
905.4				X																			
905.5				X																			
905.7.2				X																			
906.1			X																				
[T-19 §3.29 (a-d)]				X																			
[T-19 §565 (a)]				X																			
906.2			X																				
[T-19 §565.1 (a-c)]				X																			
[T-19 §565.2 (a-e)]				X																			
[T-19 §566 (a-f)]				X																			
[T-19 §567.8]				X																			
[T-19 §574.1]				X																			
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[T-19 §574.3]				X																			
[T-19 §574.4]				X																			
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[T-19 §596.7 (a)(b)]				X																			
[T-19 §574.5 (a-c)]				X																			
906.2.1			X																				
[T-19 §567 (a-k)]				X																			
[T-19 §568 (a-e)]				X																			
[T-19 §569 (a-c)]				X																			
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Table 906.3(1)			X																				
906.3.2			X																				
Table 906.3(2)			X																				
906.3.4			X																				
[T-19 §573 (a-c)]				X																			
[T-19 §567.5]				X																			
[T-19 §567.3]				X																			
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[T-19 §567.2]				X																			
[T-19 §567.7]				X																			
[T-19 §573 (a-c)]				X																			
907.1.2			X																				
907.1.3			X																				
907.1.4			X																				
907.1.5			X																				

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CHAPTER 9 – FIRE PROTECTION AND LIFE SAFETY SYSTEMS—continued

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				X																			
Chapter / Section																							
907.2			X																				
907.2.1			X																				
907.2.1.1			X																				
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			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				X																			
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907.2.11.3			X																				
907.2.11.4			X																				
907.2.11.8			X																				
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Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
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This state agency does not adopt sections identified with the following symbol: †

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

SECTION 903
AUTOMATIC SPRINKLER SYSTEMS

903.1 General. Automatic sprinkler systems shall comply with this section.

903.1.1 Alternative protection. Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted instead of automatic sprinkler *system* protection where recognized by the applicable standard and approved by the fire code official.

903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12 *and Sections 903.2.14 through 903.2.21*.

903.2.1 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section.

903.2.1.1 Group A-1. An automatic sprinkler system shall be provided throughout stories containing Group A-1 occupancies and throughout all stories from the Group A-1 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m^2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The fire area contains a multiple-theater complex.

903.2.1.2 Group A-2. An automatic sprinkler system shall be provided throughout stories containing Group A-2 occupancies and throughout all stories from the Group A-2 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464 m^2).
2. The fire area has an occupant load of 100 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. *The structure exceeds 5,000 square feet (465 m^2), contains more than one fire area containing a Group A-2 occupancy, and is separated into two or more buildings by fire walls of not less than 4-hour fire-resistance rating without openings.*

903.2.1.3 Group A-3. An automatic sprinkler system shall be provided throughout stories containing Group A-3 occupancies and throughout all stories from the Group A-3 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m^2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. *The structure exceeds 12,000 square feet (1155 m^2), contains more than one fire area containing exhibition and display rooms, and is separated into two or more buildings by fire walls of not less than 4-hour fire-resistance rating without openings.*

903.2.1.4 Group A-4. An automatic sprinkler system shall be provided throughout stories containing Group A-4 occupancies and throughout all stories from the Group A-4 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m^2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

903.2.1.5 Group A-5. An automatic sprinkler system shall be provided for all enclosed Group A-5 accessory use areas in excess of 1,000 square feet (93 m^2).

903.2.1.5.1 Spaces under grandstands or bleachers. Enclosed spaces under grandstands or bleachers shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 where either of the following exist:

1. The enclosed area is 1,000 square feet (93 m^2) or less and is not constructed in accordance with Section 1030.1.1.1.
2. The enclosed area exceeds 1,000 square feet (93 m^2).

903.2.1.6 Assembly occupancies on roofs. Where an occupied roof has an assembly occupancy with an occupant load exceeding 100 for Group A-2 and 300 for other Group A occupancies, all floors between the occupied roof and the level of exit discharge shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

Exception: Open parking garages of Type I or Type II construction.

903.2.1.7 Multiple fire areas. An automatic sprinkler system shall be provided where multiple fire areas of Group A-1, A-2, A-3 or A-4 occupancies share exit or exit access components and the combined occupant load of these fire areas is 300 or more.

903.2.2 Ambulatory care facilities. An automatic sprinkler system shall be installed throughout the entire floor containing an ambulatory care facility where either of the following conditions exist at any time:

1. Four or more care recipients are incapable of self-preservation.

2. One or more care recipients that are incapable of self-preservation are located at other than the level of exit discharge serving such a facility.

In buildings where ambulatory care is provided on levels other than the level of exit discharge, an automatic sprinkler system shall be installed throughout the entire floor as well as all floors below where such care is provided, and all floors between the level of ambulatory care and the nearest level of exit discharge, the level of exit discharge, and all floors below the level of exit discharge.

Exception: Floors classified as an open parking garage are not required to be sprinklered.

903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 12,000 square feet (1115 m^2) in area.
2. The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies.

   Exception: In buildings where every classroom has not fewer than one exterior exit door at ground level, an automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area.
3. The Group E fire area has an occupant load of 300 or more.
4. *In rooms or areas with special hazards such as laboratories, vocational shops and other such areas where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.*
5. *Throughout any Group E structure greater than 12,000 square feet (1115 m^2) in area, which contains more than one fire area, and which is separated into two or more buildings by fire walls of not less than 4-hour fire-resistance rating without openings.*
6. *For public school state-funded construction projects see Section 903.2.19.*
7. *For public school campuses, Kindergarten through 12th grade, see Section 903.2.20.*

903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

1. A Group F-1 fire area exceeds 12,000 square feet (1115 m^2).
2. A Group F-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m^2).

903.2.4.1 Woodworking operations. An automatic sprinkler system shall be provided throughout all Group F-1 occupancy fire areas that contain woodworking operations in excess of 2,500 square feet (232 m^2) in area that generate finely divided combustible waste or use finely divided combustible materials. ***[SFM]*** *A fire wall of less than 4-hour fire-resistance rating without openings, or any fire wall with openings, shall not be used to establish separate fire areas.*

903.2.4.2 Group F-1 distilled spirits. An automatic sprinkler system shall be provided throughout a Group F-1 fire area used for the manufacture of distilled spirits.

903.2.4.3 Group F-1 upholstered furniture or mattresses. An automatic sprinkler system shall be provided throughout a Group F-1 fire area that exceeds 2,500 square feet (232 m^2) used for the manufacture of upholstered furniture or mattresses.

903.2.5 Group H. Automatic sprinkler systems shall be provided in high-hazard occupancies as required in Sections 903.2.5.1 through 903.2.5.3.

903.2.5.1 General. An automatic sprinkler system shall be installed in Group H occupancies.

903.2.5.2 Group H-5 occupancies. An automatic sprinkler system shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall be not less than that required under the *California Building Code* for the occupancy hazard classifications in accordance with Table 903.2.5.2.

Where the design area of the sprinkler system consists of a corridor protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13.

TABLE 903.2.5.2
GROUP H-5 SPRINKLER DESIGN CRITERIA

LOCATION	OCCUPANCY HAZARD CLASSIFICATION
Fabrication areas	Ordinary Hazard Group 2
Service corridors	Ordinary Hazard Group 2
Storage rooms without dispensing	Ordinary Hazard Group 2
Storage rooms with dispensing	Extra Hazard Group 2
Corridors	Ordinary Hazard Group 2

903.2.5.3 Pyroxylin plastics. An automatic sprinkler system shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg).

903.2.5.4 Group H occupancies located on the 11th story and above. *The fire sprinkler system shall be designed and zoned to provide separate indication upon water-flow for each side of the 2-hour fire-smoke barrier on the 11th story and above.*

903.2.6 Group I. An automatic sprinkler system shall be provided throughout buildings with a Group I fire area.

Exceptions:

1. *Those areas exempted by Section 407.6 of the California Building Code.*

2. *Pursuant to Health and Safety Code Section 13113 (d), Group I-2 occupancies, or any alterations thereto, located in Type IA construction in existence on March 4, 1972.*

903.2.6.1 Group I-2. *An existing, unsprinklered Group I-2, nurses' station open to fire-resistive exit access corridors shall be protected by an automatic sprinkler system located directly above the nurses' station. It shall be permitted to connect the automatic sprinkler system to the domestic water service.*

903.2.6.2 Group I-3. *Every building, or portion thereof, where inmates* or persons *are* in custody *or restrained shall be protected by an automatic sprinkler system conforming to NFPA 13. The main sprinkler control valve or valves and all other control valves in the system shall be locked in the open position and electrically supervised so that at least an audible and visual alarm will sound at a constantly attended location when valves are closed. The sprinkler branch piping serving cells may be embedded in the concrete construction.*

903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 12,000 square feet (1115 m^2).
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m^2).
4. ***[SFM]*** *The structure exceeds 24,000 square feet (465 m^2), contains more than one fire area containing a Group M occupancy, and is separated into two or more buildings by fire walls of not less than 4-hour fire-resistance rating without openings.*

903.2.7.1 High-piled storage. An automatic sprinkler system shall be provided as required in Chapter 32 in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

903.2.7.2 Group M upholstered furniture or mattresses. An automatic sprinkler system shall be provided throughout a Group M fire area where the area used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m^2).

903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

Exceptions:

1. *Existing Group R-3 occupancies converted to Group R-3.1 occupancies not housing bedridden clients, not housing nonambulatory clients above the first floor, and not housing clients above the second floor.*
2. *Existing Group R-3 occupancies converted to Group R-3.1 occupancies housing only one bedridden client and complying with Section 435.8.3.3 of the California Building Code.*
3. *Pursuant to Health and Safety Code, Section 13113, occupancies housing ambulatory children only, none of whom are mentally ill children or children with intellectual disabilities, and the buildings or portions thereof in which such children are housed are not more than two stories in height, and buildings or portions thereof housing such children have an automatic fire alarm system activated by approved smoke detectors.*
4. *Pursuant to Health and Safety Code, Section 13143.6, occupancies licensed for protective social care which house ambulatory clients only, none of whom is a child (under the age of 18 years), or who is elderly (65 years of age or over).*

   When not used in accordance with area or height increases for automatic fire sprinklers allowed in the California Building Code, an automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be allowed in Group R-2.1 occupancies.

   An automatic sprinkler system designed in accordance with Section 903.3.1.3 shall not be utilized in Group R-2.1 or R-4 occupancies.

903.2.8.1 Group R-3. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

903.2.8.2 ***Reserved.***

903.2.8.3 Group R-4. An automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4 occupancies. <

903.2.8.4 ***Group R-3.1.*** An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in *Group R-3.1 occupancies with six* or fewer individuals in a single-family dwelling.

903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m^2).
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m^2).
4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m^2).

903.2.9.1 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used

as repair garages in accordance with Section 406.8 of the *California Building Code*, as shown:

1. Buildings having two or more stories above grade plane, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (929 m^2).
2. Buildings not more than one story above grade plane, with a fire area containing a repair garage exceeding 12,000 square feet (1115 m^2).
3. Buildings with repair garages servicing vehicles parked in basements.
4. A Group S-1 fire area used for the repair of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m^2).

903.2.9.2 Bulk storage of tires. Buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet (566 m^3) shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

903.2.9.3 Group S-1 distilled spirits or wine. An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine.

903.2.9.4 Group S-1 upholstered furniture and mattresses. An automatic sprinkler system shall be provided throughout a Group S-1 fire area where the area used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m^2).

Exception: Self-service storage facilities not greater than one story above grade plane where all storage spaces can be accessed directly from the exterior.

903.2.10 Group S-2 parking garages. An automatic sprinkler system shall be provided throughout buildings classified as parking garages where any of the following conditions exist:

1. Where the fire area of the enclosed parking garage, in accordance with Section 406.6 of the *California Building Code*, exceeds 12,000 square feet (1115 m^2).
2. Where the enclosed parking garage, in accordance with Section 406.6 of the *California Building Code*, is located beneath other groups.

   Exception: Enclosed parking garages located beneath Group R-3 occupancies.
3. Where the fire area of the open parking garage, in accordance with Section 406.5 of the *California Building Code*, exceeds 48,000 square feet (4460 m^2).

903.2.10.1 Commercial parking garages. An automatic sprinkler system shall be provided throughout buildings used for storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m^2).

903.2.10.2 Mechanical-access enclosed parking garages. An approved automatic sprinkler system shall be provided throughout buildings used for the storage of motor vehicles in a mechanical-access enclosed parking garage. The portion of the building that contains the mechanical-access enclosed parking garage shall be protected with a specially engineered automatic sprinkler system.

903.2.11 Specific buildings areas and hazards. In all occupancies other than Group U, an automatic sprinkler system shall be installed for building design or hazards in the locations set forth in Sections 903.2.11.1 through 903.2.11.6.

903.2.11.1 Stories without openings. An automatic sprinkler system shall be installed throughout all stories, including basements, of all buildings where the floor area exceeds 1,500 square feet (139 m^2) and where the story does not comply with the following criteria for exterior wall openings:

1. Openings below grade that lead directly to ground level by an exterior stairway complying with Section 1011 or an outside ramp complying with Section 1012. Openings shall be located in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on not fewer than one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm).
2. Openings entirely above the adjoining ground level totaling not less than 20 square feet (1.86 m^2) in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on not fewer than one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm). The height of the bottom of the clear opening shall not exceed 44 inches (1118 mm) measured from the floor.

903.2.11.1.1 Opening dimensions and access. Openings shall have a minimum dimension of not less than 30 inches (762 mm). Access to such openings shall be provided for the fire department from the exterior and shall not be obstructed in a manner such that fire fighting or rescue cannot be accomplished from the exterior.

903.2.11.1.2 Openings on one side only. Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet (22 860 mm) from such openings, the story shall be equipped throughout with an approved automatic sprinkler system, or openings shall be provided on not fewer than two sides of the story.

903.2.11.1.3 Basements. Where any portion of a basement is located more than 75 feet (22 860 mm) from openings required by Section 903.2.11.1, or where walls, partitions or other obstructions are installed that restrict the application of water from hose streams, the basement shall be equipped throughout with an approved automatic sprinkler system.

3. Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or 510.4 of the *California Building Code*, attics not required by Item 1 to have sprinklers shall comply with one of the following if the roof assembly is located more than 55 feet (16 764 mm) above the lowest level of fire department vehicle access needed to meet the provisions in Section 503:

    3.1. Provide automatic sprinkler system protection.

    3.2. Construct the attic using noncombustible materials.

    3.3. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the *California Building Code*.

    3.4. Fill the attic with noncombustible insulation.

    The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with Section 503.

903.3.1.3 NFPA 13D sprinkler systems. Automatic sprinkler systems installed in one- and two-family dwellings; Group R-3; Group R-4, Condition 1; and townhouses shall be permitted to be installed throughout in accordance with NFPA 13D *as amended in Chapter 80*.

903.3.2 Quick-response and residential sprinklers. Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers shall be installed in all of the following areas in accordance with Section 903.3.1 and their listings:

1. Throughout all spaces within a smoke compartment containing care recipient sleeping units in Group I-2 in accordance with the *California Building Code*.
2. *Reserved.*
3. Throughout all spaces within a smoke compartment containing treatment rooms in ambulatory care facilities.
4. Dwelling units and sleeping units in Group R occupancies.
5. Light-hazard occupancies as defined in NFPA 13.

903.3.3 Obstructed locations. Automatic sprinklers shall be installed with regard to obstructions that will delay activation or obstruct the water distribution pattern and shall be in accordance with the applicable automatic sprinkler system standard that is being used. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands or equipment that exceeds 4 feet (1219 mm) in width. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers.

Exception: Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with Section 904.

903.3.4 Actuation. Automatic sprinkler systems shall be automatically actuated unless specifically provided for in this code.

903.3.5 Water supplies. Water supplies for automatic sprinkler systems shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with *Health and Safety Code 13114.7*. For connections to public waterworks systems, the water supply test used for design of fire protection systems shall be adjusted to account for seasonal and daily pressure fluctuations based on information from the water supply authority and as approved by the fire code official.

903.3.5.1 Domestic services. Where the domestic service provides the water supply for the automatic sprinkler system, the supply shall be in accordance with this section.

903.3.5.2 Residential combination services. A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand as required by NFPA 13R.

903.3.6 Hose threads. Fire hose threads and fittings used in connection with automatic sprinkler systems shall be as prescribed by the fire code official.

903.3.7 Fire department connections. Fire department connections for automatic sprinkler systems shall be installed in accordance with Section 912.

903.3.8 Limited area sprinkler systems. Limited area sprinkler systems shall be in accordance with the standards listed in Section 903.3.1 except as provided in Sections 903.3.8.1 through 903.3.8.5.

903.3.8.1 Number of sprinklers. Limited area sprinkler systems shall not exceed six sprinklers in any single fire area.

903.3.8.2 Occupancy hazard classification. Only areas classified by NFPA 13 as Light Hazard or Ordinary Hazard Group 1 shall be permitted to be protected by limited area sprinkler systems.

903.3.8.3 Piping arrangement. Where a limited area sprinkler system is installed in a building with an automatic wet standpipe system, sprinklers shall be supplied by the standpipe system. Where a limited area sprinkler system is installed in a building without an automatic wet standpipe system, water shall be permitted to be supplied by the plumbing system provided

that the plumbing system is capable of simultaneously supplying domestic and sprinkler demands.

903.3.8.4 Supervision. Control valves shall not be installed between the water supply and sprinklers unless the valves are of an approved indicating type that are supervised or secured in the open position.

903.3.8.5 Calculations. Hydraulic calculations in accordance with NFPA 13 shall be provided to demonstrate that the available water flow and pressure are adequate to supply all sprinklers installed in any single fire area with discharge densities corresponding to the hazard classification.

903.3.9 Floor control valves. *Floor control valves and waterflow detection assemblies shall be installed at each floor where any of the following occur:*

1. *Buildings where the floor level of the highest story is located more than 30 feet above the lowest level of fire department vehicle access.*
2. *Buildings that are four or more stories in height.*
3. *Buildings that are two or more stories below the highest level of fire department vehicle access.*

Exception: *Group R-3 and R-3.1 occupancies floor control valves and waterflow detection assemblies shall not be required.*

903.4 Sprinkler system supervision and alarms. Valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a listed fire alarm control unit.

Exceptions:

1. Automatic sprinkler systems protecting one- and two-family dwellings.
2. Limited area sprinkler systems in accordance with Section 903.3.8.
3. Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the automatic sprinkler system, and a separate shutoff valve for the automatic sprinkler system is not provided.
4. Jockey pump control valves that are sealed or locked in the open position.
5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.
8. Underground key or hub gate valves in roadway boxes.

903.4.1 Monitoring. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an approved supervising station or, where approved by the fire code official, shall sound an audible signal at a constantly attended location.

Exception: Backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.

903.4.2 Alarms. *One exterior* approved audible device, located on the exterior of the building in an approved location, shall be connected to each automatic sprinkler system. Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system. *Visible alarm notification appliances shall not be required except when required by Section 907.*

903.4.3 Floor control valves. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor in high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access*..

903.5 Testing and maintenance. *Automatic* sprinkler systems shall be tested and maintained in accordance with Section 901.

903.6 Where required in existing buildings and structures. An automatic sprinkler system shall be provided in existing buildings and structures where required in Chapter 11.

SECTION 904
ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS

904.1 General. Automatic fire-extinguishing systems, other than automatic sprinkler systems, shall be designed, installed, inspected, tested and maintained in accordance with the provisions of this section and the applicable referenced standards.

[California Code of Regulations, Title 19, Division 1, §904(a)(2)] Required Inspection, Testing and Maintenance Frequencies.

(2) Engineered and pre-engineered fixed extinguishing systems shall be inspected, tested and maintained at least semi-annually, and immediately after a system activation.

[California Code of Regulations, Title 19, Division 1, §904(c)] Required Inspection, Testing and Maintenance Frequencies.

(c) Engineered and pre-engineered fixed extinguishing systems, regardless of installation date, shall be inspected, tested and maintained within the time periods specified in

[California Code of Regulations, Title 19, Division 1, §567.7] Sealed Cabinets.

Where extinguishers are installed in closed cabinets that are exposed to elevated temperatures, the cabinets shall be provided with screened openings and drains.

906.9 Extinguisher installation. The installation of portable fire extinguishers shall be in accordance with Sections 906.9.1 through 906.9.3.

906.9.1 Extinguishers weighing 40 pounds or less. Portable fire extinguishers having a gross weight not exceeding 40 pounds (18 kg) shall be installed so that their tops are not more than 5 feet (1524 mm) above the floor.

906.9.2 Extinguishers weighing more than 40 pounds. Hand-held portable fire extinguishers having a gross weight exceeding 40 pounds (18 kg) shall be installed so that their tops are not more than 3.5 feet (1067 mm) above the floor.

906.9.3 Floor clearance. The clearance between the floor and the bottom of installed hand-held portable fire extinguishers shall be not less than 4 inches (102 mm).

906.10 Wheeled units. Wheeled fire extinguishers shall be conspicuously located in a designated location.

SECTION 907
FIRE ALARM AND DETECTION SYSTEMS

907.1 General. This section covers the application, installation, performance and maintenance of fire alarm systems and their components in new and existing buildings and structures. The requirements of Section 907.2 are applicable to new buildings and structures. The requirements of Section 907.9 are applicable to existing buildings and structures.

907.1.1 Construction documents. Construction documents for fire alarm systems shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code; the *California Building Code*; and relevant laws, ordinances, rules and regulations, as determined by the fire code official.

907.1.2 Fire alarm shop drawings. Shop drawings for fire alarm systems shall be prepared in accordance with NFPA 72 and submitted for review and approval prior to system installation. *All plans and shop drawings shall use the symbols identified in NFPA 170, Standard for Fire Safety and Emergency Symbols.*

Exception: *Other symbols are allowed where approved by the enforcing agency.*

907.1.3 Equipment. Systems and components shall be *California State Fire Marshal* listed and approved *in accordance with California Code of Regulations, Title 19, Division 1* for the purpose for which they are installed.

907.1.4 Fire-walls and fire barrier walls. *For the purpose of Section 907, fire walls and fire barrier walls shall not define separate buildings.*

907.1.5 Fire alarm use. *A fire alarm system shall not be used for any purpose other than fire warning or mass notification and where permitted by NFPA 72.*

907.2 Where required—new buildings and structures. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through *907.2.29* and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code.

Not fewer than one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers *or automatic fire alarm systems*, a single fire alarm box shall be installed *at a location approved by the enforcing agency*.

Exceptions:

1. The manual fire alarm box is not required for fire alarm *control units* systems dedicated to elevator recall control, supervisory service *and fire sprinkler monitoring*.
2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is open to the public.
3. *The manual fire alarm box is not required to be installed when approved by the fire code official.*

907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more, or where the Group A occupant load is more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with Section 707.3.10 of the *California Building Code* shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes *with an occupant load of less than 1000* shall be provided with a fire alarm system as required for the Group E occupancy.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

Every Group A building used for educational purposes shall be provided with a manual or automatic fire alarm system. This provision shall apply to, but shall not necessarily be limited to, every community college and university.

Exception: *Privately owned trade or vocational schools or any firm or company which provides educational facilities and instructions for its employees.*

907.2.1.1 System initiation in Group A occupancies with an occupant load of 1,000 or more. Activation of the fire alarm in Group A occupancies with an occupant load of 1,000 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with Section 907.5.2.2. *For Group A occupancies with an occupant load of 10,000 or more, see Section 907.2.1.3.*

Exception: Where approved, the prerecorded announcement is allowed to be manually deactivated for a period of time, not to exceed 3 minutes, for the sole purpose of allowing a live voice announcement from an approved, constantly attended location.

907.2.1.2 Emergency voice/alarm communication system captions. Stadiums, arenas and grandstands required to caption audible public announcements shall be in accordance with Section 907.5.2.2.4.

907.2.1.3 Public address system. *Pursuant to Health and Safety Code Section 13108.9, for all buildings or structures constructed on or after July 1, 1991, which are intended for public assemblies of 10,000 or more persons, a public address system with an emergency backup power system shall be required.*

907.2.2 Group B. A manual fire alarm system, which activates the occupant notification system in accordance with Section 907.5, shall be installed in Group B occupancies where one of the following conditions exists:

1. The combined Group B occupant load of all floors is 500 or more.
2. The Group B occupant load is more than 100 persons above or below the lowest level of exit discharge.
3. The fire area contains an ambulatory care facility.
4. *For Group B occupancies containing educational facilities, see Section 907.2.2.2.*

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

907.2.2.1 Ambulatory care facilities. Fire areas containing ambulatory care facilities shall be provided with an electronically supervised automatic smoke detection system installed within the ambulatory care facility and in public use areas outside of tenant spaces, including public corridors and elevator lobbies.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 provided that the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

907.2.2.2 Group B Educational facilities. *Every Group B building used for educational purposes shall be provided with a manual or automatic fire alarm system. This provision shall apply to, but shall not necessarily be limited to, every community college and university.*

Exception: *Privately owned trade or vocational schools or any firm or company which provides educational facilities and instructions for its employees.*

907.2.3 Group E. A*n automatic* fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E occupancies *with an occupant load of 50 or more persons or containing more than one classroom or one or more rooms used for Group E or I-4 child-care purposes in accordance with this section.* Where automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. *One additional manual fire alarm box shall be located at the administration office or location approved by the AHJ.*

Exceptions:

1. *For public school state funded construction projects see Section 907.2.29.*
2. *For public schools see Section 907.2.3.7.*
3. *For private schools see Section 907.2.3.8.*

907.2.3.1 System connection. *Where more than one fire alarm control unit is used at the school campus, they shall be interconnected and shall operate all notification appliances.*

Exception: *Interconnection of fire alarm control units is not required when all of the following are provided:*

1. *Buildings that are separated a minimum of 20 feet (6096 mm) and in accordance with the California Building Code; and*
2. *There is a method of two-way communication between each classroom and the school administrative office approved by the fire enforcing agency; and*
3. *A method of manual activation of each fire alarm system is provided.*

907.2.3.2 Assemblies located within a Group E occupancy. *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 a fire alarm system as required for the Group E occupancy.*

907.2.3.3 Notification. *The fire alarm system notification shall comply with the requirements of Section 907.5.*

907.2.3.4 Annunciation. *Annunciation of the fire alarm system shall comply with the requirements of Section 907.6.4.1.*

907.2.3.5 Monitoring*. School fire alarm systems shall be monitored in accordance with Section 907.6.6.3.*

907.2.3.6 Automatic fire alarm system. *Automatic detection shall be provided in accordance with this section.*

907.2.3.6.1 Smoke detectors. *Smoke detectors shall be installed at the ceiling of every room and in "ceiling-plenums" utilized for environmental air. Where the ceiling is attached directly to the underside of the roof structure, smoke detectors shall be installed on the ceiling only.*

Exception: *Where the environment or ambient conditions exceed smoke detector installation guidelines, heat detectors or fire sprinklers shall be used.*

907.2.3.6.2 Heat detectors. *Heat detectors shall be installed in combustible spaces where sprinklers or smoke detectors are not installed.*

907.2.3.7 Public school campuses. *An automatic fire alarm system in compliance with Section 907.2.3 shall be provided in new buildings for all occupancies on Kindergarten through 12th grade public school campuses.*

Exceptions:

1. *A manual fire alarm system may be provided for a relocatable building that is sited with the intent that it be at the site for less than three years and is sited upon a temporary foundation in a manner that is designed to permit easy removal. Also see CCR, Title 24, Part 1, California Administrative Code, Section 4-314 for definition of relocatable building.*
2. *A fire alarm system is not required for detached buildings designed and used for non-instructional purposes that meet the applicable requirements for that occupancy. Buildings would include, but not be limited to:*

   Concession Stand
   Press Box
   Restroom Facilities
   Shade Structure
   Snack Bar
   Storage Building
   Ticket Booth

907.2.3.8 Private schools. *An automatic fire alarm system shall be provided in new buildings of private schools.*

Exception: *Automatic detection devices are not required where an approved automatic sprinkler system is installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate on sprinkler water flow and manual activation is provided from a normally occupied location.*

907.2.3.9 Day care, Group E.

907.2.3.9.1 *An automatic fire alarm system shall be provided in all buildings used as or containing a Group E day care.*

Exception: *Automatic detection devices are not required where an approved automatic sprinkler system is installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate on sprinkler water flow and manual activation is provided from a normally occupied location.*

907.2.3.9.2 *Smoke detectors shall be installed in every room used for sleeping or napping.*

907.2.3.10 Day care, Group E or Group I-4 located on a public school campus. *An automatic fire alarm system shall be provided in all buildings used as or containing a Group E or Group I-4 day care.*

907.2.4 Group F. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group F occupancies where both of the following conditions exist:

1. The Group F occupancy is two or more stories in height.
2. The Group F occupancy has a combined occupant load of 500 or more above or below the lowest level of exit discharge.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

907.2.5 Group H. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group H-5 occupancies and in occupancies used for the manufacture of organic coatings. An automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with Chapters 60, 62 and 63, respectively.

907.2.5.1 Group H occupancies located on the 11th story and above. *Manual fire alarm boxes shall be required on each side of the 2-hour fire-smoke barrier and at each exit on the 11th story and above.*

907.2.6 Group I. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group I occupancies. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be provided in accordance with Sections 907.2.6.1, 907.2.6.2 and 907.2.6.3.3.

Exceptions:

1. *Large family day care.*
2. Occupant notification systems are not required to be activated where private mode signaling installed in accordance with NFPA 72 is approved by the fire code official and staff evacuation responsibilities are included in the fire safety and evacuation plan required by Section 404.

907.2.6.1 ***Reserved.***

> **907.2.6.2 Group I-2.** *A manual and automatic fire alarm system shall be installed in Group I-2 occupancies. Where automatic fire suppression systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.*

> ***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, the buildings or structures comprising such facility shall be exempt from the provisions of this subsection relating to the installation of an automatic fire alarm system.*

> ***907.2.6.2.1 Notification.*** *The fire alarm notification system shall be in accordance with Section 907.5.2.5.*

> ***907.2.6.2.2 Automatic fire detection.*** *Smoke detectors shall be provided in accordance with this section.*

> 1. *In patient and client sleeping rooms. Actuation of such detectors shall cause a visual display on the corridor side of the room in which the detector is located and shall cause an audible and visual alarm at the respective nurses' station. A nurse call system listed for this function is an acceptable means of providing the audible and visual alarm at the respective nurses' station and corridor room display. Operation of the smoke detector shall not include any alarm verification feature.*

> ***Exception:*** *In patient and client rooms equipped with existing automatic door closers having integral smoke detector, the integral detector is allowed to substitute for the room smoke detector, provided it meets all the required alerting functions.*

> 2. *Group I-2 nurses' stations. A minimum of one (1) smoke detector shall be installed at the nurses' station and centrally located.*
> 3. *In waiting areas and corridors onto which they open, in the same smoke compartment, in accordance with Section 407.2.1 of the California Building Code.*
> 4. *In areas where patients are restrained, smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces of smoke compartments and in adjacent smoke compartments where occupants of those compartments utilize the same means of egress.*

907.2.6.3 Group I-3 occupancies. Group I-3 occupancies shall be equipped with a manual fire alarm system and automatic smoke detection system installed for alerting staff.

Exception: *An automatic smoke detection system is not required within temporary holding cells.*

907.2.6.3.1 System initiation. Actuation of an automatic fire-extinguishing system, automatic sprinkler system, a manual fire alarm box or a fire detector shall initiate an approved fire alarm signal that automatically notifies staff.

907.2.6.3.2 Manual fire alarm boxes. Manual fire alarm boxes are not required to be located in accordance with Section 907.4.2 where the fire alarm boxes are provided at staff-attended locations having direct supervision over areas where manual fire alarm boxes have been omitted.

907.2.6.3.2.1 Manual fire alarms boxes in detainee areas. Manual fire alarm boxes are allowed to be locked in areas occupied by detainees, provided that staff members are present within the subject area and have keys readily available to operate the manual fire alarm boxes.

907.2.6.3.3 Automatic smoke detection system. An automatic smoke detection system shall be installed throughout resident housing areas, including sleeping units and contiguous day rooms, group activity spaces and other common spaces normally open to *inmates*.

Exceptions:

1. Other approved smoke detection arrangements *may be used to prevent damage or tampering or for other purposes provided the function of detecting any fire is fulfilled and the location of the detectors is such that the speed of detection will be equivalent to that provided by the spacing and location required in accordance with NFPA 72 as referenced in Chapter 80. This may include the location of detectors in return air ducts from cells, behind grilles or in other locations. Spot type, combination duct and open area smoke detectors may be used when located not more than 14 inches (356 mm) from the return air grill. For initiation and annunciation purposes, these detectors may be combined in groups of four. The fire code official having jurisdiction, however, must approve the proposed equivalent performance of the design.*
2. *For detention housing and/or mental health housing area(s), including correctional medical and mental health uses, automatic smoke detection system in sleeping units shall not be required when all of the following conditions are met:*
   - *2.1. All rooms, including the inmate cells, are provided with an automatic sprinkler system in accordance with Section 903.3.1.1.*
   - *2.2. Building is continuously staffed by a correctional officer at all times.*
3. Smoke detectors are not required *to be installed in inmate cells with two or fewer occupants in detention facilities which do*

not have a correctional medical and mental health use.

4. *Smoke detectors are not required to be installed in inmate day rooms of detention facilities where 24-hour direct visual supervision is provided by a correctional officer(s) and a manual fire alarm box is located in the control room.*

907.2.6.3.4 System annunciation. *A staff alerting fire alarm shall sound at all staff control stations on the floor of activation and an audible and visual signal shall be indicated on an annunciator at the facility control center upon activation of any automatic extinguishing system, automatic detection system or any smoke detector or manual actuating or initiating device. In addition, where there are staff-control stations on the floor, an audible, visual and manual alarm shall be located in each staff control station.*

Fire and trouble signals of fire alarm systems and sprinkler water-flow and supervisory signals of extinguishing systems shall be annunciated in an area designated as the facility control center which shall be constantly attended by staff personnel. All such signals shall produce both an audible signal and visual display at the facility control center indicating the building, floor zone or other designated area from which the signal originated, in accordance with Section 907.6.4.

All local detention facilities within the scope of Section 6031.4 of the Penal Code shall have an automatic smoke detection system. A manual fire alarm-initiating device shall be installed in all guard control stations and shall be capable of alerting personnel in a central control point to the presence of fire or smoke within the facility.

907.2.6.4 Group I-4 occupancies. *An automatic smoke detection system shall be installed throughout the Group I-4 occupancies, including contiguous day rooms, group activity spaces and other common spaces normally occupied by the clients. Group I-4 facilities located above the first story shall comply with the provisions of Section 436.1.*

907.2.6.5 Large family day care. *Every large family day-care home shall be provided with at least one manual fire alarm box at a location approved by the enforcing agency. Such device shall actuate a fire alarm signal, which shall be audible throughout the facility at a minimum level of 15 db above ambient noise level. These devices need not be interconnected to any other fire alarm device, have a control panel or be electrically supervised or provided with emergency power. Such device or devices shall be attached to the structure and must be a device that is listed and approved by the Office of the State Fire Marshal.*

907.2.7 Group M. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group M occupancies where one of the following conditions exists:

1. The combined Group M occupant load of all floors is 500 or more persons.
2. The Group M occupant load is more than 100 persons above or below the lowest level of exit discharge.

Exceptions:

1. A manual fire alarm system is not required in covered or open mall buildings complying with Section 402 of the *California Building Code*.
2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will automatically activate throughout the notification zones upon sprinkler water flow.

907.2.7.1 Occupant notification. During times that the building is occupied, the initiation of a signal from a manual fire alarm box or from a waterflow switch shall not be required to activate the alarm notification appliances when an alarm signal is activated at a constantly attended location from which evacuation instructions shall be initiated over an emergency voice/alarm communication system installed in accordance with Section 907.5.2.2.

907.2.8 Group R-1. Fire alarm systems and smoke alarms shall be installed in Group R-1 occupancies as required in Sections 907.2.8.1 through 907.2.8.3.

907.2.8.1 Manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-1 occupancies.

Exceptions:

1. A manual fire alarm system is not required in buildings not more than two stories in height where all individual sleeping units and contiguous attic and crawl spaces to those units are separated from each other and public or common areas by not less than 1-hour fire partitions and each individual sleeping unit has an exit directly to a public way, egress court or yard.
2. Manual fire alarm boxes are not required throughout the building where all of the following conditions are met:
    2.1. The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
    2.2. The notification appliances will activate upon sprinkler water flow.
    2.3. Not fewer than one manual fire alarm box is installed at an approved location.

907.2.8.2 Automatic smoke detection system. An automatic smoke detection system that activates the

occupant notification system in accordance with Section 907.5 shall be installed throughout all interior corridors serving sleeping units.

Exception: An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.

907.2.8.3 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.11.

907.2.9 Group R-2, *R-2.1 and R-2.2*. Fire alarm systems and smoke alarms shall be installed in Group R-2 and *R-2.1* occupancies as required in Sections 907.2.9.1 and 907.2.9.3 through *907.2.10.2.1.1. Group R-2.2 shall be equipped throughout with an automatic fire alarm system and shall have a manual fire alarm pull station at the 24-hour staff watch office.*.

907.2.9.1 Manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies where any of the following conditions apply:

1. Any dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge.
2. Any dwelling unit or sleeping unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit or sleeping unit.
3. The building contains more than 16 dwelling units or sleeping units.
4. *Congregate residences with more than 16 occupants.*

Exceptions:

1. A fire alarm system is not required in buildings not more than two stories in height where all dwelling units or sleeping units and contiguous attic and crawl spaces are separated from each other and public or common areas by not less than 1-hour fire partitions and each dwelling unit or sleeping unit has an exit directly to a public way, egress court or yard.
2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.
3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1027.6, Exception 3.

907.2.9.2 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.11.

907.2.9.3 Group R-2 college and university buildings. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies operated by a college or university for student or staff housing in all of the following locations:

1. Common spaces outside of dwelling units and sleeping units.
2. Laundry rooms, mechanical equipment rooms and storage rooms.
3. All interior corridors serving sleeping units or dwelling units.

Required smoke alarms *and detectors listed in accordance with UL 268*, in dwelling units and sleeping units in Group R-2 occupancies operated by a college or university for student or staff housing shall be interconnected with the fire alarm system *to activate the occupant notification* in accordance with NFPA 72 *and shall comply with Section 907.2.11.7.*

907.2.10 Group S. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group S public- and self-storage occupancies three stories or greater in height for interior corridors and interior common areas. Visible notification appliances are not required within storage units.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

907.2.11 Single- and multiple-station smoke alarms. Listed single- and multiple-station smoke alarms complying with UL 217 shall be installed in accordance with Sections 907.2.11.1 through 907.2.11.7 and NFPA 72.

Exception: *For Group R occupancies. A fire alarm system with smoke detectors located in accordance with this section may be installed in lieu of smoke alarms. Upon actuation of the detector, only those noti-*

(12) For tray-shaped ceilings (coffered ceilings), smoke alarms and smoke detectors shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 inches (300 mm) vertically down from the highest point.

(13) Smoke alarms and detectors installed in rooms with joists or beams shall comply with the requirements of Section 17.7.3.2.4 of NFPA 72.

(14) Heat alarms and detectors installed in rooms with joists or beams shall comply with the requirements of Section 17.6.3 of NFPA 72.

**For additional requirements or clarification, see NFPA 72.*

907.2.12 Special amusement *areas*. An automatic smoke detection system shall be provided in special amusement *areas and throughout the exit access to the point of exit discharge* in accordance with Sections 907.2.12.1 through 907.2.12.3.

907.2.12.1 Alarm. Activation of any single smoke detector, the automatic sprinkler system or any other automatic fire detection device shall immediately activate an audible and visible alarm at the building at a constantly attended location from which emergency action can be initiated, including the capability of manual initiation of requirements in Section 907.2.12.2.

907.2.12.2 System response. The activation of two or more smoke detectors, a single smoke detector equipped with an alarm verification feature, the automatic sprinkler system or other approved fire detection device shall automatically do all of the following:

1. Cause illumination of the means of egress with light of not less than 1 footcandle (11 lux) at the walking surface level.
2. Stop any conflicting or confusing sounds and visual distractions.
3. Activate an approved directional exit marking that will become apparent in an emergency.
4. Activate a prerecorded message, audible throughout the special amusement *area and throughout the exit access to the point of exit discharge*, building, instructing patrons to proceed to the nearest exit. Alarm signals used in conjunction with the prerecorded message shall produce a sound that is distinctive from other sounds used during normal operation.

907.2.12.3 Emergency voice/alarm communication system. An emergency voice/alarm communication system, which is allowed to serve as a public address system, shall be installed in accordance with Section 907.5.2.2 and be audible throughout the entire special amusement *area and throughout the exit access to the point of exit discharge.*

907.2.13 High-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access.* *High-rise buildings and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* shall be provided with an automatic smoke detection system in accordance with Section 907.2.13.1, a fire department communication system in accordance with Section 907.2.13.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

Exceptions:

1. Airport traffic control towers in accordance with Section 907.2.22 of this code and Section 412 of the *California Building Code*.
2. Open parking garages in accordance with Section 406.5 of the *California Building Code*.
3. Buildings with an occupancy in Group A-5 in accordance with Section 303.1 of the *California Building Code*.
4. Low-hazard special occupancies in accordance with Section 503.1.1 of the *California Building Code*.
5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415 of the *California Building Code*.
6. In Group I-2 *and R-2.1* occupancies, the alarm shall sound at a constantly attended location and occupant notification shall be broadcast by the emergency voice/alarm communication system. <

907.2.13.1 Automatic smoke detection. Automatic smoke detection in high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* shall be in accordance with Sections 907.2.13.1.1 and 907.2.13.1.2.

907.2.13.1.1 Area smoke detection. Area smoke detectors shall be provided in accordance with this section. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this section shall activate the emergency voice/alarm communication system in accordance with Section 907.5.2.2. In addition to smoke detectors required by Sections 907.2.1 through 907.2.9, smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room that is not provided with sprinkler protection.
2. In each elevator machine room, machinery space, control room and control space and in elevator lobbies.

907.2.13.1.2 Duct smoke detection. *Smoke detectors listed for use in air duct systems shall be provided in accordance with this section and the California Mechanical Code. The activation of any detector required by this section shall initiate a visible and audible supervisory signal at a constantly*

attended location. Duct smoke detectors complying with Section 907.3.1 shall be located as follows:

1. In the main return air and exhaust air plenum of each air-conditioning system having a capacity greater than 2,000 cubic feet per minute (cfm) (0.94 m^3/s). Such detectors shall be located in a serviceable area downstream of the last duct inlet.
2. At each connection to a vertical duct or riser serving two or more stories from a return air duct or plenum of an air-conditioning system. In Group R-1 and R-2 occupancies, a smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m^3/s) and serving not more than 10 air-inlet openings.

907.2.13.2 Fire department communication system. Where a wired communication system is approved in lieu of an in-building, two-way emergency responder communication coverage system in accordance with Section 510, the wired fire department communication system shall be designed and installed in accordance with NFPA 72 and shall operate between a fire command center complying with Section 508, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, areas of refuge and inside interior exit stairways. The fire department communication device shall be provided at each floor level within the interior exit stairway.

907.2.13.3 Multiple-channel voice evacuation. In buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, voice evacuation systems for high-rise buildings shall be multiple-channel systems.

907.2.14 Atriums connecting more than two stories. A fire alarm system shall be installed in occupancies with an atrium that connects more than two stories, with smoke detection in locations required by a rational analysis in Section 909.4 and in accordance with the system operation requirements in Section 909.17. The system shall be activated in accordance with Section 907.5. Such occupancies in Group A, E or M shall be provided with an emergency voice/alarm communication system complying with the requirements of Section 907.5.2.2.

907.2.15 High-piled combustible storage areas. An automatic smoke detection system shall be installed throughout high-piled combustible storage areas where required by Section 3206.5.

907.2.16 Aerosol storage uses. Aerosol product rooms and general-purpose warehouses containing aerosol products shall be provided with an approved manual fire alarm system where required by this code.

907.2.17 Lumber, wood structural panel and veneer mills. Lumber, wood structural panel and veneer mills shall be provided with a manual fire alarm system.

907.2.18 Underground buildings with smoke control systems. Where a smoke control system is installed in an underground building in accordance with the *California Building Code*, automatic smoke detectors shall be provided in accordance with Section 907.2.18.1.

907.2.18.1 Smoke detectors. Not fewer than one smoke detector listed for the intended purpose shall be installed in all of the following areas:

1. Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.
2. Elevator lobbies.
3. The main return and exhaust air plenum of each air-conditioning system serving more than one story and located in a serviceable area downstream of the last duct inlet.
4. Each connection to a vertical duct or riser serving two or more floors from return air ducts or plenums of heating, ventilating and air-conditioning systems, except that in Group R occupancies, a listed smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m^3/s) and serving not more than 10 air inlet openings.

907.2.18.2 Alarm required. Activation of the smoke control system shall activate an audible alarm at a constantly attended location.

907.2.19 Deep underground buildings. Where the lowest level of a structure is more than 60 feet (18 288 mm) below the finished floor of the lowest level of exit discharge, the structure shall be equipped throughout with a manual fire alarm system, including an emergency voice/alarm communication system installed in accordance with Section 907.5.2.2.

907.2.20 Covered and open mall buildings. Where the total floor area exceeds 50,000 square feet (4645 m^2) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided. Access to emergency voice/alarm communication systems serving a mall, required or otherwise, shall be provided for the fire department. The system shall be provided in accordance with Section 907.5.2.2.

907.2.21 Residential aircraft hangars. Not fewer than one single-station smoke alarm shall be installed within a residential aircraft hangar as defined in Chapter 2 of the *California Building Code* and shall be interconnected into the residential smoke alarm or other sounding device to provide an alarm that will be audible in all sleeping areas of the dwelling.

907.2.22 Airport traffic control towers. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be provided in airport control towers in accordance with Sections 907.2.22.1 and 907.2.22.2.

Exception: Audible appliances shall not be installed within the control tower cab.

907.2.22.1 Airport traffic control towers with multiple exits and automatic sprinklers. Airport traffic control towers with multiple exits and equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be provided with smoke detectors in all of the following locations:

1. Airport traffic control cab.
2. Electrical and mechanical equipment rooms.
3. Airport terminal radar and electronics rooms.
4. Outside each opening into interior exit stairways.
5. Along the single means of egress permitted from observation levels.
6. Outside each opening into the single means of egress permitted from observation levels.

907.2.22.2 Other airport traffic control towers. Airport traffic control towers with a single exit or where sprinklers are not installed throughout shall be provided with smoke detectors in all of the following locations:

1. Airport traffic control cab.
2. Electrical and mechanical equipment rooms.
3. Airport terminal radar and electronics rooms.
4. Office spaces incidental to the tower operation.
5. Lounges for employees, including sanitary facilities.
6. Means of egress.
7. Utility shafts where access to smoke detectors can be provided.

907.2.23 Energy storage systems. An automatic smoke detection system or radiant-energy detection system shall be installed in rooms, areas and walk-in units containing energy storage systems as required in Section 1207.5.4.

907.2.24 Motion Picture and Television Production Studio Sound Stages and Approved Production Facilities

907.2.24.1 Sound Stages—Solid-ceiling Sets and Platforms. *Where required by Chapter 48, all interior solid-ceiling sets over 600 square feet (55.7 m^2) in area, and platforms (when provided) over 600 square feet (55.7 m^2) in area and which exceed 3 feet (914 mm) in height shall be protected by an approved heat detector system. Heat detectors shall be spaced 30 feet (9144 mm) on center or as required by the manufacturer's installation instructions. The fire alarm system shall be connected to an approved supervising station in accordance with Section 907.6.5 or a local alarm which will give an audible signal at a constantly attended location.*

907.2.24.2 Production locations—solid-ceiling sets and platforms. *Where required by Chapter 48 of the California Fire Code, buildings with existing fire protection systems and where production intends to construct solid-ceiling sets over 600 square feet (55.7 m^2) in area, and platforms over 600 square feet (55.7 m^2) in area and which exceed 3 feet (914 mm) in height shall be protected by an approved heat detector system. Heat detectors shall be spaced 30 feet (9144 mm) on center or as required by the manufacturer's installation instructions. The fire alarm system shall be connected to an approved supervising station in accordance with Section 907.6.6 or a local alarm which will give an audible signal at a constantly attended location.*

907.2.24.3 Fire alarm control units. *Fire alarm control units shall be California State Fire Marshal listed and shall be utilized in accordance with their listing. Control units are permitted to be temporarily supported by sets, platforms or pedestals.*

907.2.24.4 Heat detectors.

907.2.24.4.1 *Heat detection required by this section shall be defined as a portable system as it is intended to be reinstalled when platforms or sets are changed.*

907.2.24.4.2 *Heat detectors shall be secured to standard outlet boxes and are allowed to be temporarily supported by sets, platforms or pedestals.*

907.2.24.4.3 *Heat detectors shall be provided for solid-ceiling sets and platforms where required by Section 4805.3 and 4811.14.*

907.2.25 Group C occupancies (Organized Camps).

907.2.25.1 General. *Every building and structure used or intended for sleeping purposes shall be provided with an automatic smoke-detection system.*

Exception:

1. *Buildings and structures in existence and in operation prior to January 1, 1985.*
2. *Tents, tent structures and buildings and structures that do not exceed 25 feet (7620 mm) in any lateral dimensions and where such building or structure is not more than one story.*

907.2.25.2 Camp fire alarm. *Every organized camp shall provide and maintain audible appliances or devices suitable for sounding a fire alarm. Such audible appliances or devices may be of any type acceptable to the enforcing agency, provided they are distinctive in tone from all other signaling devices or systems and shall be audible throughout the camp premises. When an automatic fire alarm system is provided, as required by Section 450.6.6 of the California Building Code, all audible appliances required by this section shall be of the same type as that used in the automatic system.*

[California Code of Regulations, Title 19, Division 1, §3.12] Fire Alarm.

Every organized camp shall provide and maintain an audible appliance or audible appliances suitable for sounding a fire alarm. Such audible appliance or audible appliances may be of any type acceptable to the enforcing agency provided they are distinctive in tone from all other signaling devices or systems and shall be audible throughout the camp premises.

When an automatic fire alarm system is provided, all audible appliances and fire alarm signals as required by this section shall be of the same type as that used in the automatic system.

907.2.26 Fixed guideway and passenger rail transits systems fire alarm and communication systems.

907.2.26.1 General. *Every fixed guideway transit station shall be provided with an approved emergency voice/alarm communication system in accordance with NFPA 72. The emergency voice/alarm communication system shall be designed and installed so that damage to any one speaker will not render any paging zone of the system inoperative.*

Exception: *Open stations.*

907.2.26.2 System components. *Each station fire alarm system shall consist of:*

1. *Fire alarm control unit at a location as permitted by the enforcing agency.*
2. *An alarm annunciator(s). The annunciator(s) shall be located at a point acceptable to the enforcing agency. The annunciator(s) shall indicate the type of device and general location of alarm. All alarm, supervisory and trouble signals shall be transmitted to the local annunciator(s) and the operations control center.*
3. *Manual fire alarm boxes shall be provided throughout passenger platforms and stations.*

   Exception: *Two-way emergency communication reporting devices (emergency telephones) are allowed to be used in lieu of manual fire alarm boxes, as permitted by the enforcing agency. Such devices shall provide two-way communication between the operations control center and each device. Such devices shall be located as required for manual fire alarm boxes, and shall be distinctly identified by signs, coloring or other means acceptable to the enforcing agency.*
4. *Automatic smoke detectors in all ancillary spaces.*

   Exceptions:

   1. *Ancillary spaces protected by an approved fixed automatic extinguishing system; or*
   2. *Ancillary spaces protected by quick-response sprinklers.*
5. *Automatic control of exiting components.*

907.2.26.3 Emergency voice/alarm communication system. *Each station shall be provided with a an emergency voice/alarm communication system capable of transmitting voice, recorded or electronically generated textual messages to all areas of the station. The system(s) shall be configured such that the messages can be initiated from either the Emergency Management Panel (EMP) or the operations control center.*

907.2.26.4 Emergency telephones. *A dedicated two-way emergency communication phone system designed and installed in accordance with NFPA 72 shall be provided in all underground stations to facilitate direct communications for emergency response between remote locations and the EMP.*

907.2.26.4.1. *Remote emergency phones shall be located at ends of station platforms, each hose outlet connection and station valve rooms.*

907.2.26.4.2. *Provisions shall be made in the design of this two-way emergency communication phone system for extensions of the system to the next passenger station or guideway portal.*

907.2.27 Winery caves. *An approved manual fire alarm system conforming to the provisions of Section 907.2.1 shall be provided in all Type 3 winery caves.*

907.2.28 Group L. *A manual fire alarm system shall be installed throughout buildings having Group L occupancy.*

When Group L occupancies are located in mixed use buildings, at least one manual fire alarm box shall be located within the Group L occupancy.

907.2.28.1 Group L occupancies located on the 11th story and above. *Manual fire alarm boxes shall be required on each side of the 2-hour fire-smoke barrier and at each exit on the 11th story and above.*

907.2.29 Public school state-funded construction projects for kindergarten through 12th grade — automatic fire alarm system requirements.

907.2.29.1 Alterations to existing buildings on an existing public school campus. *An automatic fire alarm system shall be provided for all portions within the scope of an alteration project. The provisions of this section shall apply to any public school project on an existing campus and receiving state funds pursuant to Leroy F. Green, School Facilities Act of 1998, California Education Code, Sections 17070.10 through 17079. For purposes of this section, an existing campus refers to a school site, where an application for construction of original buildings was made to DSA prior to July 1, 2002.*

Exceptions:

1. *A manual fire alarm system may be provided for a construction project that has an estimated total cost of less than $200,000.*
2. *A manual fire alarm system may be provided for a relocatable building that is sited with the intent that it be at the site for less than three years and is sited upon a temporary foundation in a manner that is designed to permit easy removal. See California Administrative Code, Section 4-314 for definition of relocatable building.*
3. *A fire alarm system is not required for detached buildings designed and used for non-instructional purposes that meet the applicable requirements for that occupancy. Buildings would include, but not be limited to:*

   Concession stand.
   Press box.
   Restroom facilities.

Shade structure.
Snack bar.
Storage building.
Ticket booth.

907.3 Fire safety functions. Automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building's fire alarm control unit where a fire alarm system is required by Section 907.2. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances or activate a visible and audible supervisory signal at a constantly attended location. In buildings not equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72.

907.3.1 Duct smoke detectors. Smoke detectors installed in ducts shall be listed for the air velocity, temperature and humidity present in the duct. Duct smoke detectors shall be connected to the building's fire alarm control unit where a fire alarm system is required by Section 907.2. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the *California Mechanical Code*. In facilities that are required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal and not as a fire alarm. They shall not be used as a substitute for required open area detection.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.
2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and an audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

907.3.2 Special locking systems. Where special locking systems are installed on means of egress doors in accordance with Section 1010.2.14 or 1010.2.13, an automatic *smoke* detection system shall be installed as required by *those* sections *and Sections 907.3.2.1 through 907.3.2.5*.

907.3.2.1 Delayed egress. *In other than Group I, Group R-2.1 and Group R-4, occupancies for single-story building smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces. For multiple-story buildings, smoke detectors shall be installed throughout all occupied areas and mechanical/electrical spaces for the story where delayed egress devices are installed. Additional detectors are required on adjacent stories where occupants of those stories utilize the same means of egress.*

Exception: *Refer to Section 907.3.2.4 for Group A courthouse occupancies.*

907.3.2.2 Delayed egress for Group I and R-2.1 occupancies. *Smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces of smoke-compartments where delayed egress devices are installed. Additional detectors are required in adjacent smoke-compartments where occupants of those compartments utilize the same means of egress.*

907.3.2.3 Delayed egress for Group R-4 occupancies. *In occupancies licensed as residential care facilities for the elderly and housing clients with Alzheimer's disease or dementia, smoke detectors shall be installed at ceilings throughout all occupiable rooms and areas and mechanical/electrical rooms and spaces.*

907.3.2.4 Delayed egress for Group A Courthouse occupancies. *Approved automatic smoke detection systems shall be installed at ceilings in all occupied corridors and mechanical/electrical spaces of occupancies where delayed egress devices are installed.*

907.3.2.5 Controlled egress doors for Group I-2 occupancies. *Smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces of smoke-compartments where controlled egress doors are installed.*

907.3.3 Elevator emergency operation. Automatic fire detectors installed for elevator emergency operation shall be installed in accordance with the provisions of *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders* and NFPA 72.

907.3.3.1 Hoist way fire detection. *Smoke detectors or other automatic fire detection shall be provided in hoist ways in accordance with NFPA 72 for the following:*

1. *Where required by California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders, to initiate elevator phase I emergency recall.*
2. *Where required by Section 3003.4.3 to activate a hoist way ventilation system.*

907.3.4 Wiring. The wiring to the auxiliary devices and equipment used to accomplish the fire safety functions shall be monitored for integrity in accordance with NFPA 72.

907.4 Initiating devices. Where a fire alarm system is required by another section of this code, occupant notification in accordance with Section 907.5 shall be initiated by one or more of the following. Initiating devices shall be installed in accordance with Sections 907.4.1 through 907.4.3.1.

1. Manual fire alarm boxes.
2. Automatic fire detectors.
3. Automatic sprinkler system waterflow devices.
4. Automatic fire-extinguishing systems.

907.4.1 Protection of fire alarm control unit. In areas that are not continuously occupied, a single smoke detector shall be provided at the location of each fire alarm control unit, notification appliance circuit power extenders and supervising station transmitting equipment.

Exception: Where ambient conditions prohibit installation of a smoke detector, a heat detector shall be permitted.

907.4.2 Manual fire alarm boxes. Where a manual fire alarm system is required by another section of this code, it shall be activated by fire alarm boxes installed in accordance with Sections 907.4.2.1 through 907.4.2.6.

907.4.2.1 Location. Manual fire alarm boxes shall be located not more than 5 feet (1524 mm) from the entrance to each exit. In buildings not protected by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, additional manual fire alarm boxes shall be located so that the distance of travel to the nearest box does not exceed 200 feet (60 960 mm).

Exception: *When individual dwelling units are served by a single exit stairway, additional boxes at other than the ground floor may be omitted.*

907.4.2.2 Height. The height of the manual fire alarm boxes shall be not less than 42 inches (1067 mm) and not more than 48 inches (1372 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 11B309.4 of the California Building Code.*

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.*

907.4.2.3 Color. Manual fire alarm boxes shall be red in color.

907.4.2.4 Signs. Where fire alarm systems are not monitored by an approved supervising station in accordance with Section 907.6.6, an approved permanent sign shall be installed adjacent to each manual fire alarm box that reads: "WHEN ALARM SOUNDS—CALL FIRE DEPARTMENT."

Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.

907.4.2.5 Protective covers. The fire code official is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or to provide the manual fire alarm box with protection from physical damage. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions. A protective cover that emits a local alarm signal shall not be installed unless approved. Protective covers shall not project more than that permitted by Section 1003.3.3.

907.4.2.6 Unobstructed and unobscured. Manual fire alarm boxes shall be provided with ready access, unobstructed, unobscured and visible at all times.

907.4.2.7 Operation. *Manual fire alarm boxes shall be operable with one hand including boxes with protective covers.*

907.4.3 Automatic smoke detection. Where an automatic smoke detection system is required, it shall utilize smoke detectors unless ambient conditions prohibit such an installation. In spaces where smoke detectors cannot be utilized due to ambient conditions, approved automatic heat detectors shall be permitted.

907.4.3.1 Automatic sprinkler system. For conditions other than specific fire safety functions noted in Section 907.3, in areas where ambient conditions prohibit the installation of smoke detectors, an automatic sprinkler system installed in such areas in accordance with Section 903.3.1.1 or 903.3.1.2 and that is connected to the fire alarm system shall be approved as automatic heat detection.

907.5 Occupant notification. Occupant notification by fire alarms shall be in accordance with Sections 907.5.1 through *907.5.2.5.* Occupant notification by smoke alarms in Group R-1 and R-2 occupancies shall comply with Section 907.5.2.1.3.2.

907.5.1 Alarm activation and annunciation. Upon activation, fire alarm systems shall initiate occupant notification and shall annunciate at the fire alarm control unit, or where allowed elsewhere by Section 907, at a constantly attended location.

907.5.1.1 Presignal feature. A presignal feature shall only be provided where approved. The presignal shall be annunciated at an approved, constantly attended location, having the capability to activate the occupant notification system in the event of fire or other emergency.

Exception: *A presignal feature shall not be permitted to be installed in a Group I-2 or R-2.1 occupancy.* <

907.5.2 Alarm notification appliances. Alarm notification appliances shall be provided and shall be listed for their purpose.

907.5.2.1 Audible alarms. Audible alarm notification appliances shall be provided and emit a distinctive sound that is not to be used for any purpose other than that of a fire alarm. *In Group I-2 occupancies, audible appliances located in patient areas shall be only chimes or similar sounding appliances for alerting staff. See Section 907.5.2.5.*

Exceptions:

1. Audible alarm notification appliances are not required in *patient* areas of Group I-2 occupancies that are in compliance with Section *907.5.2.5.*
2. A visible alarm notification appliance installed in a nurses' control station or other continuously attended staff location in a Group I-2 *care* suite shall be an acceptable alternative to the installation of audible alarm notification appliances throughout a *care* suite in Group I-2 occupancies that are in compliance with Section *907.5.2.5.*
3. Where provided, audible notification appliances located in each enclosed occupant evacuation elevator lobby in accordance with Section 3008.9.1 of the *California Building*

Code shall be connected to a separate notification zone for manual paging only.

907.5.2.1.1 Average sound pressure. 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 a duration of not less than 60 seconds, whichever is greater, in every occupiable space within the building.

907.5.2.1.2 Maximum sound pressure. The total sound pressure level produced by combining the ambient sound pressure level with all audible notification appliances operating shall not exceed 110 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.

907.5.2.1.3 Audible signal frequency in Group R-1 and R-2 sleeping rooms. Audible signal frequency in Group R-1 and R-2 occupancies shall be in accordance with Sections 907.5.2.1.3.1 and 907.5.2.1.3.2.

907.5.2.1.3.1 Fire alarm system signal. In sleeping rooms of Group R-1 and R-2 occupancies, the audible alarm activated by a fire alarm system shall be a 520-Hz low-frequency signal complying with NFPA 72.

907.5.2.1.3.2 Smoke alarm signal in sleeping rooms. In sleeping rooms of Group R-1 and R-2 occupancies that are required by Section 907.2.8 or 907.2.9 to have a fire alarm system, the audible alarm signal activated by single- or multiple-station smoke alarms in the dwelling unit or sleeping unit shall be a 520-Hz signal complying NFPA 72.

Where a sleeping room smoke alarm is unable to produce a 520-Hz signal, the 520-Hz alarm signal shall be provided by a listed notification appliance or a smoke detector with an integral 520-Hz sounder.

907.5.2.1.4 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.*

907.5.2.2 Emergency voice/alarm communication systems. Emergency voice/alarm communication systems required by this code shall be designed and installed in accordance with NFPA 72. The operation of any automatic fire detector, sprinkler waterflow device or manual fire alarm box shall automatically sound an alert tone followed by voice instructions giving approved information and directions for a general or staged evacuation in accordance with the building's fire safety and evacuation plans required by Section 404. In high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access*, the system shall operate on at least the alarming floor, the floor above and the floor below. Speakers shall be provided throughout the building by paging zones. At a minimum, paging zones shall be provided as follows:

1. Elevator groups.
2. Interior exit stairways.
3. Each floor.
4. Areas of refuge as defined in Chapter 2.

Exception: In Group I-2 occupancies, *where in accordance with Section 907.5.2.5, audible fire alarm notification devices are not provided, upon receipt of an alarm at a constantly attended location, a general occupant notification shall be broadcast over the public-address system.* <

907.5.2.2.1 Manual override. A manual override for emergency voice communication shall be provided on a selective and all-call basis for all paging zones.

907.5.2.2.2 Live voice messages. The emergency voice/alarm communication system shall have the capability to broadcast live voice messages by paging zones on a selective and all-call basis.

907.5.2.2.3 Alternative uses. The emergency voice/alarm communication system shall be allowed to be used for other announcements, provided that the manual fire alarm use takes precedence over any other use.

907.5.2.2.4 Emergency voice/alarm communication captions. Where stadiums, arenas and grandstands *have 15,000 fixed seats or more and provide audible public announcements*, the emergency/voice alarm communication system shall provide prerecorded or real-time captions. Prerecorded or live emergency captions shall be from an approved location constantly attended by personnel trained to respond to an emergency.

907.5.2.2.5 Standby power. Emergency voice/alarm communications systems shall be provided with standby power in accordance with Section 1203.

907.5.2.3 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through *907.5.2.3.4*.

Exceptions:

1. *In other than Group I-2,* 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. <
2. Visible alarm notification appliances shall not be required in *enclosed exit stairways, enclosed exit ramps, exterior exit stairs and exterior exit ramps.*
3. Visible alarm notification appliances shall not be required in elevator cars.

4. Visual alarm notification appliances are not required in critical care areas of Group I-2 occupancies that are in compliance with Section *907.5.2.5*.
5. A visible alarm notification appliance installed in a nurses' control station or other continuously attended staff location in a Group I-2 *care* suite shall be an acceptable alternative to the installation of visible alarm notification appliances throughout the *care* suite in Group I-2 occupancies that are in compliance with Section *907.5.2.5*.

907.5.2.3.1 Public use areas 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. *Band rooms.*
2. *Classrooms.*
3. *Corridors.*
4. *Gymnasiums.*
5. *Lobbies.*
6. *Meeting and conference rooms.*
7. *Multipurpose rooms.*
8. *Music practice rooms.*
9. *Occupational shops.*
10. *Occupied rooms where ambient noise impairs hearing of the fire alarm.*
11. *Sanitary facilities including restrooms, bathrooms and shower rooms.*
12. *Shared office rooms used by two or more persons.*
13. *Normally occupied room(s) used by two or more persons, such as mother's room, phone room, quiet room, wellness room, etc.*
14. *Normally occupied storage room/area.*
15. *Exam rooms in medical office buildings.*

Exception: Where employee work areas have audible alarm coverage, the notification appliance circuits serving the employee work areas shall be initially designed with not less than 20-percent spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing-impaired employee(s).

907.5.2.3.2 Groups R-1 *and R-2.1*. Habitable spaces in dwelling units and sleeping units in Group R-1 *and R-2.1* occupancies in accordance with Table 907.5.2.3.2 shall be provided with visible alarm notification. Visible alarms shall be activated by the in-room smoke alarm and the building fire alarm system.

907.5.2.3.3 Group R-2. In Group R-2 occupancies required by Section 907 to have a fire alarm system, each story that contains dwelling units and sleeping units shall be provided with the capability to support future visible alarm notification appliances in accordance with *NFPA 72*. Such capability shall accommodate wired or wireless equipment.

TABLE 907.5.2.3.2
VISIBLE ALARMS

NUMBER OF SLEEPING UNITS	SLEEPING ACCOMMODATIONS WITH VISIBLE 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

[SFM] *Also see Chapter 11B of the California Building Code.*

907.5.2.3.3.1 Wired equipment. Where wired equipment is used to comply with the future capability required by Section 907.5.2.3.3, the system shall include one of the following capabilities:

1. The replacement of audible appliances with combination audible/visible appliances or additional visible notification appliances.
2. The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.
3. For wired equipment, the fire alarm power supply and circuits shall have not less than 5-percent excess capacity to accommodate the future addition of visible alarm notification appliances, and a single access point to such circuits shall be available on every story. Such circuits shall not be required to be extended beyond a single access point on a story. The fire alarm system shop drawings required by Section 907.1.2 shall include the power supply and circuit documentation to accommodate the future addition of visible notification appliances.

907.5.2.3.4 Group R-2.1, 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.*

907.5.2.4 Group E schools. *One audible alarm notification appliance shall be mounted on the exterior of a building to alert occupants at each playground area.*

907.5.2.5 Group I-2. *Audible appliances shall be used in nonpatient areas. Visible appliances are allowed to*

907.8.1 Maintenance required. Where required for compliance with the provisions of this code, devices, equipment, systems, conditions, arrangements, levels of protection or other features shall thereafter be continuously maintained in accordance with applicable NFPA requirements or as directed by the fire code official.

907.8.2 Testing. Testing shall be performed in accordance with the schedules in NFPA 72 or more frequently where required by the fire code official. Records of testing shall be maintained.

Exception: Devices or equipment that are inaccessible because of safety considerations shall be tested during scheduled shutdowns where approved by the fire code official, but not less than every 18 months.

907.8.3 Smoke detector sensitivity. Smoke detector sensitivity shall be checked within one year after installation and every alternate year thereafter. After the second calibration test, where sensitivity tests indicate that the detector has remained within its listed and marked sensitivity range (or 4-percent obscuration light gray smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to not more than 5 years. Where the frequency is extended, records of detector-caused nuisance alarms and subsequent trends of these alarms shall be maintained. In zones or areas where nuisance alarms show any increase over the previous year, calibration tests shall be performed.

907.8.4 Inspection, testing and maintenance. The building owner shall be responsible to maintain the fire and life safety systems in an operable condition at all times. Service personnel shall meet the qualification requirements of NFPA 72 for inspection, testing and maintenance of such systems. Records of inspection, testing and maintenance shall be maintained.

907.9 Where required in existing buildings and structures. An approved fire alarm system shall be provided in existing buildings and structures where required in Chapter 11.

907.10 Smoke alarm maintenance. Smoke alarms shall be tested and maintained in accordance with the manufacturer's instructions. Smoke alarms shall be replaced when they fail to respond to operability tests, or when they exceed 10 years from the date of manufacture, unless an earlier replacement is specified in the manufacturer's published instructions.

SECTION 908
EMERGENCY ALARM SYSTEMS

908.1 Group H occupancies. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as required in Chapter 50.

908.2 Group H-5 occupancy. Emergency alarms for notification of an emergency condition in an HPM facility shall be provided as required in Section 2703.12.

908.3 Fire alarm system interface. Where an emergency alarm system is interfaced with a building's fire alarm system, the signal produced at the fire alarm control unit shall be a supervisory signal.

908.4 Carbon dioxide enrichment systems. *A gas detection system shall be provided in rooms and indoor areas in which carbon dioxide enrichment processes are located in accordance with Section 5307.3.2.*

SECTION 909
SMOKE CONTROL SYSTEMS

909.1 Scope and purpose. This section applies to mechanical or passive smoke control systems where they are required for new buildings or portions thereof by provisions of the *California Building Code* or this code. The purpose of this section is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, the timely restoration of operations or for assistance in fire suppression or overhaul activities. Smoke control systems regulated by this section serve a different purpose than the smoke- and heat-removal provisions found in Section 910. Mechanical smoke control systems shall not be considered exhaust systems under Chapter 5 of the *California Mechanical Code*.

909.2 General design requirements. Buildings, structures, or parts thereof required by the *California Building Code* or this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to describe adequately the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied with sufficient information and analysis to demonstrate compliance with these provisions.

909.3 Special inspection and test requirements. In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 shall undergo special inspections and tests sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this section shall be conducted under the same terms as in Section 1704 of the *California Building Code*.

909.4 Analysis. A rational analysis supporting the types of smoke control systems to be employed, the methods of their operations, the systems supporting them and the methods of construction to be utilized shall accompany the construction

documents submission and include, but not be limited to, the items indicated in Sections 909.4.1 through 909.4.7.

909.4.1 Stack effect. The system shall be designed such that the maximum probable normal or reverse stack effect will not adversely interfere with the system's capabilities. In determining the maximum probable stack effect, altitude, elevation, weather history and interior temperatures shall be used.

909.4.2 Temperature effect of fire. Buoyancy and expansion caused by the design fire in accordance with Section 909.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.

909.4.3 Wind effect. The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of the *California Building Code*.

909.4.4 Systems. The design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis shall include all permutations of systems status. The design shall consider the effects of the fire on the heating, ventilating and air-conditioning systems.

909.4.5 Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.

909.4.6 Duration of operation. All portions of active or engineered smoke control systems shall be capable of continued operation after detection of the fire event for a period of not less than either 20 minutes or 1.5 times the calculated egress time, whichever is greater.

909.4.7 Smoke control system interaction. The design shall consider the interaction effects of the operation of multiple smoke control systems for all design scenarios.

909.5 Smoke barrier construction. Smoke barriers required for passive smoke control and a smoke control system using the pressurization method shall comply with Section 709 of the *California Building Code*. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios:

1. Walls: $A/A_w = 0.00100$
2. Interior exit stairways and ramps and exit passageways: $A/A_w = 0.00035$
3. Enclosed exit access stairways and ramps and all other shafts: $A/A_w = 0.00150$
4. Floors and roofs: $A/A_F = 0.00050$

where:

A = Total leakage area, square feet (m^2).

A_F = Unit floor or roof area of barrier, square feet (m^2).

A_w = Unit wall area of barrier, square feet (m^2).

The leakage area ratios shown do not include openings due to gaps around doors and operable windows. The total leakage area of the smoke barrier shall be determined in accordance with Section 909.5.1 and tested in accordance with Section 909.5.2.

909.5.1 Total leakage area. Total leakage area of the barrier is the product of the smoke barrier gross area multiplied by the allowable leakage area ratio, plus the area of other openings such as gaps around doors and operable windows.

909.5.2 Testing of leakage area. Compliance with the maximum total leakage area shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems utilizing the pressurization method. Compliance with the maximum total leakage area of passive smoke control systems shall be verified through methods such as door fan testing or other methods, as approved by the fire code official.

909.5.3 Opening protection. Openings in smoke barriers shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by fire door assemblies complying with Section 716 of the *California Building Code*.

Exceptions:

1. Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with Section 907.3. *When used in a Group I-2, such detectors shall activate the fire alarm system and shall close all the smoke barrier doors within the effected zone.* <
2. Fixed openings between smoke zones that are protected utilizing the airflow method *in other than Group I-2*. <
3. In Group I-2, *R-2.1* and ambulatory care facilities, where a pair of opposite-swinging doors are installed across a corridor in accordance with Section 909.5.3.1, the doors shall be protected in accordance with Section 716 of the *California Building Code*. The doors shall not have a center mullion. *Positive-latching devices are required. Doors installed across corridors shall comply with Section 1010.1.1.* <
4. In Group I-2, *R-2.1* and ambulatory care facilities, where such doors are special-purpose horizontal sliding, accordion or folding door assemblies installed in accordance with Section 1010.3.3 and are automatic closing by smoke detection in accordance with Section 716.2.6.6 of the *California Building Code they shall be protected in accordance with Section 716 of the California Building Code. Doors installed across corridors shall comply with Section 1010.1.1.* <
5. Group I-3.
6. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank-down capacity of greater than 20 minutes as determined by the design fire size.

> *7. In Group I-2, smoke damper activation may be accomplished by a fire alarm control unit provided that an open area smoke detection system is provided within all areas served by an HVAC system.*

> **909.5.3.1 Group I-2, *R-2.1* and ambulatory care facilities.** In Group I-2, *R-2.1* and ambulatory care facilities, where doors are installed across a corridor, the doors shall be automatic closing by smoke detection in accordance with Section 716.2.6.6 of the *California Building Code* and shall have a vision panel with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested. *In Group I-2, where swinging doors are installed across a corridor, such doors shall be opposite swinging pairs.*

909.5.3.2 Ducts and air transfer openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250°F (121°C) smoke damper complying with Section 717 of the *California Building Code*.

909.6 Pressurization method. The primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke-control zone of fire origin.

909.6.1 Minimum pressure difference. The pressure difference across a smoke barrier used to separate smoke zones shall be not less than 0.05-inch water gage (0.0124 kPa) in fully sprinklered buildings.

In buildings permitted to be other than fully sprinklered, the smoke control system shall be designed to achieve pressure differences not less than two times the maximum calculated pressure difference produced by the design fire.

909.6.2 Maximum pressure difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with Section 1010.1.3. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:

$$F = F_{dc} + K(WA\Delta P)/2(W - d) \qquad \textbf{(Equation 9-1)}$$

where:

A = Door area, square feet (m^2).

d = Distance from door handle to latch edge of door, feet (m).

F = Total door opening force, pounds (N).

F_{dc} = Force required to overcome closing device, pounds (N).

K = Coefficient 5.2 (1.0).

W = Door width, feet (m).

ΔP = Design pressure difference, inches of water (Pa).

909.6.3 Pressurized stairways and elevator hoistways. Where stairways or elevator hoistways are pressurized, such pressurization systems shall comply with Section 909 as smoke control systems, in addition to the requirements of Sections 909.20 and 909.21.

909.7 Airflow design method. Where approved by the fire code official, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design airflow shall be in accordance with this section. Airflow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be considered to prevent flow reversal from turbulent effects. Smoke control systems using the airflow method shall be designed in accordance with NFPA 92.

909.7.1 Prohibited conditions. This method shall not be employed where either the quantity of air or the velocity of the airflow will adversely affect other portions of the smoke control system, unduly intensify the fire, disrupt plume dynamics or interfere with exiting. Airflow toward the fire shall not exceed 200 feet per minute (1.02 m/s). Where the calculated airflow exceeds this limit, the airflow method shall not be used.

909.8 Exhaust method. Where approved by the fire code official, mechanical smoke control for large enclosed volumes, such as in atriums or malls, shall be permitted to utilize the exhaust method. Smoke control systems using the exhaust method shall be designed in accordance with NFPA 92.

909.8.1 Smoke layer. The height of the lowest horizontal surface of the smoke layer interface shall be maintained not less than 6 feet (1829 mm) above a walking surface that forms a portion of a required egress system within the smoke zone.

909.9 Design fire. The design fire shall be based on a rational analysis performed by the registered design professional and approved by the fire code official. The design fire shall be based on the analysis in accordance with Section 909.4 and this section.

909.9.1 Factors considered. The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire and whether the fire is likely to be steady or unsteady.

909.9.2 Design fire fuel. Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration.

909.9.3 Heat-release assumptions. The analysis shall make use of best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.

909.9.4 Sprinkler effectiveness assumptions. A documented engineering analysis shall be provided for conditions that assume fire growth is halted at the time of sprinkler activation.

909.10 Equipment. Equipment including, but not limited to, fans, ducts, automatic dampers and balance dampers shall be suitable for their intended use, suitable for the probable expo-

sure temperatures that the rational analysis indicates, and as approved by the fire code official.

909.10.1 Exhaust fans. Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by:

$$T_s = (Q_c/mc) + (T_a) \quad \textbf{(Equation 9-2)}$$

where:

c = Specific heat of smoke at smoke layer temperature, Btu/lb°F (kJ/kg × K).

m = Exhaust rate, pounds per second (kg/s).

Q_c = Convective heat output of fire, Btu/s (kW).

T_a = Ambient temperature, °F (K).

T_s = Smoke temperature, °F (K).

Exception: Reduced T_s as calculated based on the assurance of adequate dilution air.

909.10.2 Ducts. Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 909.10.1. Ducts shall be constructed and supported in accordance with the *California Mechanical Code*. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.

Exception: Flexible connections, for the purpose of vibration isolation, complying with the *California Mechanical Code* and that are constructed of approved fire-resistance-rated materials.

909.10.3 Equipment, inlets and outlets. Equipment shall be located so as to not expose uninvolved portions of the building to an additional fire hazard. Outside air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be so located as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.

909.10.4 Automatic dampers. Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of approved recognized standards.

909.10.5 Fans. In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty with the minimum number of belts being two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the structural design requirements of Chapter 16 of the *California Building Code*.

Motors driving fans shall not be operated beyond their nameplate horsepower (kilowatts) as determined from measurement of actual current draw and shall have a minimum service factor of 1.15.

909.11 Standby power. Smoke control systems shall be provided with standby power in accordance with Section 1203.

909.11.1 Equipment room. The standby power source and its transfer switches shall be in a room separate from the normal power transformers and switch gears and ventilated directly to and from the exterior. The room shall be enclosed with not less than 1-hour fire barriers constructed in accordance with Section 707 of the *California Building Code* or horizontal assemblies constructed in accordance with Section 711 of the *California Building Code*, or both.

909.11.2 Power sources and power surges. Elements of the smoke control system relying on volatile memories or the like shall be supplied with uninterruptable power sources of sufficient duration to span 15-minute primary power interruption. Elements of the smoke control system susceptible to power surges shall be suitably protected by conditioners, suppressors or other approved means.

909.12 Detection and control systems. Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

909.12.1 Verification. Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override and the presence of power downstream of all disconnects. A preprogrammed weekly test sequence shall report abnormal conditions audibly, visually and by printed report. The preprogrammed weekly test shall operate all devices, equipment and components used for smoke control.

Exception: Where verification of individual components tested through the preprogrammed weekly testing sequence will interfere with, and produce unwanted effects to, normal building operation, such individual components are permitted to be bypassed from the preprogrammed weekly testing, where approved by the fire code official and in accordance with both of the following:

1. Where the operation of components is bypassed from the preprogrammed weekly test, presence of power downstream of all disconnects shall be verified weekly by a listed control unit.
2. Testing of all components bypassed from the preprogrammed weekly test shall be in accordance with Section 909.20.6.

The status of dampers shall be determined using limit or proximity switches installed at the damper or incorporated into the damper actuator. Where multiple dampers are grouped together in an assembly requiring one or more actuators, each damper shall be independently con-

912.3 Fire hose threads. Fire hose threads used in connection with standpipe systems shall be approved and shall be compatible with fire department hose threads.

912.4 Access. Immediate access to fire department connections shall be maintained at all times and without obstruction by fences, bushes, trees, walls or any other fixed or moveable object. Access to fire department connections shall be approved by the fire code official.

Exceptions:

1. Fences, where provided with an access gate equipped with a sign complying with the legend requirements of Section 912.5 and a means of emergency operation. The gate and the means of emergency operation shall be approved by the fire code official and maintained operational at all times.

TABLE 911.1
EXPLOSION CONTROL REQUIREMENTS[f]

MATERIAL	CLASS	EXPLOSION CONTROL METHODS	
		Barricade construction	Explosion (deflagration) venting or explosion (deflagration) prevention systems
Hazard Category			
Combustible dusts[a]	—	Not required	Required
Cryogenic fluids	Flammable	Not required	Required
Explosives	Division 1.1	Required	Not required
	Division 1.2	Required	Not required
	Division 1.3	Not required	Required
	Division 1.4	Not required	Required
	Division 1.5	Required	Not required
	Division 1.6	Required	Not required
Flammable gas	Gaseous	Not required	Required[h]
	Liquefied	Not required	Required[h]
Flammable liquids	IA[b]	Not required	Required
	IB[c]	Not required	Required
Organic peroxides	Unclassified detonable	Required	Not permitted
	I	Required	Not permitted
Oxidizer liquids and solids	4	Required	Not permitted
Pyrophoric	Gases	Not required	Required
Unstable (reactive)	4	Required	Not permitted
	3 detonable	Required	Not permitted
	3 nondetonable	Not required	Required
Water-reactive liquids and solids	3	Not required	Required
	2[e]	Not required	Required
Special Uses			
Acetylene generator rooms	—	Not required	Required
Electrochemical energy storage systems[g]	—	Not required	Required
Energy storage systems[g]	—	Not required	Required
Grain processing	—	Not required	Required
Liquefied petroleum gas distribution facilities	—	Not required	Required
Where explosion hazards exist[d]	Detonation	Required	Not permitted
	Deflagration	Not required	Required

a. Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 104.8.2. See definition of "Combustible dust" in Chapter 2.
b. Storage or use.
c. In open use or dispensing.
d. Rooms containing dispensing and use of hazardous materials where an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process.
e. A method of explosion control shall be provided where Class 2 water-reactive materials can form potentially explosive mixtures.
f. Explosion venting is not required for Group H-5 Fabrication Areas complying with Chapter 27 and the *California Building Code*.
g. Where explosion control is required in Section 1207.6.3.
h. Not required for Category 1B flammable gases having a burning velocity not exceeding 3.9 in./s (10 cm/s).

2. *When acceptable to the fire enforcing agency, fire department connections for Group I-3 detention facilities may be located inside all security walls or fences on the property.*

912.4.1 Locking fire department connection caps. The fire code official is authorized to require locking caps on fire department connections for water-based fire protection systems where the responding fire department carries appropriate key wrenches for removal.

912.4.2 Clear space around connections. A working space of not less than 36 inches (914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be provided and maintained in front of and to the sides of wall-mounted fire department connections and around the circumference of free-standing fire department connections, except as otherwise required or approved by the fire code official.

912.4.3 Physical protection. Where fire department connections are subject to impact by a motor vehicle, vehicle impact protection shall be provided in accordance with Section 312.

912.5 Signs. A metal sign with raised letters not less than 1 inch (25 mm) in size shall be mounted on all fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: "AUTOMATIC SPRINKLERS" or "STANDPIPES" or "TEST CONNECTION" or a combination thereof as applicable. Where the fire department connection does not serve the entire building, a sign shall be provided indicating the portions of the building served.

912.6 Backflow protection. The potable water supply to automatic sprinkler and standpipe systems shall be protected against backflow as required by the *Health and Safety Code Section 13114.7*.

912.7 Inspection, testing and maintenance. Fire department connections shall be periodically inspected, tested and maintained in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5*. Records of inspection, testing and maintenance shall be maintained.

SECTION 913
FIRE PUMPS

913.1 General. Where provided, fire pumps for fire protection systems shall be installed in accordance with this section and NFPA 20.

Exception: Pumps for automatic sprinkler systems installed in accordance with Section 903.3.1.3 or Section *R313* of the *California Residential Code*.

913.2 Protection against interruption of service. The fire pump, driver and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

913.2.1 Protection of fire pump rooms. Rooms where fire pumps are located shall be separated from all other areas of the building in accordance with Section 913.2.1 of the *California Building Code*.

913.2.2 Circuits supplying fire pumps. Cables used for survivability of circuits supplying fire pumps shall be protected using one of the following methods:

1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a fire-resistance rating of not less than 1 hour.
2. Electrical circuit protective systems shall have a fire-resistance rating of not less than 1 hour. Electrical circuit protective systems shall be installed in accordance with their listing requirements.
3. Construction having a fire-resistance rating of not less than 1 hour.
4. The cable or raceway is encased in a minimum of 2 inches (51 mm) of concrete.

Exception: This section shall not apply to cables, or portions of cables, located within a fire pump room or generator room that is separated from the remainder of the occupancy with fire-resistance-rated construction.

913.3 Temperature of pump room. Suitable means shall be provided for maintaining the temperature of a pump room or pump house, where required, above 40°F (5°C).

913.3.1 Engine manufacturer's recommendation. Temperature of the pump room, pump house or area where engines are installed shall never be less than the minimum recommended by the engine manufacturer. The engine manufacturer's recommendations for oil heaters shall be followed.

913.4 Valve supervision. Where provided, the fire pump suction, discharge and bypass valves, and isolation valves on the backflow prevention device or assembly shall be supervised open by one of the following methods:

1. Central-station, proprietary or remote-station signaling service.
2. Local signaling service that will cause the sounding of an audible signal at a constantly attended location.
3. Locking valves open.
4. Sealing of valves and approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.

913.4.1 Test outlet valve supervision. Fire pump test outlet valves shall be supervised in the closed position.

913.5 Testing and maintenance. Fire pumps shall be inspected, tested and maintained in accordance with the requirements of this section and *California Code of Regulations, Title 19, Division 1, Chapter 5*. Records of inspection, testing and maintenance shall be maintained.

913.5.1 Acceptance test. Acceptance testing shall be done in accordance with the requirements of NFPA 20.

913.5.2 Generator sets. Engine generator sets supplying emergency or standby power to fire pump assemblies shall

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 10 – MEANS OF EGRESS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
1001.1			X																				
[T-19 §4.1 (a)]				X																			
[T-19 §4.1 (b)]				X																			
1003.1			X																				
1003.2			X																				
1003.3			X																				
1003.3.1			X																				
1003.3.3.1			X																				
1003.3.4			X																				
1003.5			X																				
[T-19 §3.27]				X																			
1004.1			X																				
Table 1004.5			X																				
1004.6				X																			
[T-19 §3.30]				X																			
1005.3.1			X																				
1005.3.2			X																				
1005.7.1			X																				
1005.7.2			X																				
1006.2.1			X																				
Table 1006.2.1			X																				
1006.2.2.2			X																				
1006.2.2.3			X																				
1006.2.2.4			X																				
1006.2.2.6			X																				
1006.2.2.8			X																				
1006.3.3			X																				
Table 1006.3.3(1)			X																				
Table 1006.3.3(2)			X																				
Table 1006.3.4(2)			X																				
1008.2			X																				
1008.3.2			X																				
1009.1			X																				
1009.2			X																				
1009.4			X																				
1009.5			X																				
1009.6.3			X																				
1009.8.1			X																				
1009.8.2			X																				

(continued)

CHAPTER 10 – MEANS OF EGRESS—continued

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
1009.10			X																				
1009.12			X																				
1010.1.1			X																				
1010.1.1.1, Exceptions			X																				
1010.1.2			X																				
1010.1.2.1			X																				
1010.1.4			X																				
1010.1.7			X																				
1010.1.8			X																				
1010.1.9.1			X																				
1010.1.9.9			X																				
1010.1.9.10			X																				
1010.1.9.11			X																				
1010.2.5			X																				
1010.2.8.1			X																				
1010.2.8.2			X																				
1010.2.9			X																				
1010.2.12.1			X																				
1010.2.13			X																				
1010.2.13.1			X																				
1010.2.14			X																				
1011.2			X																				
1011.5.2			X																				
1011.6			X																				
1011.11			X																				
1011.15			X																				
1012.6.3			X																				
1013.1			X																				
1013.2			X																				
1013.4			X																				
1013.6.3			X																				
1013.7			X																				
1013.8			X																				
1014.8			X																				
1015.3			X																				
1015.4			X																				
1016.2			X																				
Table 1017.2			X																				
1018			X																				
[T-19 §3.06 (a)]				X																			
[T-19 §3.06 (b)]				X																			

(continued)

CHAPTER 10 – MEANS OF EGRESS—continued

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				X																			
Chapter / Section																							
1018.3			X																				
1019.3			X																				
1019.4			X																				
Table 1020.1			X																				
1020.2, Exception 6			X																				
Table 1020.2			X																				
Table 1020.3			X																				
1020.4			X																				
1020.5			X																				
1020.6			X																				
1022.3			X																				
1023.2			X																				
1023.9			X																				
1023.9.1			X																				
1023.11.2			X																				
1024.2			X																				
1025.1			X																				
1029.1			X																				
1026.4.1			X																				
1026.4.2			X																				
1028.5			X																				
1030.1			X																				
1030.2			X																				
1030.3			X																				
1030.3.1			X																				
1030.6.3.2			X																				
1030.9.1			X																				
[T-19 §3.06 (a)]				X																			
1031.2			X																				
1031.2.1			X																				
[T-19 §4.2]				X																			
[T-19 §4.3 (a-c)]				X																			
[T-19 §4.4]				X																			
[T-19 §4.5 (a)]				X																			
[T-19 §4.6 (a)(b)]				X																			
[T-19 §3.11 (a-d)]				X																			
1032.2.1.2			X																				
1032.2.1.3			X																				

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

CHAPTER 10

MEANS OF EGRESS

User note:

About this chapter: *Chapter 10 provides the general criteria for designing the means of egress established as the primary method for protection of people in buildings by allowing timely relocation or evacuation of building occupants. Both prescriptive and performance language is utilized in this chapter to provide for a basic approach in the determination of a safe exiting system for all occupancies. This chapter addresses all portions of the egress system (exit access, exits and exit discharge) and includes design requirements as well as provisions regulating individual components. The requirements detail the size, arrangement, number and protection of means of egress components. Functional and operational characteristics that will permit the safe use of components without special knowledge or effort are specified.*

The means of egress protection requirements work in coordination with other sections of the code, such as protection of vertical openings (see Chapter 7), interior finish (see Chapter 8), fire suppression and detection systems (see Chapter 9) and numerous others, all having an impact on life safety. Sections 1003 through 1031 are duplicated text from Chapter 10 of the California Building Code*; however, the* California Fire Code *contains an additional Section 1032 on maintenance of the means of egress system in existing buildings. Retroactive minimum means of egress requirements for existing buildings are found in Chapter 11. Section 1010 was extensively reorganized for the 2021 edition. For complete information, see the relocations table in the preface information for the* California Building Code*.*

SECTION 1001
ADMINISTRATION

1001.1 General. Buildings or portions thereof shall be provided with a means of egress system as required by this chapter. The provisions of this chapter shall control the design, construction and arrangement of means of egress components required to provide an approved means of egress from structures and portions thereof. Sections 1003 through 1031 shall apply to new construction. Section 1032 shall apply to existing buildings.

Exception: Detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures shall comply with the *California Residential Code*.

[BE] 1001.2 Minimum requirements. It shall be unlawful to alter a building or structure in a manner that will reduce the number of exits or the capacity of the means of egress to less than required by this code.

SECTION 1002
DEFINITIONS

[BE] 1002.1 Definitions. The following terms are defined in Chapter 2:

ACCESSIBLE MEANS OF EGRESS.

AISLE.

AISLE ACCESSWAY.

ALTERNATING TREAD DEVICE.

AREA OF REFUGE.

BLEACHERS.

BREAKOUT.

COMMON PATH OF EGRESS TRAVEL.

CORRIDOR.

DOOR, BALANCED.

EGRESS COURT.

EMERGENCY ESCAPE AND RESCUE OPENING.

EXIT.

EXIT ACCESS.

EXIT ACCESS DOORWAY.

EXIT ACCESS RAMP.

EXIT ACCESS STAIRWAY.

EXIT DISCHARGE.

EXIT DISCHARGE, LEVEL OF.

EXIT PASSAGEWAY.

EXTERIOR EXIT RAMP.

EXTERIOR EXIT STAIRWAY.

FIRE EXIT HARDWARE.

FIXED SEATING.

FLIGHT.

FLOOR AREA, GROSS.

FLOOR AREA, NET.

FOLDING AND TELESCOPIC SEATING.

GRADE FLOOR EMERGENCY ESCAPE AND RESCUE OPENINGS.

GRANDSTAND.

GUARD.

HANDRAIL.

HORIZONTAL EXIT.

INTERIOR EXIT RAMP.

INTERIOR EXIT STAIRWAY.

LOW ENERGY POWER-OPERATED DOOR.

MEANS OF EGRESS.

MERCHANDISE PAD.

NOSING.

OCCUPANT LOAD.

OPEN-AIR ASSEMBLY SEATING.

OPEN-ENDED CORRIDOR.

PANIC HARDWARE.

PHOTOLUMINESCENT.

POWER-ASSISTED DOOR.

POWER-OPERATED DOOR.

PUBLIC WAY.

RAMP.

SCISSOR STAIRWAY.

SELF-LUMINOUS.

SMOKE-PROTECTED ASSEMBLY SEATING.

STAIR.

STAIRWAY.

STAIRWAY, INTERIOR EXIT.

STAIRWAY, SPIRAL.

WINDER.

[California Code of Regulations, Title 19, Division 1, §4.1(a)] Definitions.

(a) Burglar bars – Security bars located on the inside or outside of a door or window of a residential dwelling.

[California Code of Regulations, Title 19, Division 1, §4.1 (b)] Definitions.

(b) Residential Dwelling – A house, apartment, motel, hotel or other type of residential dwelling subject to the State Housing Law Part. 1.5 (commencing with Section 17910), Division 13 of Health and Safety Code and a manufactured home, mobilehome and multi-unit manufactured housing as defined in Part 2 (commencing with Section 18000) of Division 13 of the Health and Safety Code.

SECTION 1003
GENERAL MEANS OF EGRESS

[BE] 1003.1 Applicability. The general requirements specified in Sections 1003 through 1015 shall apply to all three elements of the means of egress system, in addition to those specific requirements for the exit access, the exit and the exit discharge detailed elsewhere in this chapter.

Exception: *Exiting requirements for Fixed Guideway Transit Systems shall be in accordance with Section 443 of the California Building Code.*

[BE] 1003.2 Ceiling height. The means of egress shall have a ceiling height of not less than 7 feet 6 inches (2286 mm) above the finished floor.

Exceptions:

1. Sloped ceilings in accordance with Section 1207.2 of the *California Building Code*.
2. Ceilings of dwelling units and sleeping units within residential occupancies in accordance with Section 1207.2 of the *California Building Code*.
3. Allowable projections in accordance with Section 1003.3.
4. Stair headroom in accordance with Section 1011.3.
5. Door height in accordance with Section 1010.1.1.
6. Ramp headroom in accordance with Section 1012.5.2.
7. The clear height of floor levels in vehicular and pedestrian traffic areas of public and private parking garages in accordance with Section 406.2.2 of the *California Building Code*.
8. Areas above and below mezzanine floors in accordance with Section 505.2 of the *California Building Code*.
9. *In Group I-2 and I-3 occupancies, the means of egress shall have a ceiling height of not less than 8 feet (2439 mm).* <

[BE] 1003.3 Protruding objects. Protruding objects on circulation paths shall comply with the requirements of Sections 1003.3.1 through 1003.3.4.

Exception: *In Group I-2 occupancies, protruding objects shall not extend more than 12 inches (305 mm) below the minimum ceiling height required by Section 1003.2.* <

[BE] 1003.3.1 Headroom. Protruding objects are permitted to extend below the minimum ceiling height required by Section 1003.2 where a minimum headroom of 80 inches (2032 mm) is provided over any circulation paths, including walks, corridors, aisles and passageways. *In other than Group I-2 occupancies,* 50 percent of the ceiling area of a means of egress shall be *permitted to be* reduced in height by protruding objects. <

Exception: Door closers and stops shall not reduce headroom to less than 78 inches (1981 mm).

A barrier shall be provided where the vertical clearance above a circulation path is less than 80 inches (2032 mm) high above the finished floor. The leading edge of such a barrier shall be located 27 inches (686 mm) maximum above the finished floor.

[BE] 1003.3.2 Post-mounted objects. A free-standing object mounted on a post or pylon shall not overhang that post or pylon more than 4 inches (102 mm) where the lowest point of the leading edge is more than 27 inches (686 mm) and less than 80 inches (2032 mm) above the finished floor. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (686 mm) maximum or 80 inches (2032 mm) minimum above the finished floor or ground.

Exception: These requirements shall not apply to sloping portions of handrails between the top and bottom riser of stairs and above the ramp run.

[BE] 1003.3.3 Horizontal projections. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the finished floor shall not project horizontally more than 4 inches (102 mm) into the circulation path.

Exception: Handrails are permitted to protrude $4^1/_2$ inches (114 mm) from the wall or guard.

> ***1003.3.3.1 Horizontal projections for Group I-2 occupancies.*** *Structural elements, fixtures or furnishings shall not project horizontally from either side more than $1^1/_2$ inches (38 mm) into the required width of an exit access corridor serving any area caring for one or more nonambulatory or bedridden persons.*

Exceptions:

1. *Handrails are permitted to protrude $3^1/_2$ inches (89 mm) from the wall.*
2. *Alcohol-based hand-rub dispensers are permitted to protrude 4 inches.*
3. *Manual fire alarm boxes with a protective cover installed are permitted to protrude 4 inches.*

[BE] 1003.3.4 Clear width. Protruding objects shall not reduce the minimum clear width of accessible routes *as* required *by Chapter 11A or 11B of the California Building Code.*

[BE] 1003.4 Slip-resistant surface. Circulation paths of the means of egress shall have a slip-resistant surface and be securely attached.

[BE] 1003.5 Elevation change. Where changes in elevation of less than 12 inches (305 mm) exist in the means of egress, sloped surfaces shall be used. Where the slope is greater than 1 unit vertical in 20 units horizontal (5-percent slope), ramps complying with Section 1012 shall be used. Where the difference in elevation is 6 inches (152 mm) or less, the ramp shall be equipped with either handrails or floor finish materials that contrast with adjacent floor finish materials.

Exceptions:

1. Steps at exterior doors complying with Section 1010.1.4.
2. A stair with a single riser or with two risers and a tread is permitted at locations not required to be accessible by Chapter *11A or 11B* of the *California Building Code*, where the risers and treads comply with Section 1011.5, the minimum depth of the tread is 13 inches (330 mm) and not less than one handrail complying with Section 1014 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the stair.
3. A step is permitted in aisles serving seating that has a difference in elevation less than 12 inches (305 mm) at locations not required to be accessible by Chapter *11A or 11B* of the *California Building Code*, provided that the risers and treads comply with Section 1030.14 and the aisle is provided with a handrail complying with Section 1030.16.

> Throughout a story in a Group I-2 occupancy, any change in elevation in portions of the means of egress that serve nonambulatory persons shall be by means of a ramp or sloped walkway.

[BE] 1003.6 Means of egress continuity. The path of egress travel along a means of egress shall not be interrupted by a building element other than a means of egress component as specified in this chapter. Obstructions shall not be placed in the minimum width or required capacity of a means of egress component except projections permitted by this chapter. The minimum width or required capacity of a means of egress system shall not be diminished along the path of egress travel.

[BE] 1003.7 Elevators, escalators and moving walks. Elevators, escalators and moving walks shall not be used as a component of a required means of egress from any other part of the building.

Exception: Elevators used as an accessible means of egress in accordance with Section 1009.4.

SECTION 1004
OCCUPANT LOAD

[BE] 1004.1 Design occupant load. In determining means of egress requirements, the number of occupants for whom means of egress facilities are provided shall be determined in accordance with this section.

[California Code of Regulations, Title 19, Division 1, §3.27] Overcrowding.

The number of occupants of any building, structure or portion thereof, shall not exceed the permitted or posted capacity.

[BE] 1004.2 Cumulative occupant loads. Where the path of egress travel includes intervening rooms, areas or spaces, cumulative occupant loads shall be determined in accordance with this section.

[BE] 1004.2.1 Intervening spaces or accessory areas. Where occupants egress from one or more rooms, areas or spaces through others, the design occupant load shall be the combined occupant load of interconnected accessory or intervening spaces. Design of egress path capacity shall be based on the cumulative portion of occupant loads of all rooms, areas or spaces to that point along the path of egress travel.

[BE] 1004.2.2 Adjacent levels for mezzanines. That portion of the occupant load of a mezzanine with required egress through a room, area or space on an adjacent level shall be added to the occupant load of that room, area or space.

[BE] 1004.2.3 Adjacent stories. Other than for the egress components designed for convergence in accordance with Section 1005.6, the occupant load from separate stories shall not be added.

[BE] 1004.3 Multiple-function occupant load. Where an area under consideration contains multiple functions having different occupant load factors, the design occupant load for such area shall be based on the floor area of each function calculated independently.

[BE] 1004.4 Multiple occupancies. Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served.

[BE] 1004.5 Areas without fixed seating. The number of occupants shall be computed at the rate of one occupant per unit of area as prescribed in Table 1004.5. For areas without fixed seating, the occupant load shall be not less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table 1004.5. Where an intended function is not listed in Table 1004.5, the fire code official shall establish a function based on a listed function that most nearly resembles the intended function.

Exception: Where approved by the fire code official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design occupant load.

[BE] TABLE 1004.5
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR[a]
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Exhibit gallery and museum	30 net
Assembly with fixed seats	See Section 1004.6
Assembly without fixed seats	
Concentrated (chairs only—not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	150 gross
Concentrated business use areas	See Section 1004.8
Courtrooms—other than fixed seating areas	40 net
Day care	35 net

(continued)

[BE] TABLE 1004.5—continued
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR[a]
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Group H-5 fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas[c]	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Laboratory *Educational (K–12)* *Laboratories, noneducational* *Laboratory suite*[b]	 *50 net* *100 net* *200 gross*
Library	
Reading rooms	50 net
Stack area	100 gross
Locker rooms	50 gross
Mall buildings—covered and open	See Section 402.8.2 of the *California Building Code*
Mercantile	60 gross
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross

For SI: 1 square foot = 0.0929 m^2, 1 foot = 304.8 mm.

a. Floor area in square feet per occupant.

b. See California Building Code Section 453.2.

c. See California Building Code Section 408.3.13 for I-3 facilities.

[BE] 1004.5.1 Increased occupant load. The occupant load permitted in any building, or portion thereof, is permitted to be increased from that number established for the occupancies in Table 1004.5, provided that all other requirements of the code are met based on such modified number and the occupant load does not exceed one occupant per 7 square feet (0.65 m^2) of occupiable floor space. Where required by the fire code official, an approved aisle, seating or fixed equipment diagram substantiating any increase in occupant load shall be submit-

the design occupant load or the common path of egress travel distance exceeds the values listed in Table 1006.2.1. The cumulative occupant load from adjacent rooms, areas or spaces shall be determined in accordance with Section 1004.2.

Exceptions:

1. The number of exits from foyers, lobbies, vestibules or similar spaces need not be based on cumulative occupant loads for areas discharging through such spaces, but the capacity of the *exits* from such spaces shall be based on applicable cumulative occupant loads.
2. *Rooms and c*are suites in Group I-2 occupancies complying with Section 407.4 of the *California Building Code*.
3. Unoccupied mechanical rooms and penthouses are not required to comply with the common path of egress travel distance measurement.
4. *In detention and correctional facilities and holding cells, such as are found in courthouse buildings, when the occupant load is more than 20 see Section 408.3.11 of the California Building Code.*

[BE] 1006.2.1.1 Three or more exits or exit access doorways. Three exits or exit access doorways shall be provided from any space with an occupant load of 501 to 1,000. Four exits or exit access doorways shall be provided from any space with an occupant load greater than 1,000.

[BE] 1006.2.2 Egress based on use. The numbers, configuration and types of components of exits or access to exits shall be provided in the uses described in Sections 1006.2.2.1 through *1006.2.2.7*.

[BE] 1006.2.2.1 Boiler, incinerator and furnace rooms. Two exit access doorways are required in boiler, incinerator and furnace rooms where the area is over 500 square feet (46 m^2) and any fuel-fired equip-

[BE] TABLE 1006.2.1
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A[c], E, M	49	75	75	75[a]
B	49	100	75	100[a]
F	49	75	75	100[a]
H-1, H-2, H-3	3	NP	NP	25[b]
H-4, H-5	10	NP	NP	75[b]
I-2[d], I-4	10	NP[i]	NP[i]	75[a]
I-3	10	NP	NP	100[a]
R-1	10	NP	NP	75[a]
R-2	20	NP	NP	125[a]
R-2.1	*10*	*NP*	*NP*	*75[a]*
R-2.2	*20*	*NP*	*NP*	*125[a]*
R-3[e], *R-3.1[e]*	20	NP	NP	125[a, g]
R-4[e]	20	NP	NP	125[a, g]
S[f]	29	100	75	100[a]
U	49	100	75	75[a]
L	*See Section 453.6.1 of the California Building Code*	*NP*	*NP*	*NP*

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

a. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2

b. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.

c. For a room or space used for assembly purposes having fixed seating, see Section 1030.8.

d. For the travel distance limitations *and number of exit and exit access requirements for rooms and spaces* in Group I-2, see Section 407.4 of the *California Building Code*.

e. The common path of egress travel distance shall apply only in a Group R-3 occupancy located in a mixed occupancy building.

f. The length of common path of egress travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

g. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6.

h. For holding cells, see Section 408.3.11 of the California Building Code.

i. In accordance with Health and Safety Code Section 13113(d), there is no requirement for automatic sprinkler protection in an existing Group I-2 located in Type IA construction.

ment exceeds 400,000 British thermal units (Btu) (422 000 KJ) input capacity. Where two exit access doorways are required, one is permitted to be a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the length of the maximum overall diagonal dimension of the room.

[BE] 1006.2.2.2 Refrigeration machinery rooms. Machinery rooms larger than 1,000 square feet (93 m^2) shall have not less than two exits or exit access doorways. Where two exit access doorways are required, one such doorway is permitted to be served by a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of the room.

All portions of machinery rooms shall be within 150 feet (45 720 mm) of an exit or exit access doorway.

Exit and exit access doorways shall swing in the direction of egress travel and shall be equipped with panic hardware, regardless of the occupant load served. Exit and exit access doorways shall be tight fitting and self-closing.

[BE] 1006.2.2.3 Refrigerated rooms or spaces. Rooms or spaces having a floor area larger than 1,000 square feet (93 m^2), containing a refrigerant evaporator and maintained at a temperature below 68°F (20°C), shall have access to not less than two exits or exit access doorways.

Exit access travel distance shall be determined as specified in Section 1017.1. *All* portions of a refrigerated room or space shall be within 150 feet (45 720 mm) of an exit or exit access doorway *leading to a non-refrigerated area* where such rooms are not protected by an approved automatic sprinkler system.

Exception: Where using refrigerants in quantities limited to the amounts based on the volume set forth in the *California Mechanical Code. Egress is allowed through adjoining refrigerated rooms or spaces.*

[BE] 1006.2.2.4 Electrical rooms. The location and number of exit or exit access doorways shall be provided for electrical rooms in accordance with Section 110.26 of *the California Electrical Code* for electrical equipment rated 1,000 volts or less, and Section 110.33 of *the California Electrical Code* for electrical equipment rated over 1,000 volts. Panic hardware shall be provided where required in accordance with Section 1010.2.9.2.

[BE] 1006.2.2.5 Vehicular ramps. Vehicular ramps shall not be considered as an exit access ramp unless pedestrian facilities are provided.

[BE] 1006.2.2.6 Groups R-3 and R-4. Where Group R-3 occupancies are permitted by Section 903.2.8 to be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.3, the exit access travel distance for Group R-3 shall be not more than 125 feet (38 100 mm). Where Group R-4 occupancies are permitted by Section 903.2.8 to be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.3, the exit access travel distance for Group R-4 shall be not more than 75 feet (22 860 mm).

1006.2.2.7 Large family day-care home. *Every story or basement of a large family day-care home shall be provided with two exits which are remotely located from each other. Every required exit shall be of a size to permit the installation of a door not less than 32 inches (813 mm) in clear width and not less than 6 feet 8 inches (2,032 mm) in height. A manually operated horizontal sliding door may be used as one of the two required exits.*

Where basements are used for day-care purposes, one of the two required exits shall provide access directly to the exterior without entering the first story. The second exit from the basement may either pass through the story above or exit directly to the exterior.

Rooms used for day-care purposes shall not be located above the first story.

Exception: *Buildings equipped with an automatic sprinkler system throughout and which have at least one of the required exits providing access directly to the exterior. NFPA 13R may be used in large family day-care homes. The sprinkler omissions of NFPA 13R shall not apply unless approved by the enforcing agency.*

Exit doors, including manually operated horizontal sliding doors, shall be openable from the inside without use of a key or any special knowledge or effort.

Tables 1006.3.3(1) and 1006.3.3(2) are not applicable to this occupancy classification.

1006.2.2.8 Group I-4 means of egress. *Group I-4 facilities, rooms or spaces where care is provided for more than 10 children that are 36 months of age or less shall have access to not less than two exits or exit access doorways.*

[BE] 1006.3 Egress from stories or occupied roofs. The means of egress system serving any story or occupied roof shall be provided with the number of separate and distinct exits or access to exits based on the aggregate occupant load served in accordance with this section.

[BE] 1006.3.1 Occupant load. Where stairways serve more than one story, or more than one story and an occupied roof, only the occupant load of each story or occupied roof, considered individually, shall be used when calculating the required number of exits or access to exits serving that story.

[BE] 1006.3.2 Path of egress travel. The path of egress travel to an exit shall not pass through more than one adjacent story.

Exception: The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

1. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or fewer serving and contained within an

individual dwelling unit or sleeping unit or live/work unit.

2. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
3. Exit access stairways and ramps within an atrium complying with Section 404.
4. Exit access stairways and ramps in open parking garages that serve only the parking garage.
5. Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7.
6. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
7. Exterior exit access stairways and ramps between occupied roofs.

[BE] 1006.3.3 Egress based on occupant load. Each story and occupied roof shall have the minimum number of separate and distinct exits, or access to exits, as specified in Table 1006.3.3. A single exit or access to a single exit shall be permitted in accordance with Section 1006.3.4. The required number of exits, or exit access stairways or ramps providing access to exits, from any story or occupied roof shall be maintained until arrival at the exit discharge or public way.

[BE] TABLE 1006.3.3
MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS PER STORY

OCCUPANT LOAD PER STORY	MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS FROM STORY
1–500	2
501–1,000	3
More than 1,000	4

[BE] 1006.3.4 Single exits. A single exit or access to a single exit shall be permitted from any story or occupied roof, where one of the following conditions exists:

1. The occupant load, number of dwelling units and exit access travel distance do not exceed the values in Table 1006.3.4(1) or 1006.3.4(2).
2. Rooms, areas and spaces *at the level of exit discharge*, complying with Section 1006.2.1 with exits that discharge directly to the exterior at the level of exit discharge, are permitted to have one exit or access to a single exit.
3. Parking garages where vehicles are mechanically parked shall be permitted to have one exit or access to a single exit.
4. Group R-3 and R-4 occupancies shall be permitted to have one exit or access to a single exit.
5. Individual single-story or multistory dwelling units shall be permitted to have a single exit or access to a single exit from the dwelling unit provided that both of the following criteria are met:
   5.1. The dwelling unit complies with Section 1006.2.1 as a space with one means of egress.
   5.2. Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.

[BE] 1006.3.4.1 Mixed occupancies. Where one exit, or exit access stairway or ramp providing access to exits at other stories, is permitted to serve individual stories, mixed occupancies shall be permitted to be served by single exits provided that each individual occupancy complies with the applicable requirements of Table 1006.3.4(1) or 1006.3.4(2) for that occupancy. Where applicable, cumulative occupant loads from adjacent occupancies shall be considered to be in accordance with the provisions of Section 1004.1. In each story of a mixed occupancy building, the maximum number of occupants served by a single exit shall be such that the sum of the ratios of the calculated number of occupants of the space divided by the allowable number of occupants indicated in Table 1006.3.4(2) for each occupancy does not exceed one. Where dwelling units are located on a story with other occupancies, the actual number of dwelling units divided by four plus the ratio from the other occupancy does not exceed one.

[BE] TABLE 1006.3.4(1)
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 *AND R-3* OCCUPANCIES

STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS	MAXIMUM EXIT ACCESS TRAVEL DISTANCE
Basement, first, second or third story above grade plane	R-2[a, b] *R-3*[a]	4 dwelling units *NA*	125 feet *NA*
Fourth story above grade plane and higher	*R-3*[a]	NA	*125 feet*

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 *or R-3* equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.

b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.4(2).

[BE] TABLE 1006.3.4(2)
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES[e]

STORY	OCCUPANCY	MAXIMUM OCCUPANT LOAD PER STORY	MAXIMUM EXIT ACCESS TRAVEL DISTANCE (feet)
First story above or below grade plane	A, B[b], E, F[b], M, U	49	75
	H-2, H-3	3	25
	H-4, H-5, I, R-1, R-2[a, c], *R-2.2*	10	75
	S[b, d]	29	75
	I-2	*7 occupants*	*50 feet*
Second story above grade plane	B, F, M, S[d]	29	75
Third story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.

b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall have a maximum exit access travel distance of 100 feet.

c. This table is used for R-2 occupancies consisting of sleeping units. For R-2 occupancies consisting of dwelling units, use Table 1006.3.4(1).

d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

e. For Group L occupancies see Section 453.6.1 of the California Building Code.

SECTION 1007
EXIT AND EXIT ACCESS DOORWAY CONFIGURATION

[BE] 1007.1 General. Exits, exit access doorways, and exit access stairways and ramps serving spaces, including individual building stories, shall be separated in accordance with the provisions of this section.

[BE] 1007.1.1 Two exits or exit access doorways. Where two exits, exit access doorways, exit access stairways or ramps, or any combination thereof, are required from any portion of the exit access, they shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between them. Interlocking or scissor stairways shall be counted as one exit stairway.

Exceptions:

1. Where interior exit stairways or ramps are interconnected by a 1-hour fire-resistance-rated corridor conforming to the requirements of Section 1020, the required exit separation shall be measured along the shortest direct line of travel within the corridor.
2. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance shall be not less than one-third of the length of the maximum overall diagonal dimension of the area served.

[BE] 1007.1.1.1 Measurement point. The separation distance required in Section 1007.1.1 shall be measured in accordance with the following:

1. The separation distance to exit or exit access doorways shall be measured to any point along the width of the doorway.
2. The separation distance to exit access stairways shall be measured to the closest riser.
3. The separation distance to exit access ramps shall be measured to the start of the ramp run.

[BE] 1007.1.2 Three or more exits or exit access doorways. Where access to three or more exits is required, not less than two exit or exit access doorways shall be arranged in accordance with the provisions of Section 1007.1.1. Additional required exit or exit access doorways shall be arranged a reasonable distance apart so that if one becomes blocked, the others will be available.

[BE] 1007.1.3 Remoteness of exit access stairways or ramps. Where two exit access stairways or ramps provide the required means of egress to exits at another story, the required separation distance shall be maintained for all portions of such exit access stairways or ramps.

[BE] 1007.1.3.1 Three or more exit access stairways or ramps. Where more than two exit access stairways or ramps provide the required means of egress, not less than two shall be arranged in accordance with Section 1007.1.3.

SECTION 1008
MEANS OF EGRESS ILLUMINATION

[BE] 1008.1 Means of egress illumination. Illumination shall be provided in the means of egress in accordance with Section 1008.2. Under emergency power, means of egress illumination shall comply with Section 1008.3.

[BE] 1008.2 Illumination required. The means of egress serving a room or space shall be illuminated at all times that the room or space is occupied.

Exceptions:

1. Occupancies in Group U.

2. Aisle accessways in Group A.
3. Dwelling units and sleeping units in Groups R-1, R-2 and R-3.
4. Sleeping units of Group I, *R-2.1 and R-4* occupancies.

[BE] 1008.2.1 Illumination level under normal power. The means of egress illumination level shall be not less than 1 footcandle (11 lux) at the walking surface. Along exit access stairways, exit stairways and at their required landings, the illumination level shall be not less than 10 footcandles (108 lux) at the walking surface when the stairway is in use.

Exception: For auditoriums, theaters, concert or opera halls and similar assembly occupancies, the illumination at the walking surface is permitted to be reduced during performances by one of the following methods provided that the required illumination is automatically restored upon activation of a premises' fire alarm system:

1. Externally illuminated walking surfaces shall be permitted to be illuminated to not less than 0.2 footcandle (2.15 lux).
2. Steps, landings and the sides of ramps shall be permitted to be marked with self-luminous materials in accordance with Sections 1025.2.1, 1025.2.2 and 1025.2.4 by systems listed in accordance with UL 1994.

[BE] 1008.2.2 Group I-2. In Group I-2 occupancies where two or more exits are required, on the exterior landings required by Section 1010.1.5, means of egress illumination levels for the exit discharge shall be provided such that failure of a single lamp in a luminaire shall not reduce the illumination level on that landing to less than 1 footcandle (11 lux).

[BE] 1008.2.3 Exit discharge. Illumination shall be provided along the path of travel for the exit discharge from each exit to the public way.

Exception: Illumination shall not be required where the path of the exit discharge meets both of the following requirements:

1. The path of exit discharge is illuminated from the exit to a safe dispersal area complying with Section 1028.5.
2. A dispersal area shall be illuminated to a level not less than 1 footcandle (11 lux) at the walking surface.

[BE] 1008.3 Emergency power for illumination. The power supply for means of egress illumination shall normally be provided by the premises' electrical supply.

[BE] 1008.3.1 General. In the event of power supply failure in rooms and spaces that require two or more exits or access to exits, an emergency electrical system shall automatically illuminate all of the following areas:

1. Aisles.
2. Corridors.
3. Exit access stairways and ramps.

[BE] 1008.3.2 Buildings. In the event of power supply failure, in buildings that require two or more exits or access to exits, an emergency electrical system shall automatically illuminate all of the following areas:

1. Interior exit access stairways and ramps.
2. Interior and exterior exit stairways and ramps.
3. Exit passageways.
4. Vestibules and areas on the level of discharge used for exit discharge in accordance with Section 1028.2.
5. Exterior landings as required by Section 1010.1.5 for exit doorways that lead directly to the exit discharge.
6. *Group I-2 exit discharge stairways, ramps, aisles, walkways and escalators leading to a public way or to a safe dispersal area in accordance with Section 1028.5.* <

[BE] 1008.3.3 Rooms and spaces. In the event of power supply failure, an emergency electrical system shall automatically illuminate all of the following areas:

1. Electrical equipment rooms.
2. Fire command centers.
3. Fire pump rooms.
4. Generator rooms.
5. Public restrooms with an area greater than 300 square feet (27.87 m^2).

[BE] 1008.3.4 Duration. The emergency power system shall provide power for a duration of not less than 90 minutes and shall consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702 of the *California Building Code.*

[BE] 1008.3.5 Illumination level under emergency power. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than an average of 1 footcandle (11 lux) and a minimum at any point of 0.1 footcandle (1 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 footcandle (6 lux) average and a minimum at any point of 0.06 footcandle (0.6 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded. In Group I-2 occupancies, failure of a single lamp in a luminaire shall not reduce the illumination level to less than 0.2 footcandle (2.2 lux).

SECTION 1009
ACCESSIBLE MEANS OF EGRESS

[BE] 1009.1 Accessible means of egress required. Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress is required by Section 1006.2 or 1006.3 from any accessible space, each accessible portion of the space shall be served by

not less than two accessible means of egress *in at least the same number as required by Section 1006.2 or 1006.3. In addition to the requirements of this chapter, means of egress, which provide access to, or egress from, buildings for persons with disabilities, shall also comply with the requirements of Chapter 11A or 11B of the California Building Code, as applicable.*

Exceptions:

1. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1009.3, 1009.4 or 1009.5 *and Chapter 11A or 11B of the California Building Code*.
2. In assembly areas with ramped aisles or stepped aisles, one accessible means of egress is permitted where the common path of travel is accessible and meets the requirements in Section 1030.8, *and Chapter 11A or 11B of the California Building Code.*

[BE] 1009.2 Continuity and components. Each required accessible means of egress shall be continuous to a public way and shall consist of one or more of the following components:

1. Accessible routes complying with *Chapter 11A or 11B of the California Building Code.*
2. Interior exit stairways complying with Sections 1009.3 and 1023 *of this code and Chapter 11A or 11B of the California Building Code.*
3. Exit access stairways complying with Sections 1009.3 and 1019.3 or 1019.4 *of this code and Chapter 11A or 11B of the California Building Code.*
4. Exterior exit stairways complying with Sections 1009.3 and 1027 and serving levels other than the level of exit discharge *of this code and Chapter 11A or 11B of the California Building Code.*
5. Elevators complying with Section 1009.4 *of this code and Chapter 11A or 11B of the California Building Code.*
6. Platform lifts complying with Section 1009.5 *of this code and Chapter 11A or 11B of the California Building Code.*
7. Horizontal exits complying with Section 1026.
8. Ramps complying with Section 1012 *of this code and Chapter 11A or 11B of the California Building Code.*
9. Areas of refuge complying with Section 1009.6.
10. Exterior areas for assisted rescue complying with Section 1009.7 serving exits at the level of exit discharge.

[BE] 1009.2.1 Elevators required. In buildings where a required accessible floor or occupied roof is four or more stories above or below a level of exit discharge, not less than one required accessible means of egress shall be an elevator complying with Section 1009.4.

Exceptions:

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a horizontal exit and located at or above the levels of exit discharge.
2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a ramp conforming to the provisions of Section 1012.

[BE] 1009.3 Stairways. In order to be considered part of an accessible means of egress, a stairway between stories shall comply with Sections 1009.3.1 through 1009.3.3.

[BE] 1009.3.1 Exit access stairways. Exit access stairways that connect levels in the same story are not permitted as part of an accessible means of egress.

Exception: Exit access stairways providing means of egress from mezzanines are permitted as part of an accessible means of egress.

[BE] 1009.3.2 Stairway width. Stairways shall have a clear width of 48 inches (1219 mm) minimum between handrails.

Exceptions:

1. The clear width of 48 inches (1219 mm) between handrails is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
2. The clear width of 48 inches (1219 mm) between handrails is not required for stairways accessed from a refuge area in conjunction with a horizontal exit.

[BE] 1009.3.3 Area of refuge. Stairways shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from an area of refuge complying with Section 1009.6.

Exceptions:

1. Areas of refuge are not required at exit access stairways where two-way communication is provided at the elevator landing in accordance with Section 1009.8.
2. Areas of refuge are not required at stairways in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Areas of refuge are not required at stairways serving open parking garages.
4. Areas of refuge are not required for smoke-protected or open-air assembly seating areas complying with Sections 1030.6.2 and 1030.6.3.
5. Areas of refuge are not required at stairways in Group R-2 occupancies.
6. Areas of refuge are not required for stairways accessed from a refuge area in conjunction with a horizontal exit.

requirements of Section 1022.2. Gates in the means of egress shall comply with the requirements of Sections 1010.4 and 1010.4.1. Turnstiles in the means of egress shall comply with the requirements of Sections 1010.5 through 1010.5.4.

Doors, gates and turnstiles provided for egress purposes in numbers greater than required by this code shall comply with the requirements of this section.

Doors in the means of egress shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Mirrors or similar reflecting materials shall not be used on means of egress doors. Means of egress doors shall not be concealed by curtains, drapes, decorations or similar materials.

[BE] 1010.1.1 Size of doors. The required capacity of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear opening width of 32 inches (813 mm). The clear opening width of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 32 inches (813 mm). In Group I-2 *or an ambulatory care facility*, doors serving as means of egress doors*;* where used for the movement of beds *and stretcher patients* shall provide a minimum clear opening width of *44 inches (1118 mm). Where this section requires a minimum clear opening width of 44 inches (1118 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 44 inches (1118 mm).* The minimum clear opening height of doors shall be not less than 80 inches (2032 mm).

Exceptions:

1. In Group R-2 and R-3 dwelling and sleeping units that are not required to be an Accessible unit, Type A unit or Type B unit, the minimum width shall not apply to door openings that are not part of the required means of egress.
2. Group I-3 door openings to resident sleeping units that are not required to be an Accessible unit shall have a minimum clear opening width of 28 inches (711 mm).
3. Door openings to storage closets less than 10 square feet (0.93 m^2) in area shall not be limited by the minimum clear opening width.
4. The maximum width of door leaves in revolving doors that comply with Section 1010.3.1 shall not be limited.
5. The maximum width of door leaves in power-operated doors that comply with Section 1010.3.2 shall not be limited.
6. Door openings within a dwelling unit or sleeping unit shall have a minimum clear opening height of 78 inches (1981 mm).
7. In dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, exterior door openings, other than the required exit door, shall have a minimum clear opening height of 76 inches (1930 mm).
8. In Groups R-2, R-3 and R-4, in dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, the minimum clear opening widths shall not apply to interior egress doors.
9. Door openings required to be accessible within Type B units intended for user passage shall have a minimum clear opening width of 31.75 inches (806 mm).
10. Doors to walk-in freezers and coolers less than 1,000 square feet (93 m^2) in area shall have a maximum width of 60 inches (1524 mm) nominal.
11. Doors serving nonaccessible single-user shower or sauna compartments; toilet stalls; or dressing, fitting or changing rooms shall have a minimum clear opening width of 20 inches (508 mm).

[BE] 1010.1.1.1 Projections into clear opening. There shall not be projections into the required clear opening width lower than 34 inches (864 mm) above the floor or ground. Projections into the clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm).

Exceptions*:*

1. Door closers, overhead door stops, power door operators, and electromagnetic door locks shall be permitted to be 78 inches (1980 mm) minimum above the floor.
2. *In a Group I-2 occupancy, there shall be no projections into the clear width of doors used for the movement of beds and stretcher patients in the means of egress.*

[BE] 1010.1.2 Egress door types. Egress doors shall be of the side-hinged swinging door, pivoted door or balanced door types.

Exceptions:

1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Critical or intensive care patient rooms within suites of health care facilities.
4. Doors within or serving a single dwelling unit in Groups R-2 and R-3.
5. In other than Group H occupancies, revolving doors complying with Section 1010.3.1.
6. In other than Group H occupancies, special-purpose horizontal sliding, accordion or folding door assemblies complying with Section 1010.3.3.
7. Power-operated doors in accordance with Section 1010.3.2.
8. Doors serving a bathroom within an individual sleeping unit in Group R-1.

9. In other than Group H occupancies, manually operated horizontal sliding doors are permitted in a means of egress from spaces with an occupant load of 10 or less.

> 10. *In Group I-2 occupancies, exit doors serving an occupant load of 50 or more shall not be of the pivoted or balanced type.*

[BE] 1010.1.2.1 Direction of swing. Side-hinged swinging doors, pivoted doors and balanced doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy. *For Group L occupancies, see Section 453.6.2 of the California Building Code.*

In a Group I-2 occupancy, all required exterior egress doors shall open in the direction of egress regardless of the occupant load served.

[BE] 1010.1.3 Forces to unlatch and open doors. The forces to unlatch doors shall comply with the following:

1. Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (66.7 N).
2. Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).

The force to open doors shall comply with the following:

1. For interior swinging egress doors that are manually operated, other than doors required to be fire rated, the force for pushing or pulling open the door shall not exceed 5 pounds (22 N).
2. For other swinging doors, sliding doors or folding doors, and doors required to be fire rated, the door shall require not more than a 30-pound (133 N) force to be set in motion and shall move to a full-open position when subjected to not more than a 15-pound (67 N) force.

[BE] 1010.1.3.1 Location of applied forces. Forces shall be applied to the latch side of the door.

[BE] 1010.1.3.2 Manual horizontal sliding doors. Where a manual horizontal sliding door is required to latch, the latch or other mechanism shall prevent the door from rebounding into a partially open position when the door is closed.

[BE] 1010.1.4 Floor elevation. There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2-percent slope).

Exceptions:

1. At doors serving individual dwelling units or sleeping units in Groups R-2 and R-3, a door is permitted to open at the top step of an interior flight of stairs, provided that the door does not swing over the top step.
2. At exterior doors serving Groups F, H, R-2 and S and where such doors are not part of an accessible route *or are not required to be accessible by Chapter 11A or 11B of the California Building Code,* the landing at an exterior door shall be not more than 7 inches (178 mm) below the landing on the egress side of the door, provided that the door, other than an exterior storm or screen door, does not swing over the landing.
3. At exterior doors serving Group U and individual dwelling units and sleeping units in Groups R-2 and R-3, and where such units are not required to be Accessible units, Type A units or Type B units, the landing at an exterior doorway shall be not more than $7^3/_4$ inches (197 mm) below the landing on the egress side of the door. Such doors, including storm or screen doors, shall be permitted to swing over either landing.
4. Variations in elevation due to differences in finish materials, but not more than $^1/_2$ inch (12.7 mm).
5. Exterior decks, patios or balconies that are part of Type B dwelling units or sleeping units, that have impervious surfaces and that are not more than 4 inches (102 mm) below the finished floor level of the adjacent interior space of the dwelling unit or sleeping unit.
6. Doors serving equipment spaces not required to be accessible in accordance with Section 1103.2.9 of the *California Building Code* and serving an occupant load of five or less shall be permitted to have a landing on one side to be not more than 7 inches (178 mm) above or below the landing on the egress side of the door.

[BE] 1010.1.5 Landings at doors. Landings shall have a width not less than the width of the stairway or the door, whichever is greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches (178 mm). Where a landing serves an occupant load of 50 or more, doors in any position shall not reduce the landing to less than one-half its required width. Landings shall have a length measured in the direction of travel of not less than 44 inches (1118 mm).

Exception: Landing length in the direction of travel in Groups R-3 and U and within individual units of Group R-2 need not exceed 36 inches (914 mm).

[BE] 1010.1.6 Thresholds. Thresholds at doorways shall not exceed $^3/_4$ inch (19.1 mm) in height above the finished floor or landing for sliding doors serving dwelling units or $^1/_2$ inch (12.7 mm) above the finished floor or landing for other doors. Raised thresholds and floor level changes greater than $^1/_4$ inch (6.4 mm) at doorways shall be beveled with a slope not greater than 1 unit vertical in 2 units horizontal (50-percent slope).

Exceptions:

1. In occupancy Group R-2 or R-3, threshold heights for sliding and side-hinged exterior doors

opposite side in Group B, F, M and S occupancies where the only interior access to the tenant space is from a single exit stairway where permitted in Section 1006.3.4.

5. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group R-2 occupancies where the only interior access to the dwelling unit is from a single exit stairway where permitted in Section 1006.3.4.

[BE] 1010.2.8 Locking arrangements in educational occupancies. In Group E occupancies, Group B educational occupancies and Group I-4 occupancies, egress doors from classrooms, offices and other occupied rooms with locking arrangements designed to keep intruders from entering the room shall comply with all of the following conditions:

1. The door shall be capable of being unlocked from outside the room with a key or other approved means.
2. The door shall be openable from within the room in accordance with Section 1010.2.
3. Modifications shall not be made to listed panic hardware, fire door hardware or door closers.
4. Modifications to fire door assemblies shall be in accordance with NFPA 80.

Remote locking or unlocking of doors from an approved location shall be permitted in addition to the unlocking operation in Item 1.

1010.2.8.1 Special provisions school classrooms. *School classrooms constructed after January 1, 1990, not equipped with automatic sprinkler systems, which have metal grilles or bars on all their windows and do not have at least two exit doors within 3 feet (914 mm) of each end of the classroom opening to the exterior of the building or to a common hallway used for evacuation purposes, shall have an inside release for the grilles or bars on at least one window farthest from the exit doors. The window or windows with the inside release shall be clearly marked as emergency exits.*

1010.2.8.2 Group E lockable doors from the inside. *New buildings that are included in public schools (kindergarten through 12th grade) state-funded projects and are receiving state funding pursuant to Leroy F. Green, School Facilities Act of 1998, California Education Code Sections 17070.10 through 17079, and that are submitted to the Division of the State Architect for plan review after July 1, 2011, in accordance with Education Code 17075.50 shall include locks that allow doors to classrooms and any room with an occupancy of five or more persons to be locked from the inside. The locks shall conform to the specification and requirements found in Section 1010.2.*

Exceptions:

1. *Doors that are locked from the outside at all times such as, but not limited to, janitor's closet, electrical room, storage room, boiler room, elevator equipment room and pupil restroom.*
2. *Reconstruction projects that utilize original plans in accordance with California Administrative Code, Section 4-314.*
3. *Existing relocatable buildings that are relocated within the same site, in accordance with California Administrative Code, Section 4-314.*

[BE] 1010.2.9 Panic and fire exit hardware. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy, *assembly area not classified as an assembly occupancy, E, or I-2 occupancies* shall not be provided with a latch or lock other than panic hardware or fire exit hardware. *For Group L occupancies see Section 453.6.3 of the California Building Code.*

Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.2.4, Item 3.
2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.2.12 or 1010.2.11.
3. Exit access doors serving occupied exterior areas shall be permitted to be locked in accordance with Section 1010.2.4, Item 8.
4. Courtrooms shall be permitted to be locked in accordance with Section 1010.2.13, Item 3.

[BE] 1010.2.9.1 Refrigeration machinery room. Refrigeration machinery rooms larger than 1,000 square feet (93 m^2) shall have not less than two exit or exit access doorways that swing in the direction of egress travel and shall be equipped with panic hardware or fire exit hardware.

[BE] 1010.2.9.2 Rooms with electrical equipment. Exit or exit access doors serving transformer vaults, rooms designated for batteries or energy storage systems, or modular data centers shall be equipped with panic hardware or fire exit hardware. Rooms containing electrical equipment rated 800 amperes or more that contain overcurrent devices, switching devices or control devices and where the exit or exit access door is less than 25 feet (7620 mm) from the equipment working space as required by *the California Electrical Code*, such doors shall not be provided with a latch or lock other than panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

[BE] 1010.2.9.3 Installation. Where panic or fire exit hardware is installed, it shall comply with the following:

1. Panic hardware shall be listed in accordance with UL 305.
2. Fire exit hardware shall be listed in accordance with UL 10C and UL 305.

3. The actuating portion of the releasing device shall extend not less than one-half of the door leaf width.
4. The maximum unlatching force shall not exceed 15 pounds (67 N).

[BE] 1010.2.9.4 Balanced doors. If balanced doors are used and panic hardware is required, the panic hardware shall be the push-pad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

[BE] 1010.2.10 Monitored or recorded egress. Where electrical systems that monitor or record egress activity are incorporated, the locking system shall comply with Section 1010.2.11, 1010.2.12, 1010.2.13, 1010.2.14 or 1010.2.15, or shall be readily openable from the egress side without the use of a key or special knowledge or effort.

[BE] 1010.2.11 Door hardware release of electrically locked egress doors. Door hardware release of electric locking systems shall be permitted on doors in the means of egress in any occupancy except Group H where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.2.1.
3. Operation of the door hardware directly interrupts the power to the electric lock and unlocks the door immediately.
4. Loss of power to the electric locking system automatically unlocks the door.
5. Where panic or fire exit hardware is required by Section 1010.2.9, operation of the panic or fire exit hardware also releases the electric lock.
6. The locking system units shall be listed in accordance with UL 294.

[BE] 1010.2.12 Sensor release of electrically locked egress doors. Sensor release of electric locking systems shall be permitted on doors located in the means of egress in any occupancy except Group *E*, H *or L* where installed and operated in accordance with all of the following criteria:

1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors and shall cause the electric locking system to unlock.
2. The electric locks shall be arranged to unlock by a signal from or loss of power to the sensor.
3. Loss of power to the lock or locking system shall automatically unlock the electric locks.
4. The doors shall be arranged to unlock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads "PUSH TO EXIT." When operated, the manual unlocking device shall result in direct interruption of power to the electric lock—independent of other electronics—and the electric lock shall remain unlocked for not less than 30 seconds.
5. Activation of the building fire alarm system, where provided, shall automatically unlock the electric lock, and the electric lock shall remain unlocked until the fire alarm system has been reset.
6. Activation of the building automatic sprinkler system or fire detection system, where provided, shall automatically unlock the electric lock. The electric lock shall remain unlocked until the fire alarm system has been reset.
7. Emergency lighting shall be provided on the egress side of the door.
8. The door locking system units shall be listed in accordance with UL 294.

1010.2.12.1 ***Access-controlled elevator lobby doors in high-rise office buildings.*** *For elevator lobbies in high-rise office buildings where the occupants of the floor are not required to travel through the elevator lobby to reach an exit, when approved by the fire chief, the doors separating the elevator lobby from the adjacent occupied tenant space that also serve as the entrance doors to the tenant space shall be permitted to be equipped with an approved entrance and egress access control provided all of the following requirements are met:*

1. *The building is provided throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.*
2. *A smoke detector is installed on the ceiling on the tenant side of the elevator lobby doors along the center line of the door opening, not less than 1 foot and not more than 5 feet from the door opening, and is connected to the fire alarm system.*
3. *A remote master switch capable of unlocking the elevator lobby doors shall be provided in the fire command center for use by the fire department.*
4. *Locks for the elevator lobby shall be UL and California State Fire Marshal listed fail-safe type locking mechanisms. The locking device shall automatically release on activation of any fire alarm device on the floor of alarm (waterflow, smoke detector, manual pull stations, etc.). All locking devices shall unlock, but not unlatch, upon activation.*
5. *A two-way voice communication system, utilizing dedicated lines, shall be provided from each locked elevator lobby to the 24-hour staffed location on site, annunciated as to loca-*

tion. Operating instructions shall be posted above each two-way communication device.

Exception: *When approved by the fire chief, a two-way voice communication system to an off-site facility may be permitted where means to remotely unlock the access controlled doors from the off-site facility are provided.*

6. *An approved momentary mushroom-shaped palm button connected to the doors and installed adjacent to each locked elevator lobby door shall be provided to release the door locks when operated by an individual in the elevator lobby. The locks shall be reset manually at the door. Mount palm button so that the center line is 48 inches above the finished floor.*

   Provide a sign stating:

   "IN CASE OF EMERGENCY,
   PUSH PALM BUTTON,

   DOOR WILL UNLOCK AND
   SECURITY ALARM WILL SOUND."

   The sign lettering shall be $^{3}/_{4}$-inch high letters by $^{1}/_{8}$-inch width stroke on a contrasting background.

7. *Loss of power to that part of the access control system which locks the doors shall automatically unlock the doors.*

[BE] 1010.2.13 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 *and* an approved automatic smoke or heat detection system installed in accordance with Section 907:

1. Group B, F, I, M, R, S and U occupancies.
2. Group E classrooms with an occupant load of less than 50.
3. In courtrooms in Group A-3 and B occupancies, delayed egress locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 *and an approved automatic smoke detection system installed in accordance with Section 907.*

[BE] 1010.2.13.1 Delayed egress locking system. The delayed egress locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the *automatic sprinkler system required by Section 1010.2.13 and the delay electronics of the delayed egress locking system shall deactivate upon actuation of the smoke or heat detection system required by Section 1010.2.13,* allowing immediate, free egress.
2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress, *to any one of the following:*
   2.1. The egress-control device itself.
   2.2. The smoke detection system.
   2.3. Means of egress illumination as required by Section 1008.
3. The delayed egress locking system shall have the capability of being deactivated at the fire command center and other approved locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only. *The time delay established for each egress-control device shall not be field adjustable. For applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, see Chapter 11B.*

   Exception: *In facilities housing Alzheimer's or dementia clients,* a delay of not more than 30 seconds is permitted on a delayed egress door.

5. The egress path from any point shall not pass through more than one delayed egress locking system.

   Exceptions:

   1. In Group *R-2.1,* Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds.
   2. In Group I-4 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:

   Exception: Where approved, in Group I occupancies, the installation of a sign is not

required where care recipients who, because of clinical needs, require restraint or containment as part of the function of the treatment area.

6.1. For doors that swing in the direction of egress, the sign shall read: "PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS."

6.2. For doors that swing in the opposite direction of egress, the sign shall read: "PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS."

6.3. *Sign lettering shall be at least 1 inch (25 mm) in height and shall have a stroke of not less than $^{1}/_{8}$ inch (3.2 mm).*

6.4. A tactile sign shall also be provided in Braille and raised characters, which complies with Chapter 11B.

7. Emergency lighting shall be provided on the egress side of the door.

8. The delayed egress locking system units shall be listed in accordance with UL 294.

9. Actuation of the panic bar or other door-latching hardware shall activate an audible signal at the door.

10. The unlatching shall not require more than one operation.

11. Regardless of the means of deactivation, relocking of the egress-control device shall be by manual means only at the door.

[BE] 1010.2.14 *Controlled egress doors in Group I-2.* *Electric locking systems, including electromechanical locking systems and electromagnetic locking systems, shall be permitted to be locked in the means of egress in Group I-2 occupancies where the clinical needs of persons receiving psychiatric or mental health treatment require their restraint or containment. Controlled egress doors shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and an approved automatic smoke detection system installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following:*

1. The door locks shall unlock on actuation of the automatic sprinkler system or automatic smoke detection system.

2. The door locks shall unlock on loss of power controlling the lock or lock mechanism.

3. The door locking system shall be installed to have the capability of being unlocked by a switch located at the fire command center, a nursing station or other approved location. The switch shall directly break power to the lock.

4. A building occupant shall not be required to pass through more than one door equipped with a controlled egress locking system before entering an exit.

5. All clinical staff shall have the keys, codes or other means necessary to operate the locking systems.

6. Emergency lighting shall be provided at the door.

7. The door locking system units shall be listed in accordance with UL 294.

Exception: *Items 1 through 4 shall not apply to doors to areas occupied by persons who, because of clinical needs, require restraint or containment as part of the function of a psychiatric or mental health treatment area.*

[BE] 1010.2.15 *Reserved.*

[BE] 1010.3 Special doors. Special doors and security grilles shall comply with the requirements of Sections 1010.3.1 through 1010.3.4.

[BE] 1010.3.1 Revolving doors. Revolving doors shall comply with the following:

1. Revolving doors shall comply with BHMA A156.27 and shall be installed in accordance with the manufacturer's instructions.

2. Each revolving door shall be capable of breakout in accordance with BHMA A156.27 and shall provide an aggregate width of not less than 36 inches (914 mm).

3. A revolving door shall not be located within 10 feet (3048 mm) of the foot or top of stairways or escalators. A dispersal area shall be provided between the stairways or escalators and the revolving doors.

4. The revolutions per minute (rpm) for a revolving door shall not exceed the maximum rpm as specified in BHMA A156.27. Manual revolving doors shall comply with Table 1010.3.1(1). Automatic or power-operated revolving doors shall comply with Table 1010.3.1(2).

5. An emergency stop switch shall be provided near each entry point of power or automatic operated revolving doors within 48 inches (1219 mm) of the door and between 34 inches (864 mm) and 48 inches (1219 mm) above the floor. The activation area of the emergency stop switch button shall be not less than 1 inch (25 mm) in diameter and shall be red.

6. Each revolving door shall have a side-hinged swinging door that complies with Section 1010.1 in the same wall and within 10 feet (3048 mm) of the revolving door.

7. Revolving doors shall not be part of an accessible route required by Section 1009 of this code and Chapter 11 of the *California Building Code*.

release device shall be positioned at one of the following locations:

5.2.1. On the egress side of each security access turnstile lane.

5.2.2. At an approved location where it can be actuated by an employee assigned to the area at all times that the building is occupied.

5.3. Upon actuation of the building fire alarm system, if provided, after which the physical barrier remains in the open position until the fire alarm system is manually reset.

Exception: Actuation of a manual fire alarm box.

5.4. Upon actuation of the building automatic sprinkler system or fire detection system, after which the physical barrier remains in the open position until the fire alarm system is manually reset.

[BE] 1010.5.3 High turnstile. Turnstiles more than 39 inches (991 mm) high shall meet the requirements for revolving doors or the requirements of Section 1010.5.2 for security access turnstiles.

[BE] 1010.5.4 Additional door. Where serving an occupant load greater than 300, each turnstile that is not portable shall have a side-hinged swinging door that conforms to Section 1010.1 within 50 feet (15 240 mm).

Exception: A side-hinged swinging door is not required at security access turnstiles that comply with Section 1010.5.2.

SECTION 1011
STAIRWAYS

[BE] 1011.1 General. Stairways serving occupied portions of a building shall comply with the requirements of Sections 1011.2 through 1011.13. Alternating tread devices shall comply with Section 1011.14. Ship's ladders shall comply with Section 1011.15. Ladders shall comply with Section 1011.16.

Exception: Within rooms or spaces used for assembly purposes, stepped aisles shall comply with Section 1030.

[BE] 1011.2 Width and capacity. The required capacity of stairways shall be determined as specified in Section 1005.1, but the minimum width shall be not less than 44 inches (1118 mm). See Section 1009.3 for accessible means of egress stairways.

Exceptions:

1. Stairways serving an occupant load of less than 50 shall have a width of not less than 36 inches (914 mm).
2. Spiral stairways as provided for in Section 1011.10.
3. Where an incline platform lift or stairway chairlift is installed on stairways serving occupancies in Group R-3, or within dwelling units in occupancies in Group R-2, a clear passage width not less than 20 inches (508 mm) shall be provided. Where the seat and platform can be folded when not in use, the distance shall be measured from the folded position.

Means of egress stairs in a Group I-2 or ambulatory care facility occupancy used for the movement of beds and stretcher patients shall provide a clear width not less than 44 inches (1118 mm).

[BE] 1011.3 Headroom. Stairways shall have a headroom clearance of not less than 80 inches (2032 mm) measured vertically from a line connecting the edge of the nosings. Such headroom shall be continuous above the stairway to the point where the line intersects the landing below, one tread depth beyond the bottom riser. The minimum clearance shall be maintained the full width of the stairway and landing.

Exceptions:

1. Spiral stairways complying with Section 1011.10 are permitted a 78-inch (1981 mm) headroom clearance.
2. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; where the nosings of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally into the required headroom not more than $4^3/_4$ inches (121 mm).

[BE] 1011.4 Walkline. The walkline across winder treads shall be concentric to the direction of travel through the turn and located 12 inches (305 mm) from the side where the winders are narrower. The 12-inch (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface of the winder. Where winders are adjacent within the flight, the point of the widest clear stair width of the adjacent winders shall be used.

[BE] 1011.5 Stair treads and risers. Stair treads and risers shall comply with Sections 1011.5.1 through 1011.5.5.3.

[BE] 1011.5.1 Dimension reference surfaces. For the purpose of this section, all dimensions are exclusive of carpets, rugs or runners.

[BE] 1011.5.2 Riser height and tread depth. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between the nosings of adjacent treads or between the stairway landing and the adjacent tread. Rectangular tread depths shall be 11 inches (279 mm) minimum measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's nosing. Winder treads shall have a minimum tread depth of 11 inches (279 mm) between the vertical planes of the foremost projection of adjacent treads at the intersections with the walkline and a minimum tread depth of 10 inches (254 mm) within the clear width of the stair.

Exceptions:

1. Spiral stairways in accordance with Section 1011.10.

2. Stairways connecting stepped aisles to cross aisles or concourses shall be permitted to use the riser/tread dimension in Section 1030.14.2.
3. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be $7^{3}/_{4}$ inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walkline shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing projection not less than $^{3}/_{4}$ inch (19.1 mm) but not more than $1^{1}/_{4}$ inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).
4. See *Chapter 11 and California Existing Building Code* for the replacement of existing stairways. ***[DSA-AC]*** *For applications listed in Section 1.9.1 of the California Building Code regulated by the Division of the State Architect-Access Compliance, see Chapter 11B, Section 11B-202.*
5. In Group I-3 facilities, stairways providing access to guard towers, observation stations and control rooms, not more than 250 square feet (23 m^2) in area, shall be permitted to have a maximum riser height of 8 inches (203 mm) and a minimum tread depth of 9 inches (229 mm).
6. ***[SFM]*** *Stairways providing access to lifeguard towers not open to the public, not more than 250 square feet (23 m^2) in area, shall be permitted to have a maximum riser height of 8 inches (203 mm) and a minimum tread depth of 9 inches (229 mm).*

[BE] 1011.5.3 Winder treads. Winder treads are not permitted in means of egress stairways except within a dwelling unit.

Exceptions:

1. Curved stairways in accordance with Section 1011.9.
2. Spiral stairways in accordance with Section 1011.10.

[BE] 1011.5.4 Dimensional uniformity. Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed $^{3}/_{8}$ inch (9.5 mm) in any flight of stairs. The greatest winder tread depth at the walkline within any flight of stairs shall not exceed the smallest by more than $^{3}/_{8}$ inch (9.5 mm).

Exceptions:

1. Stairways connecting stepped aisles to cross aisles or concourses shall be permitted to comply with the dimensional nonuniformity in Section 1030.14.2.
2. Consistently shaped winders, complying with Section 1011.5, differing from rectangular treads in the same flight of stairs.
3. Nonuniform riser dimension complying with Section 1011.5.4.1.

[BE] 1011.5.4.1 Nonuniform height risers. Where the bottom or top riser adjoins a sloping public way, walkway or driveway having an established grade and serving as a landing, the bottom or top riser is permitted to be reduced along the slope to less than 4 inches (102 mm) in height, with the variation in height of the bottom or top riser not to exceed 1 unit vertical in 12 units horizontal (8-percent slope) of stair width. The nosings or leading edges of treads at such nonuniform height risers shall have a distinctive marking stripe, different from any other nosing marking provided on the stair flight. The distinctive marking stripe shall be visible in descent of the stair and shall have a slip-resistant surface. Marking stripes shall have a width of not less than 1 inch (25 mm) but not more than 2 inches (51 mm).

[BE] 1011.5.5 Nosing and riser profile. Nosings shall have a curvature or bevel of not less than $^{1}/_{16}$ inch (1.6 mm) but not more than $^{9}/_{16}$ inch (14.3 mm) from the foremost projection of the tread. Risers shall be solid and vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.52 rad) from the vertical.

[BE] 1011.5.5.1 Nosing projection size. The leading edge (nosings) of treads shall project not more than $1^{1}/_{4}$ inches (32 mm) beyond the tread below.

[BE] 1011.5.5.2 Nosing projection uniformity. Nosing projections of the leading edges shall be of uniform size, including the projections of the nosing's leading edge of the floor at the top of a flight.

[BE] 1011.5.5.3 Solid risers. Risers shall be solid.

Exceptions:

1. Solid risers are not required for stairways that are not required to comply with Section 1009.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3 or in Group F, H and S occupancies other than areas accessible to the public. The size of the opening in the riser is not restricted.
3. Solid risers are not required for spiral stairways constructed in accordance with Section 1011.10.

[BE] 1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door

between the closest edges of each such intermediate pair of handrails that is greater than 6 inches (152 mm).

In Group I-2 occupancies, ramps required for exit access shall not be less than 8 feet in width and handrails are permitted to protrude 3 $^{1}/_{2}$ inches from the wall on both sides. For ramps used as exits and stairways used for the movement of bed and litter patients, the clear width between handrails shall be 44 inches (1118 mm) minimum.

[BE] 1014.9 Intermediate handrails. Stairways shall have intermediate handrails located in such a manner that all portions of the stairway minimum width or required capacity are within 30 inches (762 mm) of a handrail. On monumental stairs, handrails shall be located along the most direct path of egress travel.

SECTION 1015
GUARDS

[BE] 1015.1 General. Guards shall comply with the provisions of Sections 1015.2 through 1015.7. Operable windows with sills located more than 72 inches (1829 mm) above finished grade or other surface below shall comply with Section 1015.8.

[BE] 1015.2 Where required. Guards shall be located along open-sided walking surfaces, including mezzanines, equipment platforms, aisles, stairs, ramps and landings that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Guards shall be adequate in strength and attachment in accordance with Section 1607.8 of the *California Building Code*.

Exception: Guards are not required for the following locations:

1. On the loading side of loading docks or piers.
2. On the audience side of stages and raised platforms, including stairs leading up to the stage and raised platforms.
3. On raised stage and platform floor areas, such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating areas at cross aisles in accordance with Section 1030.17.2.
8. On the loading side of station platforms on fixed guideway transit or passenger rail systems.

[BE] 1015.2.1 Glazing. Where glass is used to provide a guard or as a portion of the guard system, the guard shall comply with Section 2407 of the *California Building Code*. Where the glazing provided does not meet the strength and attachment requirements of Section 1607.8 of the *California Building Code*, complying guards shall be located along glazed sides of open-sided walking surfaces.

[BE] 1015.3 Height. Required guards shall be not less than 42 inches (1067 mm) high, measured vertically as follows:

1. From the adjacent walking surfaces.
2. On stairways and stepped aisles, from the line connecting the leading edges of the tread nosings.
3. On ramps and ramped aisles, from the ramp surface at the guard.

Exceptions:

1. For occupancies in Group R-3 not more than three stories above grade in height and within individual dwelling units in occupancies in Group R-2 not more than three stories above grade in height with separate means of egress, required guards shall be not less than 36 inches (914 mm) in height measured vertically above the adjacent walking surfaces.
2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the guard serves as a handrail on the open sides of stairs, the top of the guard shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.
3. The guard height in assembly seating areas shall comply with Section 1030.17 as applicable.
4. Along alternating tread devices and ship's ladders, guards where the top rail serves as a handrail shall have height not less than 30 inches (762 mm) and not more than 34 inches (864 mm), measured vertically from the leading edge of the device tread nosing.
5. In Group F occupancies where exit access stairways serve fewer than three stories and such stairways are not open to the public, and where the top of the guard also serves as a handrail, the top of the guard shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.

[BE] 1015.4 Opening limitations. Required guards shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter from the walking surface to the required guard height.

Exceptions:

1. From a height of 36 inches (914 mm) to 42 inches (1067 mm), guards shall not have openings that allow passage of a sphere $4^{3}/_{8}$ inches (111 mm) in diameter.
2. The triangular openings at the open sides of a stair, formed by the riser, tread and bottom rail shall not allow passage of a sphere 6 inches (152 mm) in diameter.
3. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or

equipment, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter.

4. In areas that are not open to the public within occupancies in Group I-3, F, H or S, and for alternating tread devices and ship's ladders, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter.
5. In assembly seating areas, guards required at the end of aisles in accordance with Section 1030.17.4 shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter up to a height of 26 inches (660 mm). From a height of 26 inches (660 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, guards shall not have openings that allow passage of a sphere 8 inches (203 mm) in diameter.
6. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, guards on the open sides of stairs shall not have openings that allow passage of a sphere $4^{3}/_{8}$ (111 mm) inches in diameter.
7. ***[SFM]*** *In lifeguard towers not open to the public, guards shall not have openings which allow passage of a sphere 21 inches (533 mm) in diameter.*

[BE] 1015.5 Screen porches. Porches and decks that are enclosed with insect screening shall be provided with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.

[BE] 1015.6 Mechanical equipment, systems and devices. Guards shall be provided where various components that require service are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall extend not less than 30 inches (762 mm) beyond each end of such components. The guard shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter.

Exception: Guards are not required where personal fall arrest anchorage connector devices that comply with ANSI/ASSE Z359.1 are installed.

[BE] 1015.7 Roof access. Guards shall be provided where the roof hatch opening is located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall extend not less than 30 inches (762 mm) beyond each end of the hatch parallel to the roof edge. The guard shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter.

Exception: Guards are not required where personal fall arrest anchorage connector devices that comply with ANSI/ASSE Z359.1 are installed.

[BE] 1015.8 Window openings. Windows in Group R-2 and R-3 buildings including dwelling units, where the bottom of the clear opening of an operable window is located less than 36 inches (914 mm) above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, shall comply with one of the following:

1. Operable windows where the top of the sill of the opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with ASTM F2006.
2. Operable windows where the openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.
3. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.
4. Operable windows that are provided with window opening control devices that comply with Section 1015.8.1.

[BE] 1015.8.1 Window opening control devices. Window opening control devices shall comply with ASTM F2090. The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the minimum net clear opening area of the window unit to less than the area required by Section 1031.3.1.

SECTION 1016
EXIT ACCESS

[BE] 1016.1 General. The exit access shall comply with the applicable provisions of Sections 1003 through 1015. Exit access arrangement shall comply with Sections 1016 through 1021.

[BE] 1016.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section.

1. Exit access through an enclosed elevator lobby is permitted *in other than a Group I-2*. Where access to two or more exits or exit access doorways is required in Section 1006.2.1, access to not less than one of the required exits shall be provided without travel through the enclosed elevator lobbies required by Section 3006 of the *California Building Code*. Where the path of exit access travel passes through an enclosed elevator lobby the level of protection required for the enclosed elevator lobby is not required to be extended to the *exit* unless direct access to an *exit* is required by other sections of this code.
2. Egress from a room or space shall not pass through adjoining or intervening rooms or areas, except where such adjoining rooms or areas and the area served are accessory to one or the other, are not a Group H occupancy and provide a discernible path of egress travel to an exit.

   Exception: Means of egress are not prohibited through adjoining or intervening rooms or spaces in a Group H, S or F occupancy where the adjoining or intervening rooms or spaces are the same or a lesser hazard occupancy group.

3. An exit access shall not pass through a room that can be locked to prevent egress.
4. Means of egress from dwelling units or sleeping areas shall not lead through other sleeping areas, toilet rooms or bathrooms.
5. Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes.

   Exceptions:

   1. Means of egress are not prohibited through a kitchen area serving adjoining rooms constituting part of the same dwelling unit or sleeping unit.
   2. Means of egress are not prohibited through stockrooms in Group M occupancies where all of the following are met:
      2.1. The stock is of the same hazard classification as that found in the main retail area.
      2.2. Not more than 50 percent of the exit access is through the stockroom.
      2.3. The stockroom is not subject to locking from the egress side.
      2.4. There is a demarcated, minimum 44-inch-wide (1118 mm) aisle defined by full- or partial-height fixed walls or similar construction that will maintain the required width and lead directly from the retail area to the exit without obstructions.
6. *Exits shall not pass through any room subject to locking except in Group I-3 occupancies classified as detention facilities.*

[BE] 1016.2.1 Multiple tenants. Where more than one tenant occupies any one floor of a building or structure, each tenant space, dwelling unit and sleeping unit shall be provided with access to the required exits without passing through adjacent tenant spaces, dwelling units and sleeping units.

Exception: The means of egress from a smaller tenant space shall not be prohibited from passing through a larger adjoining tenant space where such rooms or spaces of the smaller tenant occupy less than 10 percent of the area of the larger tenant space through which they pass; are the same or similar occupancy group; a discernable path of egress travel to an exit is provided; and the means of egress into the adjoining space is not subject to locking from the egress side. A required means of egress serving the larger tenant space shall not pass through the smaller tenant space or spaces.

SECTION 1017
EXIT ACCESS TRAVEL DISTANCE

[BE] 1017.1 General. Travel distance within the exit access portion of the means of egress system shall be in accordance with this section.

[BE] 1017.2 Limitations. Exit access travel distance shall not exceed the values given in Table 1017.2.

[BE] TABLE 1017.2
EXIT ACCESS TRAVEL DISTANCE[a]

OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200	250[b, e]
R-2.1	Not Permitted	250[c]
B	200	300[c]
F-2, S-2, U	300	400[c]
H-1	Not Permitted	75[d]
H-2	Not Permitted	100[d]
H-3	Not Permitted	150[d]
H-4	Not Permitted	175[d]
H-5	Not Permitted	200[c]
I-2, I-3[f], I-4	Not Permitted	200[c]
L	*Not Permitted*	*200[c]*

For SI: 1 foot = 304.8 mm.

a. See the following sections for modifications to exit access travel distance requirements:
   Section 402.8 of the *California Building Code*: For the distance limitation in malls.
   Section 407.4 of the *California Building Code*: For the distance limitation in Group I-2.
   Section 408.3.10 of the California Building Code: For increased limitation in Group I-3.
   Sections 408.6.1 and 408.8.1 of the *California Building Code*: For the distance limitations in Group I-3.
   Section 411.2 of the *California Building Code*: For the distance limitation in special amusement areas.
   Section 412.6 of the *California Building Code*: For the distance limitations in aircraft manufacturing facilities.
   Section 422.3.4 of the California Building Code: For the distance limitation in ambulatory care facilities.
   Section 1006.2.2.2: For the distance limitation in refrigeration machinery rooms.
   Section 1006.2.2.3: For the distance limitation in refrigerated rooms and spaces.
   Section 1006.3.4: For buildings with one exit.
   Section 1017.2.2: For increased distance limitation in Groups F-1 and S-1.
   Section 1030.7: For increased limitation in assembly seating.
   Section 3103.4 of the *California Building Code*: For temporary structures.
   Section 3104.9 of the *California Building Code*: For pedestrian walkways.
b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
d. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.1.
e. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.
f. Not permitted in nonsprinklered Group I-3 occupancies.

[BE] 1017.2.1 Exterior egress balcony increase. Exit access travel distances specified in Table 1017.2 shall be increased up to an additional 100 feet (30 480 mm) provided that the last portion of the exit access leading to the

exit occurs on an exterior egress balcony constructed in accordance with Section 1021. The length of such balcony shall be not less than the amount of the increase taken.

[BE] 1017.2.2 Groups F-1 and S-1 increase. The maximum exit access travel distance shall be 400 feet (122 m) in Group F-1 or S-1 occupancies where all of the following conditions are met:

1. The portion of the building classified as Group F-1 or S-1 is limited to one story in height.
2. The minimum height from the finished floor to the bottom of the ceiling or roof slab or deck is 24 feet (7315 mm).
3. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

[BE] 1017.3 Measurement. Exit access travel distance shall be measured from the most remote point of each room, area or space along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit. Where more than one exit is required, exit access travel distance shall be measured to the nearest exit.

Exceptions:

1. In open parking garages, exit access travel distance is permitted to be measured to the closest riser of an exit access stairway or the closest slope of an exit access ramp.
2. In smoke-protected seating and open-air assembly seating, exit access travel distance shall be measured in accordance with Section 1030.7.

[BE] 1017.3.1 Exit access stairways and ramps. Travel distance on exit access stairways or ramps shall be included in the exit access travel distance measurement. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stair and landings. The measurement along ramps shall be made on the walking surface in the center of the ramp and landings.

1017.3.2 Atriums. Exit access travel distance for areas open to an atrium shall comply with the requirements of Sections 1017.3.2.1 through 1017.3.2.3.

1017.3.2.1 Egress not through the atrium. Where required access to the exits is not through the atrium, exit access travel distance shall comply with Section 1017.2.

1017.3.2.2 Exit access travel distance at the level of exit discharge. Where the path of egress travel is through an atrium space, exit access travel distance at the level of exit discharge shall be determined in accordance with Section 1017.2.

1017.3.2.3 Exit access travel distance at other than the level of exit discharge. Where the path of egress travel is not at the level of exit discharge from the atrium, that portion of the total permitted exit access travel distance that occurs within the atrium shall be not greater than 200 feet (60 960 mm).

SECTION 1018
AISLES

[DSA-AC] *In addition to the requirements of this section, means of egress, which provide access to, or egress from, buildings or facilities where accessibility is required for applications listed in Section 1.9.1 regulated by the Division of the State Architect-Access Compliance, shall also comply with Chapter 11A or Chapter 11B, Section 403, as applicable.*

[BE] 1018.1 General. Aisles and aisle accessways serving as a portion of the exit access in the means of egress system shall comply with the requirements of this section. Aisles or aisle accessways shall be provided from all occupied portions of the exit access that contain seats, tables, furnishings, displays and similar fixtures or equipment. The minimum width or required capacity of aisles shall be unobstructed.

Exception: Encroachments complying with Section 1005.7.

[California Code of Regulations, Title 19, Division 1, §3.06(a)] Bonding of Chairs and Spacing of Tables.

(a) Bonding of chairs. In every Group A and Group E occupancy, all loose seats, folding chairs or similar seating facilities that are not fixed to the floor shall be bonded together in groups of not less than three.

Exceptions:

(1) When not more than 200 such seats, chairs or facilities are provided, bonding thereof may be deleted.

(2) The bonding of chairs shall not be required when tables are provided, as when the occupancy is used for dining or similar purposes.

(3) Upon approval of the enforcing agency, the bonding of chairs shall not be required when the placement and location of such chairs does not obstruct any required exit or any line of egress toward required exits and does not constitute a fire hazard as defined in California Code of Regulations, Title 19, Division 1, Section 3.14.

[California Code of Regulations, Title 19, Division 1, §3.06(b)] Bonding of Chairs and Spacing of Tables.

(b) Spacing of Tables. In occupancies having rectangular conference or banquet-type tables, such tables shall be placed not less than 54 inches apart and not less than 36 inches from walls.

[BE] 1018.2 Aisles in assembly spaces. Aisles and aisle accessways serving a room or space used for assembly purposes shall comply with Section 1030.

[BE] 1018.3 Aisles in Groups B and M. In Group B and M occupancies, the minimum clear aisle width shall be determined by Section 1005.1 for the occupant load served, but shall be not less than that required for corridors by Section 1020.3.

Exception: Nonpublic aisles serving less than 50 people and not required to be accessible by Chapter *11A or 11B* of the *California Building Code* need not exceed 28 inches (711 mm) in width.

[BE] 1018.4 Aisle accessways in Group M. An aisle accessway shall be provided on not less than one side of each element within the merchandise pad. The minimum clear width

for an aisle accessway not required to be accessible shall be 30 inches (762 mm). The required clear width of the aisle accessway shall be measured perpendicular to the elements and merchandise within the merchandise pad. The 30-inch (762 mm) minimum clear width shall be maintained to provide a path to an adjacent aisle or aisle accessway. The common path of egress travel shall not exceed 30 feet (9144 mm) from any point in the merchandise pad.

Exception: For areas serving not more than 50 occupants, the common path of egress travel shall not exceed 75 feet (22 860 mm).

[BE] 1018.5 Aisles in other than assembly spaces and Groups B and M. In other than rooms or spaces used for assembly purposes and Group B and M occupancies, the minimum clear aisle capacity shall be determined by Section 1005.1 for the occupant load served, but the width shall be not less than that required for corridors by Section 1020.3.

Exception: Nonpublic aisles serving less than 50 people and not required to be accessible by Chapter 11 of the *California Building Code* need not exceed 28 inches (711 mm) in width.

SECTION 1019
EXIT ACCESS STAIRWAYS AND RAMPS

[BE] 1019.1 General. Exit access stairways and ramps serving as an exit access component in a means of egress system shall comply with the requirements of this section. The number of stories connected by exit access stairways and ramps shall include basements, but not mezzanines.

[BE] 1019.2 All occupancies. Exit access stairways and ramps that serve floor levels within a single story are not required to be enclosed.

> **[BE] 1019.3 Occupancies other than Groups I-2, I-3 and**
> ***R-2.1*.** In other than Group I-2, I-3 and *R-2.1* occupancies, floor openings containing exit access stairways or ramps shall be enclosed with a shaft enclosure constructed in accordance with Section 713 of the *California Building Code*.

Exceptions:

1. Exit access stairways and ramps that serve or atmospherically communicate between only two adjacent stories. Such interconnected stories shall not be open to other stories.
2. In Group R-1, R-2, *R-2.1, R-2.2,* R-3 *or R-3.1* occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit or sleeping unit or live/work unit.
3. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed.
4. Exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or ramp and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.
5. Exit access stairways and ramps within an atrium complying with the provisions of Section 404 of the *California Building Code*.
6. Exit access stairways and ramps in open parking garages that serve only the parking garage.
7. Exit access stairways and ramps serving smoke-protected or open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7.
8. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
9. Exterior exit access stairways or ramps between occupied roofs.
10. *Fixed guideway transit stations, constructed in accordance with Section 443 of the California Building Code.*

[BE] 1019.4 Group I-2, I-3 and *R-2.1* occupancies. In Group I-2, I-3 and *R-2.1* occupancies, floor openings between stories containing exit access stairways or ramps are required to be enclosed with a shaft enclosure constructed in accordance with Section 713 of the *California Building Code*. < <

Exception: In Group I-3 occupancies, exit access stairways or ramps constructed in accordance with Section 408 of the *California Building Code* are not required to be enclosed.

SECTION 1020
CORRIDORS

[BE] 1020.1 General. Corridors serving as an exit access component in a means of egress system shall comply with the requirements of Sections 1020.2 and 1020.7.

[BE] 1020.2 Construction. Corridors shall be fire-resistance rated in accordance with Table 1020.2. The corridor walls required to be fire-resistance rated shall comply with Section 708 of the *California Building Code* for fire partitions.

Exceptions:

1. A fire-resistance rating is not required for corridors in an occupancy in Group E where each room that is used for instruction has not less than one door opening directly to the exterior and rooms for assembly purposes have not less than one-half of the required means of egress doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
2. A fire-resistance rating is not required for corridors contained within a dwelling unit or sleeping unit in an occupancy in Group R.
3. A fire-resistance rating is not required for corridors in open parking garages.

4. A fire-resistance rating is not required for corridors in an occupancy in Group B that is a space requiring only a single means of egress complying with Section 1006.2.
5. Corridors adjacent to the exterior walls of buildings shall be permitted to have unprotected openings on unrated exterior walls where unrated walls are permitted by Table 705.5 of the *California Building Code* and unprotected openings are permitted by Table 705.8 of the *California Building Code*.
6. *A fire-resistance rating is not required for corridors within suites in a Group I-2 constructed in accordance with Section 407.4.4 or 407.4.5 of the California Building Code.*

[BE] 1020.2.1 Hoistway opening protection. Elevator hoistway openings shall be protected in accordance with Section 3006.2.1 of the *California Building Code*.

[BE] 1020.3 Width and capacity. The required capacity of corridors shall be determined as specified in Section 1005.1, but the minimum width shall be not less than that specified in Table 1020.3.

Exception: In Group I-2 occupancies, corridors are not required to have a clear width of 96 inches (2438 mm) in areas where there will not be stretcher or bed movement for access to care or as part of the defend-in-place strategy.

[BE] 1020.4 Obstruction. The minimum width or required capacity of corridors shall be unobstructed.

Exception: Encroachments complying with Section 1005.7.

[BE] 1020.5 Dead ends. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that dead-end corridors do not exceed 20 feet (6096 mm) in length.

Exceptions:

1. In Group I-3, Condition 2, 3 or 4 occupancies, the dead end in a corridor shall not exceed 50 feet (15 240 mm).
2. In occupancies in Groups B, E, F, M, R-1, R-2, *R-2.1*, *R-2.2*, S and U, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the length of the dead-end corridors shall not exceed 50 feet (15 240 mm).
3. A dead-end corridor shall not be limited in length where the length of the dead-end corridor is less than 2.5 times the least width of the dead-end corridor.
4. In Group I-2 occupancies, *where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1,* the length of dead-end corridors that do not serve patient rooms or patient treatment spaces shall not exceed 30 feet (9144 mm).

[BE] 1020.6 Air movement in corridors. Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

Exceptions:

1. Use of a corridor as a source of makeup air for exhaust systems in *small* rooms *of 30 square feet or less* that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.
2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.
3. Where located within tenant spaces of 1,000 square feet (93 m^2) or less in area, utilization of corridors for conveying return air is permitted.
4. Transfer air movement required to maintain the pressurization difference within health care facilities

[BE] TABLE 1020.2
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system
H-1, H-2, H-3	All	Not Permitted	1[c]
H-4, H-5, *I*	Greater than 30	Not Permitted	1[c]
A[e], B, F, M, S, U	Greater than 30	1	0
R-1, R-2, R-2.2, R-3[d], R-3.1, R-4[d]	Greater than 10	Not Permitted	*1*
I-2[a]	*Greater than 6*	*1*	*1*
I-3, *R-2.1*	*Greater than 6*	Not Permitted	1[b, c]
E	*Greater than 10*	*1*	*0*
I-4	All	1	0

a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3 of the *California Building Code*.
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8 of the *California Building Code*.
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.
d. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.
e. ***[SFM]*** *See Section 1030.*

[BE] TABLE 1020.3
MINIMUM CORRIDOR WIDTH

OCCUPANCY	MINIMUM WIDTH (inches)
Any facility not listed below	44
Access to and utilization of mechanical, plumbing or electrical systems or equipment	24
With an occupant load of less than 50	36
Within a dwelling unit	36
In Group E with a corridor having a occupant load of 100 or more	72
In corridors and areas serving stretcher traffic in ambulatory care facilities	72
Group I-2 *and I-3* in areas where required for bed movement	96
Corridors in Group I-2 and I-3 occupancies serving any area caring for one or more nonambulatory persons[a]	*72*

For SI: 1 inch = 25.4 mm.

a. See California Building Code Section 1224.4.7.1 for Group I-2.

and Group L occupancies, in accordance with ASHRAE 170.

5. *For health care facilities under the jurisdiction of the Office of Statewide Health Planning and Development (OSHPD), see the California Mechanical Code.*

[BE] 1020.6.1 Corridor ceiling. Use of the space between the corridor ceiling and the floor or roof structure above as a return air plenum is permitted for one or more of the following conditions:

1. The corridor is not required to be of fire-resistance-rated construction.
2. The corridor is separated from the plenum by fire-resistance-rated construction.
3. The air-handling system serving the corridor is shut down upon activation of the air-handling unit smoke detectors required by the *California Mechanical Code.*
4. The air-handling system serving the corridor is shut down upon detection of sprinkler water flow where the building is equipped throughout with an automatic sprinkler system.
5. The space between the corridor ceiling and the floor or roof structure above the corridor is used as a component of an approved engineered smoke control system.

[BE] 1020.7 Corridor continuity. Fire-resistance-rated corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms. Where the path of egress travel within a fire-resistance-rated corridor to the exit includes travel along unenclosed exit access stairways or ramps, the fire-resistance-rating shall be continuous for the length of the stairway or ramp and for the length of the connecting corridor on the adjacent floor leading to the exit.

Exceptions:

1. Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.
2. Enclosed elevator lobbies as permitted by Item 1 of Section 1016.2 shall not be construed as intervening rooms.
3. ***[SFM]*** *In fully sprinklered office buildings, corridors may lead through enclosed elevator lobbies if all areas of the building have access to at least one required exit without passing through the elevator lobby.*

SECTION 1021
EGRESS BALCONIES

[BE] 1021.1 General. Balconies used for egress purposes shall conform to the same requirements as corridors for minimum width, required capacity, headroom, dead ends and projections.

[BE] 1021.2 Wall separation. Exterior egress balconies shall be separated from the interior of the building by walls and opening protectives as required for corridors.

Exception: Separation is not required where the exterior egress balcony is served by not less than two stairways and a dead-end travel condition does not require travel past an unprotected opening to reach a stairway.

[BE] 1021.3 Openness. The long side of an egress balcony shall be not less than 50 percent open, and the open area above the guards shall be so distributed as to minimize the accumulation of smoke or toxic gases.

[BE] 1021.4 Location. Exterior egress balconies shall have a minimum fire separation distance of 10 feet (3048 mm) measured at right angles from the exterior edge of the egress balcony to the following:

1. Adjacent lot lines.
2. Other portions of the building.
3. Other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 705 of the *California Building Code* based on fire separation distance.

For the purposes of this section, other portions of the building shall be treated as separate buildings.

SECTION 1022
EXITS

[BE] 1022.1 General. Exits shall comply with Sections 1022 through 1027 and the applicable requirements of Sections 1003 through 1015. An exit shall not be used for any purpose that interferes with its function as a means of egress. Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge. Exits shall be continuous from the point of entry into the exit to the exit discharge.

[BE] 1022.2 Exterior exit doors. Buildings or structures used for human occupancy shall have not less than one exterior door that meets the requirements of Section 1010.1.1.

[BE] 1022.2.1 Detailed requirements. Exterior exit doors shall comply with the applicable requirements of Section 1010.1.

[BE] 1022.2.2 Arrangement. Exterior exit doors shall lead directly to the exit discharge or the public way.

> ***1022.3 Basement exits in Group I-2 occupancies.*** *For additional requirements for occupancies in Group I-2, see Section 407.4.1.2 of the California Building Code.*

SECTION 1023
INTERIOR EXIT STAIRWAYS AND RAMPS

[BE] 1023.1 General. Interior exit stairways and ramps serving as an exit component in a means of egress system shall comply with the requirements of this section. Interior exit stairways and ramps shall be enclosed and lead directly to the exterior of the building or shall be extended to the exterior of the building with an exit passageway conforming to the requirements of Section 1024, except as permitted in Section 1028.2. An interior exit stairway or ramp shall not be used for any purpose other than as a means of egress and a circulation path.

[BE] 1023.2 Construction. Enclosures for interior exit stairways and ramps shall be constructed as fire barriers in accordance with Section 707 of the *California Building Code* or horizontal assemblies constructed in accordance with Section 711 of the *California Building Code*, or both. Interior exit stairway and ramp enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the interior exit stairways or ramps shall include any basements, but not any mezzanines. Enclosure for interior exit stairways and ramp *enclosures* shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.

Exceptions:

1. Interior exit stairways and ramps in Group I-3 occupancies in accordance with the provisions of Section 408.3.8 of the *California Building Code*.
2. Interior exit stairways within an atrium enclosed in accordance with Section 404.6 of the *California Building Code*.
3. Interior exit stairways in accordance with Section 510.2 of the *California Building Code*.
4. *Fixed guideway transit stations, constructed in accordance with Section 443 of the California Building Code.*

[BE] 1023.3 Termination. Interior exit stairways and ramps shall terminate at an exit discharge or a public way.

Exception: A combination of interior exit stairways, interior exit ramps and exit passageways, constructed in accordance with Sections 1023.2, 1023.3.1 and 1024, respectively, and forming a continuous protected enclosure, shall be permitted to extend an interior exit stairway or ramp to the exit discharge or a public way.

[BE] 1023.3.1 Extension. Where interior exit stairways and ramps are extended to an exit discharge or a public way by an exit passageway, the interior exit stairway and ramp shall be separated from the exit passageway by a fire barrier constructed in accordance with Section 707 of the *California Building Code* or a horizontal assembly constructed in accordance with Section 711 of the *California Building Code*, or both. The fire-resistance rating shall be not less than that required for the interior exit stairway and ramp. A fire door assembly complying with Section 716 of the *California Building Code* shall be installed in the fire barrier to provide a means of egress from the interior exit stairway and ramp to the exit passageway. Openings in the fire barrier other than the fire door assembly are prohibited. Penetrations of the fire barrier are prohibited.

Exceptions:

1. Penetrations of the fire barrier in accordance with Section 1023.5 shall be permitted.
2. Separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where there are no openings into the exit passageway extension.
3. Separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where the interior exit stairway and the exit passageway extension are pressurized in accordance with Section 909.20.5 of the *California Building Code*.

[BE] 1023.4 Openings. Interior exit stairway and ramp opening protectives shall be in accordance with the requirements of Section 716 of the *California Building Code*.

Openings in interior exit stairways and ramps other than unprotected exterior openings shall be limited to those required for exit access to the enclosure from normally occupied spaces and for egress from the enclosure.

Elevators shall not open into interior exit stairways and ramps.

[BE] 1023.5 Penetrations. Penetrations into or through interior exit stairways and ramps are prohibited except for the following:

1. Equipment and ductwork necessary for independent ventilation or pressurization.
2. Fire protection systems.

Section 707 of the *California Building Code* or a horizontal assembly complying with Section 711 of the *California Building Code*, or both. The minimum fire-resistance rating of the separation shall be 2 hours. Opening protectives in horizontal exits shall also comply with Section 716 of the *California Building Code*. Duct and air transfer openings in a fire wall or fire barrier that serves as a horizontal exit shall also comply with Section 717 of the *California Building Code*. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies have a fire-resistance rating of not less than 2 hours and do not have unprotected openings.

Exception: A fire-resistance rating is not required at horizontal exits between a building area and an above-grade pedestrian walkway constructed in accordance with Section 3104 of the *California Building Code*, provided that the distance between connected buildings is more than 20 feet (6096 mm).

Horizontal exits constructed as fire barriers shall be continuous from exterior wall to exterior wall so as to divide completely the floor served by the horizontal exit.

[BE] 1026.3 Opening protectives. Fire doors in horizontal exits shall be self-closing or automatic-closing when activated by a smoke detector in accordance with Section 716.2.6.6 of the *California Building Code*. Doors, where located in a cross-corridor condition, shall be automatic-closing by activation of a smoke detector installed in accordance with Section 716.2.6.6 of the *California Building Code*.

[BE] 1026.4 Refuge area. The refuge area of a horizontal exit shall be a space occupied by the same tenant or a public area and each such refuge area shall be adequate to accommodate the original occupant load of the refuge area plus the occupant load anticipated from the adjoining compartment. The anticipated occupant load from the adjoining compartment shall be based on the capacity of the horizontal exit doors entering the refuge area, or the total occupant load of the adjoining compartment, whichever is less.

[BE] 1026.4.1 Capacity. The capacity of the refuge area shall be computed based on a net floor area allowance of 3 square feet (0.2787 m^2) for each occupant to be accommodated therein. Where the horizontal exit also forms a smoke compartment, the capacity of the refuge area for Group I-2, I-3 *and R-2.1* occupancies and Group B ambulatory care facilities shall comply with Sections 407.5.3, 408.6.2, *420.6.2* and 422.3.2 of the *California Building Code* as applicable.

[BE] 1026.4.2 Number of exits. The refuge area into which a horizontal exit leads shall be provided with exits adequate to meet the occupant requirements of this chapter, but not including the added occupant load imposed by persons entering the refuge area through horizontal exits from other areas. *In other than I-3 occupancies, n*ot less than one refuge area exit shall lead directly to the exterior or to an interior exit stairway or ramp.

Exception: The adjoining compartment shall not be required to have a stairway or door leading directly outside, provided that the refuge area into which a horizontal exit leads has stairways or doors leading directly outside and are so arranged that egress shall not require the occupants to return through the compartment from which egress originates.

[BE] 1026.5 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.

SECTION 1027
EXTERIOR EXIT STAIRWAYS AND RAMPS

[BE] 1027.1 General. Exterior exit stairways and ramps serving as an exit component in a means of egress system shall comply with the requirements of this section.

[BE] 1027.2 Use in a means of egress. Exterior exit stairways shall not be used as an element of a required means of egress for Group I-2 occupancies. For occupancies in other than Group I-2, exterior exit stairways and ramps shall be permitted as an element of a required means of egress for buildings not exceeding six stories above grade plane or that are not high-rise buildings.

[BE] 1027.3 Open side. Exterior exit stairways and ramps serving as an element of a required means of egress shall be open on not less than one side, except for required structural columns, beams, handrails and guards. An open side shall have not less than 35 square feet (3.3 m^2) of aggregate open area adjacent to each floor level and the level of each intermediate landing. The required open area shall be located not less than 42 inches (1067 mm) above the adjacent floor or landing level.

[BE] 1027.4 Side yards. The open areas adjoining exterior exit stairways or ramps shall be either yards, courts or public ways; the remaining sides are permitted to be enclosed by the exterior walls of the building.

[BE] 1027.5 Location. Exterior exit stairways and ramps shall have a minimum fire separation distance of 10 feet (3048 mm) measured at right angles from the exterior edge of the stairway or ramps, including landings, to:

1. Adjacent lot lines.
2. Other portions of the building.
3. Other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 705 of the *California Building Code* based on fire separation distance.

For the purposes of this section, other portions of the building shall be treated as separate buildings.

Exception: Exterior exit stairways and ramps serving individual dwelling units of Group R-3 shall have a fire separation distance of not less than 5 feet (1524 mm).

[BE] 1027.6 Exterior exit stairway and ramp protection. Exterior exit stairways and ramps shall be separated from the interior of the building as required in Section 1023.2. Openings shall be limited to those necessary for egress from normally occupied spaces. Where a vertical plane projecting from the edge of an exterior exit stairway or ramp and landings is exposed by other parts of the building at an angle of

less than 180 degrees (3.14 rad), the exterior wall shall be rated in accordance with Section 1023.7.

Exceptions:

1. Separation from the interior of the building is not required for occupancies, other than those in Group R-1 or R-2, in buildings that are not more than two stories above grade plane where a level of exit discharge serving such occupancies is the first story above grade plane.
2. Separation from the interior of the building is not required where the exterior exit stairway or ramp is served by an exterior exit ramp or balcony that connects two remote exterior exit stairways or other approved exits, with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be not less than 50 percent of the height of the enclosing wall, with the top of the openings not less than 7 feet (2134 mm) above the top of the balcony.
3. Separation from the open-ended corridor of the building is not required for exterior exit stairways or ramps, provided that Items 3.1 through 3.5 are met:
    3.1. The building, including open-ended corridors, and stairways and ramps, shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
    3.2. The open-ended corridors comply with Section 1020.
    3.3. The open-ended corridors are connected on each end to an exterior exit stairway or ramp complying with Section 1027.
    3.4. The exterior walls and openings adjacent to the exterior exit stairway or ramp comply with Section 1023.7.
    3.5. At any location in an open-ended corridor where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet (3.3 m^2) or an exterior stairway or ramp shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.
4. In Group R-3 occupancies not more than four stories in height, exterior exit stairways and ramps serving individual dwelling units are not required to be separated from the interior of the building where the exterior exit stairway or ramp discharges directly to grade.

SECTION 1028
EXIT DISCHARGE

[BE] 1028.1 General. The exit discharge shall comply with Sections 1028 and 1029 and the applicable requirements of Sections 1003 through 1015.

[BE] 1028.2 Exit discharge. Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade or shall provide a direct path of egress travel to grade. The exit discharge shall not reenter a building. The combined use of Exceptions 1 and 2 shall not exceed 50 percent of the number and minimum width or required capacity of the required exits.

Exceptions:

1. Not more than 50 percent of the number and minimum width or required capacity of interior exit stairways and ramps is permitted to egress through areas, including atriums, on the level of discharge provided that all of the following conditions are met:
    1.1. Discharge of interior exit stairways and ramps shall be provided with a free and unobstructed path of travel to an exterior exit door and such exit is readily visible and identifiable from the point of termination of the enclosure.
    1.2. The entire area of the level of exit discharge is separated from areas below by construction conforming to the fire-resistance rating for the enclosure.
    1.3. The egress path from the interior exit stairway and ramp on the level of exit discharge is protected throughout by an approved automatic sprinkler system. Portions of the level of exit discharge with access to the egress path shall either be equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of interior exit stairways or ramps.
    1.4. Where a required interior exit stairway or ramp and an exit access stairway or ramp serve the same floor level and terminate at the same level of exit discharge, the termination of the exit access stairway or ramp and the exit discharge door of the interior exit stairway or ramp shall be separated by a distance of not less than 30 feet (9144 mm) or not less than one-fourth the length of the maximum overall diagonal dimension of the building, whichever is less. The distance shall be measured in a straight line between the exit discharge door from the interior exit stairway or ramp and the last tread of the exit access stairway or termination of slope of the exit access ramp.
2. Not more than 50 percent of the number and minimum width or required capacity of the interior exit stairways and ramps is permitted to egress through a vestibule provided that all of the following conditions are met:
    2.1. The entire area of the vestibule is separated from areas below by construction conform-

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 11 – CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)																							
Adopt only those sections that are listed below			**X**																				
[California Code of Regulations, Title 19, Division 1]																							
Chapter / Section																							
1103.3.3			X																				
1103.7			X																				
1103.7.3			X																				
1103.7.3.1			X																				
1103.7.8 – 1103.7.8.2			X																				
1103.7.9 – 1103.7.9.10			X																				
1103.8 – 1103.8.5.3			X																				
1103.9			X																				
1103.9.1			X																				
1105.12			X																				
1105.12.1			X																				
1107			X																				
1113			X																				
1114			X																				
1115			X																				
1116			X																				

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

area of the stairway or ramp, and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.

4. Exit access stairways and ramps within an atrium complying with the provisions of Section 404 of the *California Building Code.*
5. Exit access stairways and ramps in open parking garages that serve only the parking garage.
6. Exit access stairways and ramps serving open-air seating complying with the exit access travel distance requirements of Section 1030.7 of the *California Building Code.*
7. Exit access stairways and ramps serving the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.

1103.4.9 Waste and linen chutes. In Group I-2 occupancies, existing waste and linen chutes shall comply with Sections 1103.4.9.1 through 1103.4.9.5.

1103.4.9.1 Enclosure. Chutes shall be enclosed with 1-hour fire-resistance-rated construction. Opening protectives shall be in accordance with Section 716 of the *California Building Code* and have a fire protection rating of not less than1 hour.

1103.4.9.2 Chute intakes. Chute intakes shall comply with Section 1103.4.9.2.1 or 1103.4.9.2.2.

1103.4.9.2.1 Chute intake direct from corridor. Where intake to chutes is direct from a corridor, the intake opening shall be equipped with a chute-intake door in accordance with Section 716 of the *California Building Code* and having a fire protection rating of not less than 1 hour.

1103.4.9.2.2 Chute intake via a chute-intake room. Where the intake to chutes is accessed through a chute-intake room, the room shall be enclosed with 1-hour fire-resistance-rated construction. Opening protectives for the intake room shall be in accordance with Section 716 of the *California Building Code* and have a fire protection rating of not less than $^3/_4$ hour. Opening protectives for the chute enclosure shall be in accordance with Section 1103.4.9.1.

1103.4.9.3 Automatic sprinkler system. Chutes shall be equipped with an approved automatic sprinkler system in accordance with Section 903.2.11.2.

1103.4.9.4 Chute discharge rooms. Chutes shall terminate in a dedicated chute discharge room. Such rooms shall be separated from the remainder of the building by not less than 1-hour fire-resistance-rated construction. Opening protectives shall be in accordance with Section 716 of the *California Building Code* and have a fire protection rating of not less than 1 hour.

1103.4.9.5 Chute discharge protection. Chute discharges shall be equipped with a self-closing or automatic-closing opening protective in accordance with Section 716 of the *California Building Code* and having a fire protection rating of not less than 1 hour.

1103.4.10 Flue-fed incinerators. Existing flue-fed incinerator rooms and associated flue shafts shall be protected with 1-hour fire-resistance-rated construction and shall not have other vertical openings connected with the space other than the associated flue. Opening protectives shall be in accordance with Section 716 of the *California Building Code* and have a fire protection rating of not less than 1 hour.

1103.5 Sprinkler systems. An automatic sprinkler system shall be provided in existing buildings in accordance with Sections 1103.5.1 through 1103.5.5.

1103.5.1 Group A-2. Where alcoholic beverages are consumed in a Group A-2 occupancy having an occupant load of 300 or more, the fire area containing the Group A-2 occupancy shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

1103.5.2 Group I-2. In Group I-2, an automatic sprinkler system shall be provided in accordance with Section 1105.9.

1103.5.3 Group I-2, Condition 2. In addition to the requirements of Section 1103.5.2, existing buildings of Group I-2, Condition 2 occupancy shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. The automatic sprinkler system shall be installed as established by the adopting ordinance. **[DATE BY WHICH SPRINKLER SYSTEM MUST BE INSTALLED].**

1103.5.4 High-rise buildings. Where Appendix M has not been adopted, existing high-rise buildings that do not have a previously approved fire sprinkler system shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 where any of the following conditions apply:

1. The high-rise building has an occupied floor located more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access.
2. The high-rise building has occupied floors located more than 75 feet (22 860 mm) and not more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, and the building does not have at least two interior exit stairways complying with Section 1104.10 that are separated from the building interior by fire assemblies having a fire-resistance rating of not less than 2 hours with opening protection in accordance with Table 716.1(2) of the *California Building Code.*
3. The high-rise building has occupied floors located more than 75 feet (22 860 mm) and not more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, and the building does not have a fire alarm system that includes smoke detection in mechanical equipment, electrical, transformer, telephone equipment and similar rooms; corridors; elevator lobbies; and at doors penetrating interior exit stairway enclosures.

Building owners shall file a compliance schedule with the fire code official not later than 365 days after receipt of a written notice. The compliance schedule shall not exceed 12 years for completion of the automatic sprinkler system retrofit.

1103.5.5 Pyroxylin plastics. An automatic sprinkler system shall be provided throughout existing buildings where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg). Vaults located within buildings for the storage of raw pyroxylin shall be protected with an approved automatic sprinkler system capable of discharging 1.66 gallons per minute per square foot (68 L/min/m^2) over the area of the vault.

1103.6 Standpipes. Existing structures shall be equipped with standpipes installed in accordance with Section 905 where required in Sections 1103.6.1 and 1103.6.2. The fire code official is authorized to approve the installation of manual standpipe systems to achieve compliance with this section where the responding fire department is capable of providing the required hose flow at the highest standpipe outlet.

1103.6.1 Existing multiple-story buildings. Existing buildings with occupied floors located more than 50 feet (15 240 mm) above the lowest level of fire department access or more than 50 feet (15 240 mm) below the highest level of fire department access shall be equipped with standpipes.

1103.6.2 Existing helistops and heliports. Existing buildings with a rooftop helistop or heliport located more than 30 feet (9144 mm) above the lowest level of fire department access to the roof level on which the helistop or heliport is located shall be equipped with standpipes in accordance with Section 2007.5.

1103.7 Fire alarm systems. An approved fire alarm system shall be installed in existing buildings and structures in accordance with Sections 1103.7.1 through 1103.7.6 and provide occupant notification in accordance with Section 907.5 unless other requirements are provided by other sections of this code. *Existing high-rise buildings shall comply with Section 1103.7.9.*

Exception: Occupancies with an existing, previously approved fire alarm system.

1103.7.1 Group E. A fire alarm system shall be installed in existing Group E occupancies in accordance with Section 907.2.3.

Exceptions:

1. A manual fire alarm system is not required in a building with a maximum area of 1,000 square feet (93 m^2) that contains a single classroom and is located not closer than 50 feet (15 240 mm) from another building.
2. A manual fire alarm system is not required in Group E occupancies with an occupant load less than 50.

1103.7.2 *Reserved*.

1103.7.3 Group I-2. In Group I-2, an automatic fire alarm system *that activates the occupant notification system in accordance with Section 907.5* shall be installed in accordance with Section 1105.10. <

1103.7.3.1 Additional provisions for existing Group I occupancies. *In projects requiring the Office of Statewide Health Planning and Development approval in existing Group I-2 occupancies located in buildings defined as hospitals in Section 1250 of the Health and Safety Code, facilities not equipped with an automatic sprinkler system throughout shall be equipped with an automatic fire alarm system which responds to the products of combustion other than heat.* <

Exception: *Heat detectors may be used in closets, unusable spaces under floor areas, storage rooms, bathrooms and rooms of similar use.*

1103.7.4 Group I-3. An automatic and manual fire alarm system shall be installed in existing Group I-3 occupancies in accordance with Section 907.2.6.3.

1103.7.5 Group R-1. A fire alarm system and smoke alarms shall be installed in existing Group R-1 occupancies in accordance with Sections 1103.7.5.1 through 1103.7.5.2.1.

1103.7.5.1 Group R-1 hotel and motel manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 hotels and motels more than one story in height or with more than 20 sleeping units.

Exceptions:

1. A manual fire alarm system is not required in buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, egress court or yard.
2. A manual fire alarm system is not required in buildings not more than three stories in height with not more than 20 sleeping units and equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Manual fire alarm boxes are not required throughout the building where the following conditions are met:
    3.1. The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
    3.2. The notification appliances will activate upon sprinkler water flow.
    3.3. Not less than one manual fire alarm box is installed at an approved location.

1103.7.5.1.1 Group R-1 hotel and motel automatic smoke detection system. An automatic smoke detection system that activates the occupant notifica-

by a mortgage, or transfers by a sale under a power of sale after a default in an obligation secured by a deed of trust or secured by any other instrument containing a power of sale.

(4) Transfers by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship or trust.

(5) Transfers from one co-owner to one or more co-owners.

(6) Transfers made to a spouse, or to a person or persons in the lineal line of consanguinity of one or more of the transferors.

(7) Transfers between spouses resulting from a decree of dissolution of a marriage, from a decree of legal separation, or from a property settlement agreement incidental to either of those decrees.

(8) Transfers by the Controller in the course of administering the Unclaimed Property Law provided for in Chapter 7 (commencing with Section 1500) of Title 10 of Part 3 of the Code of Civil Procedure.

(9) Transfers under the provisions of Chapter 7 (commencing with Section 3691) or Chapter 8 (commencing with Section 3771) of Part 6 of Division 1 of the Revenue and Taxation Code.

(e) No liability shall arise, nor any action be brought or maintained against any agent of any party to a transfer of title, including any person or entity acting in the capacity of an escrow, for any error, inaccuracy or omission relating to the disclosure required to be made by a transferor pursuant to this section.

However, this subdivision does not apply to a licensee, as defined in Section 10011 of the Business and Professions Code, where the licensee participates in the making of the disclosure required to be made pursuant to this section with actual knowledge of the falsity of the disclosure.

(f) Except as otherwise provided in this section, this section shall not be deemed to create or imply a duty upon a licensee, as defined in Section 10011 of the Business and Professions Code, or upon any agent of any party to a transfer of title, including any person or entity acting in the capacity of an escrow, to monitor or ensure compliance with this section.

(g) No transfer of title shall be invalidated on the basis of a failure to comply with this section, and the exclusive remedy for the failure to comply with this section is an award of actual damages not to exceed one hundred dollars ($100), exclusive of any court costs and attorney's fees.

(h) Local ordinances requiring smoke detectors in single-family dwellings may be enacted or amended. However, the ordinances shall satisfy the minimum requirements of this section.

(i) For the purposes of this section, "single-family dwelling" does not include a manufactured home as defined in Section 18007, a mobilehome as defined in Section 18008, or a commercial coach as defined in Section 18001.8.

(j) This section shall not apply to the installation of smoke detectors in dwellings intended for human occupancy, as defined in and regulated by Section 13113.7 of the Health and Safety Code, as added by Senate Bill No. 1448 in the 1983-84 Regular Session.

1103.9 Carbon monoxide detection. Carbon monoxide detection shall be installed in existing Group I-2, I-4 and R occupancies and in classrooms in Group E occupancies where those units include any of the conditions identified in Sections 915.1.2 through 915.1.6. The carbon monoxide alarms shall be installed in the locations specified in Section 915.2 and the installation shall be in accordance with Section 915.4. <

Exceptions:

1. Carbon monoxide alarms are permitted to be solely battery operated where the code that was in effect at the time of construction did not require carbon monoxide detectors to be provided.
2. Carbon monoxide alarms are permitted to be solely battery operated in dwelling units that are not served from a commercial power source.
3. A carbon monoxide detection system in accordance with Section 915.5 shall be an acceptable alternative to carbon monoxide alarms.

1103.9.1 Carbon monoxide detection in existing Group E buildings. *For the purposes of carbon monoxide detection, an existing Group E is a building constructed before January 1, 2017. When an existing Group E occupancy has a fossil-fuel-burning furnace located inside the building, the school is encouraged to install carbon monoxide detection in accordance with the California Existing Building Code.*

No person shall install, market, distribute, offer for sale or sell any carbon monoxide device in the state of California unless the device and instructions have been approved and listed by the Office of the State Fire Marshal.

1103.10 Medical gases. Medical gases stored and transferred in health-care-related facilities shall be in accordance with Chapter 53.

SECTION 1104
MEANS OF EGRESS FOR EXISTING BUILDINGS

1104.1 General. Means of egress in existing buildings shall comply with the minimum egress requirements where specified in Table 1103.1 as further enumerated in Sections 1104.2 through 1104.25, and the building code that applied at the time of construction. Where the provisions of this chapter conflict with the building code that applied at the time of construction, the most restrictive provision shall apply. Existing buildings that were not required to comply with a building code at the time of construction shall comply with the minimum egress

requirements where specified in Table 1103.1 as further enumerated in Sections 1104.2 through 1104.25.

1104.2 Elevators, escalators and moving walks. Elevators, escalators and moving walks shall not be used as a component of a required means of egress.

Exceptions:

1. Elevators used as an accessible means of egress where allowed by Section 1009.4.
2. Previously approved elevators, escalators and moving walks in existing buildings.

1104.3 Exit sign illumination. Exit signs shall be internally or externally illuminated. The face of an exit sign illuminated from an external source shall have an intensity of not less than 5 footcandles (54 lux). Internally illuminated signs shall provide equivalent luminance and be listed for the purpose.

Exception: Approved self-luminous signs that provide evenly illuminated letters shall have a minimum luminance of 0.06 foot-lamberts (0.21 cd/m^2).

1104.4 Power source. Where emergency illumination is required in Section 1104.5, exit signs shall be visible under emergency illumination conditions.

Exception: Approved signs that provide continuous illumination independent of external power sources are not required to be connected to an emergency electrical system.

1104.5 Illumination emergency power. Where means of egress illumination is provided, the power supply for means of egress illumination shall normally be provided by the premises' electrical supply. In the event of power supply failure, illumination shall be automatically provided from an emergency system for the following occupancies where such occupancies require two or more means of egress:

1. Group A having 50 or more occupants.

   Exception: Assembly occupancies used exclusively as a place of worship and having an occupant load of less than 300.

2. Group B buildings three or more stories in height, buildings with 100 or more occupants above or below a level of exit discharge serving the occupants or buildings with 1,000 or more total occupants.
3. Group E in interior exit access and exit stairways and ramps, corridors, windowless areas with student occupancy, shops and laboratories.
4. Group F having more than 100 occupants.

   Exception: Buildings used only during daylight hours and that are provided with windows for natural light in accordance with the *California Building Code.*

5. Group I.
6. Group M.

   Exception: Buildings less than 3,000 square feet (279 m^2) in gross sales area on one story only, excluding mezzanines.

7. Group R-1.

   Exception: Where each sleeping unit has direct access to the outside of the building at grade.

8. Group R-2.

   Exception: Where each dwelling unit or sleeping unit has direct access to the outside of the building at grade.

1104.5.1 Emergency power duration and installation. Emergency power for means of egress illumination shall be provided in accordance with Section 1203. In other than Group I-2, emergency power shall be provided for not less than 60 minutes for systems requiring emergency power.

1104.6 Guards. Guards complying with this section shall be provided at the open sides of means of egress that are more than 30 inches (762 mm) above the floor or grade below.

1104.6.1 Height of guards. Guards shall form a protective barrier not less than 42 inches (1067 mm) high.

Exceptions:

1. Existing guards on the open side of stairways shall be not less than 30 inches (760 mm) high.
2. Existing guards within dwelling units shall be not less than 36 inches (910 mm) high.
3. Existing guards in assembly seating areas.

1104.6.2 Opening limitations. Open guards shall have balusters or ornamental patterns such that a 6-inch-diameter (152 mm) sphere cannot pass through any opening up to a height of 34 inches (864 mm).

Exceptions:

1. At elevated walking surfaces for access to, and use of, electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.
2. In occupancies in Group I-3, F, H or S, the clear distance between intermediate rails measured at right angles to the rails shall not exceed 21 inches (533 mm).
3. Approved existing open guards.

1104.7 Size of doors. The required capacity of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear opening width of 28 inches (711 mm). Where this section requires a minimum clear opening width of 28 inches (711 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 28 inches (711 mm). The minimum clear opening height of doorways shall be 80 inches (2032 mm).

Exceptions:

1. The minimum and maximum width shall not apply to door openings that are not part of the required means of egress in occupancies in Group R-2 and R-

aggregate area of the openings between the corridor and a room are not greater than 80 square inches (51 613 mm^2) and are located with the top edge of any opening not higher than 48 inches above the floor.

1105.5.5 Penetrations. The space around penetrating items shall be filled with an approved material to limit the passage of smoke.

1105.5.6 Joints. Joints shall be filled with an approved material to limit the passage of smoke.

1105.5.7 Ducts and air transfer openings. The space around a duct penetrating a smoke partition shall be filled with an approved material to limit the passage of smoke. Air transfer openings in smoke partitions shall be provided with a smoke damper complying with Section 717.3.2.2 of the *California Building Code*.

Exception: Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.

1105.6 Means of egress. In addition to the means of egress requirements in Section 1104, Group I-2 facilities shall meet the means of egress requirements in Sections 1105.6.1 through 1105.6.8.

1105.6.1 Two means of egress. A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which the means of egress originated. Smoke compartments that do not contain an exit shall be provided with direct access to not less than two adjacent smoke compartments.

1105.6.2 Size of door. Means of egress doors used for the movement of patients in beds shall provide a minimum clear width of $41^1/_2$ inches (1054 mm). The height of the door opening shall be not less than 80 inches (2032 mm).

Exceptions:

1. Door closers and door stops shall be permitted to be 78 inches (1981 mm) minimum above the floor.
2. In Group I-2, Condition 1, existing means of egress doors used for the movement of patients in beds that provide a minimum clear width of 32 inches (813 mm) shall be permitted to remain.

1105.6.3 Group I-2 occupancies. In Group I-2, where a door serves as an opening protective in a fire barrier, smoke barrier or fire wall and where the door is equipped with a hold-open device, such door shall automatically close upon any of the following conditions:

1. Actuation of smoke detectors initiating the hold-open device.
2. Activation of the fire alarm system within the zone.
3. Activation of an automatic sprinkler system within the zone.

1105.6.4 Ramps. In areas where ramps are used for movement of patients in beds, the clear width of the ramp shall be not less than 48 inches (1219 mm).

1105.6.5 Corridor width. In areas where corridors are used for movement of patients in beds, the clear width of the corridor shall be not less than 48 inches (1219 mm).

1105.6.6 Dead-end corridors. In smoke compartments containing patient sleeping rooms and treatment rooms, dead-end corridors shall not exceed 30 feet (9144 mm) unless approved by the fire code official.

1105.6.7 Separation of exit access doors. Patient sleeping rooms, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (92.9 m^2) shall have not less than two exit access doors placed a distance apart equal to not less than one-third of the length of the maximum overall diagonal dimension of the patient sleeping room or suite to be served, measured in a straight line between exit access doors.

1105.6.8 Aisles. In areas where aisles are used for movement of patients in beds, the clear width of the aisle shall be not less than 48 inches (1219 mm).

1105.7 Smoke compartments. Smoke compartments shall be provided in existing Group I-2, Condition 2, in accordance with Sections 1105.7.1 through 1105.7.6.

1105.7.1 Design. Smoke barriers shall be provided to subdivide each story used for patients sleeping with an occupant load of more than 30 patients into not fewer than two smoke compartments.

1105.7.1.1 Refuge areas. Refuge areas shall be provided within each smoke compartment. The size of the refuge area shall accommodate the occupants and care recipients from the adjoining smoke compartment. Where a smoke compartment is adjoined by two or more smoke compartments, the minimum area of the refuge area shall accommodate the largest occupant load of the adjoining compartments.

The size of the refuge area shall provide the following:

1. Not less than 30 net square feet (2.8 m^2) for each care recipient confined to a bed or stretcher.
2. Not less than 15 square feet (1.4 m^2) for each resident in a Group I-2 using mobility assistance devices.
3. Not less than 6 square feet (0.56 m^2) for each occupant not addressed in Items 1 and 2.

Areas of spaces permitted to be included in the calculation of the refuge area are corridors, sleeping areas, treatment rooms, lounge or dining areas and other low-hazard areas.

1105.7.2 Smoke barriers. Smoke barriers shall be constructed in accordance with Section 709 of the *California Building Code*.

Exceptions:

1. Existing smoke barriers are permitted to remain where the existing smoke barrier has a minimum fire-resistance rating of $^1/_2$ hour.
2. Smoke barriers shall be permitted to terminate at an atrium enclosure in accordance with Section 404.6 of the *California Building Code*.

1105.7.3 Opening protectives. Openings in smoke barriers shall be protected in accordance with Section 716 of the *California Building Code*. Opening protectives shall have a minimum fire protection rating of $^1/_3$ hour.

Exceptions:

1. Existing wired glass vision panels in doors shall be permitted to remain.

2. Existing nonlabeled protection plates shall be permitted to remain.

1105.7.4 Penetrations. Penetrations of smoke barriers shall comply with the *California Building Code*.

Exception: Approved existing materials and methods of construction.

1105.7.5 Joints. Joints made in or between smoke barriers shall comply with the *California Building Code*.

Exception: Approved existing materials and methods of construction.

1105.7.6 Duct and air transfer openings. Penetrations in a smoke barrier by duct and air transfer openings shall comply with Section 717 of the *California Building Code*.

Exception: Where existing duct and air transfer openings in smoke barriers exist without smoke dampers, they shall be permitted to remain. Any changes to existing smoke dampers shall be submitted for review and approved in accordance with Section 717 of the *California Building Code*.

1105.8 Group I-2 care suites. Care suites in existing Group I-2, Condition 2 occupancies shall comply with Sections 407.4.4 through 407.4.4.6.2 of the *California Building Code*.

1105.9 Group I-2 automatic sprinkler system. An automatic sprinkler system installed in accordance with Section 903.3.1.1 shall be provided throughout the floor containing the Group I-2 fire area. The sprinkler system shall be provided throughout the floor where the Group I-2 occupancy is located, on all floors between the Group I-2 occupancy fire area and the level of exit discharge, the level of exit discharge, and all floors below the level of exit discharge.

Exception: Floors classified as an open parking garage are not required to be sprinklered.

1105.10 Group I-2 automatic fire alarm system. An automatic fire alarm system shall be installed in existing Group I-2 occupancies in accordance with Section 907.2.6.2.

Exception: Manual fire alarm boxes in patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such that manual fire alarm boxes are visible, are provided with ready access, and travel distances required in Section 907.4.2.1 are not exceeded.

1105.11 Essential electrical systems. Essential electrical systems in Group I-2, Condition 2 occupancies shall be in accordance with Sections 1105.11.1 and 1105.11.2.

1105.11.1 Where required. Where required by NFPA 99, Group I-2, Condition 2 occupancies shall be provided with an essential electrical system in accordance with NFPA 99.

1105.11.2 Installation and duration. In Group I-2, Condition 2 occupancies, the installation and duration of operation of existing essential electrical systems shall be based on a hazard vulnerability analysis conducted in accordance with NFPA 99.

1105.12 Group I-2 separations between construction areas. *In an existing Group I-2 occupancy, areas of construction, alteration or demolition shall be separated from occupied portions of the building. Where, in accordance with Section 701.2, the maintenance of fire-resistance-rated construction is not required, separations used to separate areas of construction, alteration, or demolition from occupied portions of the building shall be constructed of materials that comply with one of the following:*

1. *Floors and nonbearing walls and partitions in accordance with California Building Code Chapter 6 and Table 601.*
2. *Noncombustible nonbearing walls and partitions.*

1105.12.1 Minor work*. Where minor building work identified in California Building Code Section 105.2, Item 7 is provided with a separation from occupied portions of the building, materials that provide such separation shall be approved by the fire code official and shall comply with one of the following:*

1. *Floors and nonbearing walls and partitions in accordance with California Building Code Chapter 6 and Table 601.*
2. *Noncombustible nonbearing walls and partitions.*
3. *Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.*
4. *Materials exhibiting a heat peak release rate not exceeding 300 kW/m² when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m² in the horizontal orientation on specimens at the thickness intended for use.*

SECTION 1106
REQUIREMENTS FOR OUTDOOR OPERATIONS

1106.1 Tire storage yards. Existing tire storage yards shall be provided with fire apparatus access roads in accordance with Sections 1106.1.1 and 1106.1.2.

1106.1.1 Access to piles. Access roadways shall be within 150 feet (45 720 mm) of any point in the storage yard where storage piles are located not less than 20 feet (6096 mm) from any storage pile.

1106.1.2 Location within piles. Fire apparatus access roads shall be located within all pile clearances identified in Section 3405.4 and within all fire breaks required in Section 3405.5.

SECTION 1107
GROUP A PUBLIC ADDRESS SYSTEM

1107.1 Group A occupancy public address system. *Existing buildings or structures intended for public assemblies of 10,000 or more persons, which, on or after January 1, 1991, have or subsequently have installed a public address system, shall have an emergency backup power system for the public address system.*

SECTIONS 1108 THROUGH 1112
RESERVED

SECTION 1113
EXISTING GROUP R-1 AND GROUP R-2 OCCUPANCIES [SFM]

1113.1 Scope. *The provisions of this section are intended to maintain or increase the current degree of public safety,*

health and general welfare in existing buildings classified as Group R Occupancies.

1113.1.1 Application. *In accordance with Health and Safety Code Section 13143.2, the provisions of Sections 1113.2 through 1113.12 shall only apply to multiple-story structures existing on January 1, 1975, let for human habitation, including, and limited to, apartment houses, hotels and motels wherein rooms used for sleeping are let above the ground floor.*

1113.2 Number of exits. *Every apartment and every other sleeping room shall have access to not less than two exits when the occupant load is 10 or more (exits need not be directly from the apartment or sleeping room). A fire escape as specified herein may be used as one required exit.*

Subject to approval of the authority having jurisdiction, a ladder device as specified herein may be used in lieu of a fire escape when the construction feature or the location of the building on the property cause the installation of a fire escape to be impractical.

1113.3 Stair construction. *All stairs shall have a minimum run of 9 inches (229 mm) and a maximum rise of 8 inches (203 mm) and a minimum width exclusive of handrails of 30 inches (762 mm). Every stairway shall have at least one handrail. A landing having a minimum horizontal dimension of 30 inches (762 mm) shall be provided at each point of access to the stairway.*

1113.4 Interior stairways. *Every interior stairway shall be enclosed with walls of not less than one-hour fire-resistive construction. Where existing partitions form part of a stairwell enclosure, wood lath and plaster in good condition will be acceptable in lieu of one-hour fire-resistive construction. Doors to such enclosures shall be protected by a self-closing door equivalent to a solid wood door with a thickness of not less than $1^{3}/_{4}$ inches (44.5 mm).*

Enclosures shall include all landings between flights and any corridors, passageways or public rooms necessary for continuous exit to the exterior of the buildings. The stairway need not be enclosed in a continuous shaft if cut off at each story by the fire-resistive construction required by this subsection for stairwell enclosures. Enclosures shall not be required if an automatic sprinkler system is provided for all portions of the building except bedrooms, apartments and rooms accessory thereto. Interior stairs and vertical openings need not be enclosed in two-story buildings.

1113.5 Exterior stairways. *Exterior stairways shall be noncombustible or of wood of not less than 2-inch (51 mm) nominal thickness with solid treads and risers.*

1113.6 Fire escapes, exit ladder devices. *Fire escapes may be used as one means of egress if the pitch does not exceed 60 degrees, the width is not less than 18 inches (457 mm), the treads are not less than 4 inches (102 mm) wide, and they extend to the ground or are provided with counterbalanced stairs reaching to the ground. Access shall be by an opening having a minimum dimension of 29 inches (737 mm) when open. The sill shall not be more than 30 inches (762 mm) above the floor and landing.*

A ladder device, when used in lieu of a fire escape, shall conform to Section 1113.6.1 and the following:

Serves an occupant load of nine people or less or a single dwelling unit or hotel room.

The building does not exceed three stories in height.

The access is adjacent to an opening as specified for emergency egress or rescue or from a balcony.

The device does not pass in front of any building opening below the unit being served.

The availability of activating the ladder device is accessible only to the opening or balcony served.

The device as installed will not cause a person using it to be within 12 feet (3658 mm) of exposed energized high-voltage conductors.

1113.6.1 Exit ladder devices.

1113.6.1.1 Scope. *This standard for exit ladder devices is applicable where such devices are permitted by the building official for installation on existing apartment houses and hotels in conformance with the California Building Code.*

1113.6.1.2 Instructions. *Installation shall be in accordance with the manufacturer's instructions. Instructions shall be illustrated and shall include directions and information adequate for attaining proper and safe installation of the product. Where exit ladder devices are intended for mounting on different support surfaces, specific installation instructions shall be provided for each surface.*

1113.6.1.3 General design. *All load-bearing surfaces and supporting hardware shall be of noncombustible materials. Exit ladder devices shall have a minimum width of 12 inches (305 mm) when in the position intended for use. The design load shall not be less than 400 pounds (1780 N) for 16-foot (4877 mm) length and 600 pounds (2699 N) for 25-foot (7620 mm) length.*

1113.6.1.4 Performance.

1113.6.1.4.1 *Exit ladder devices shall be capable of withstanding an applied load of four times the design load when installed in the manner intended for use. Test loads shall be applied for a period of one hour.*

1113.6.1.4.2 *Exit ladder devices of the retractable type shall, in addition to the static load requirements of Section 413.6.1.4.1 of the California Building Code, be capable of withstanding the following tests:*

1. *Rung strength*
2. *Rung-to-side-rail shear strength*
3. *Release mechanism*
4. *Low temperature*

1113.6.1.5 Rung-strength test. *Rungs of retractable exit ladder devices shall be capable of withstanding a load of 1,000 pounds (4448 N) when applied to a $3^{1}/_{2}$-inch-wide (89 mm) block resting at the center of the rung. The test load shall be applied for a period of one hour. The ladder shall remain operational following this test.*

1113.6.1.6 Rung-to-side-rail shear test. *Rungs of retractable exit ladder devices shall be capable of withstanding 1,000 (4448 N) when applied to a $3^{1}/_{2}$-inch-wide (89 mm) block resting on the center rung as near*

the side rail as possible. The test load shall be applied for a period of one hour. Upon removal of the test load the fasteners attaching the rung to the side rail shall show no evidence of failure. The ladder shall remain operational following the test.

1113.6.1.7 Release mechanism test. *The release mechanism of retractable exit ladder devices shall operate with an average applied force of not more than 5 pounds (22.2 N) for hand-operated releasing mechanisms and an average applied force of not more than 25 pounds (111 N) for foot-pedal types of releasing mechanisms. For these tests, a force gauge shall be applied to the release mechanism, and the average of three consecutive readings shall be computed.*

1113.6.1.8 Low temperature operation test. *Representative samples of the exit ladder devices shall be subjected to a temperature of -40ºC in an environmental chamber for a period of 24 hours. The release mechanism shall be operated immediately upon removal from the chamber. The ladder device shall function as intended without any restriction of operation.*

1113.7 Doors and openings. *Exit doors and openings shall meet the requirements of Sections 1008.1.2, 1008.8.1.8, 1008.1.9 and 708.6 of the California Building Code. Doors shall not reduce the required width of stairway more than 6 inches (152 mm) when open. Transoms and openings other than doors from corridors to rooms shall be fixed closed and shall be covered with a minimum of $^3/_4$-inch (19 mm) plywood or $^1/_2$-inch (13 mm) gypsum wallboard or equivalent material.*

Exceptions:

1. *Existing solid-bonded wood-core doors $1^3/_8$ inches thick (34.9 mm), or their equivalent may be continued in use.*
2. *Where the existing frame will not accommodate a door complying with Section 708.6 of the California Building Code, a $1^3/_8$-inch-thick (35 mm) solid-bonded wood-core door may be used.*

1113.8 Exit signs. *Every exit doorway or change of direction of a corridor shall be marked with a well-lighted exit sign having letters at least 5 inches (127 mm) high.*

1113.9 Enclosure of vertical openings. *Elevators, shafts, ducts and other vertical openings shall be enclosed as required for stairways in Section 1113.5 or by wired glass set in metal frames. Doors shall be noncombustible or as regulated in Section 1113.4.*

1113.10 Separation of occupancies. *Occupancy separations shall be provided as specified in Section 508 of the California Building Code. Lobbies and public dining rooms, not including cocktail lounges, shall not require a separation if the kitchen is so separated from the dining room. Every room containing a boiler or central heating plant shall be separated from the rest of the building by not less than a one-hour fire-resistive occupancy separation.*

Exception: *A separation shall not be required for such rooms with equipment serving only one dwelling unit.*

1113.11 Equivalent protection. *In lieu of the separation of occupancies required by Section 1113.10, equivalent protection may be permitted when approved by the enforcement agency.*

Exception: *The provisions of Sections 1113.3 through 1113.11 above shall not apply to any existing apartment house, hotel or motel having floors (as measured from the top of the floor surface) used for human occupancy located more than 75 feet (22 860 mm) above the lowest floor level having building access which is subject to the provisions of Section 1114 and the California Existing Building Code, relating to existing high-rise buildings.*

Note: *In accordance with Health and Safety Code Section 17920.7, the provisions of Sections 1113.3 through 1113.11 above shall apply only to multiple-story structures existing on January 1, 1975, let for human habitation including, and limited to, apartments, houses, hotels and motels wherein rooms used for sleeping are let above the ground floor.*

1113.12 Fire alarms.

1113.12.1 General. *Every apartment house three or more stories in height or containing more than 15 apartments, every hotel three or more stories in height or containing 20 or more guest rooms, shall have installed therein an automatic or manually operated fire alarm system. Such fire alarm systems shall be so designed that all occupants of the building may be warned simultaneously and shall be in accordance with the California Fire Code. See Section 1114.14 for special requirements in buildings over 75 feet (22 860 mm) in height.*

Exception: *A fire alarm system need not be installed provided such apartment house or hotel is separated by an unpierced wall of not less than four-hour fire resistance in buildings of Type IA, Type IIB, Type III or Type IV construction and two-hour fire resistance in buildings of all other types of construction provided:*

1. *Areas do not exceed the number of apartments or guest rooms stipulated.*
2. *The fire-resistive wall conforms to the requirements of Section 706.6 of the California Building Code.*
3. *The wall complies with all other applicable provisions of the California Building Code.*
4. *The wall extends to all outer edges of horizontal projecting elements, such as balconies, roof overhangs, canopies, marquees or architectural projections.*
5. *No openings are permitted for air ducts or similar penetrations, except that openings for pipes, conduits and electrical outlets of copper, sheet steel or ferrous material shall be permitted through such wall and need not be protected, provided they do not unduly impair the required fire resistance of the assembly.*
6. *Tolerances around such penetrations shall be filled with approved noncombustible materials.*

1113.12.2 Installation. *The installation of all fire alarm equipment shall be in accordance with the California Fire Code.*

1113.13 Existing Group R Occupancy high-rise buildings.

1113.13.1 General. *Regardless of other provisions of these regulations relating to existing high-rise buildings,*

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 12 – ENERGY SYSTEMS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]																							
Chapter / Section																							
1203.1.2			X																				
1203.1.3.1			X																				
1203.1.5.1			X																				
1203.2.11			X																				
1205.2.4			X																				
1205.3.4			X																				
1207.11.3			X																				
1207.11.4			X																				
Table 1207.11.4			X																				
1207.11.6			X																				
1207.11.7			X																				
1207.11.7.1			X																				
Figure 1207.11.7.1			X																				
1207.11.7.2			X																				
1207.11.7.3			X																				

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

CHAPTER 12
ENERGY SYSTEMS

User note:

About this chapter: *Chapter 12 was added to address the current energy systems found in this code, and is provided for the introduction of a wide range of systems to generate and store energy in, on and adjacent to buildings and facilities. The expansion of such energy systems is related to meeting today's energy, environmental and economic challenges. Ensuring appropriate criteria to address the safety of such systems in building and fire codes is an important part of protecting the public at large, building occupants and emergency responders. More specifically, this chapter addresses standby and emergency power, portable generators, photovoltaic systems, fuel cell energy systems, and energy storage systems.*

SECTION 1201
GENERAL

1201.1 Scope. The provisions of this chapter shall apply to the installation, operation, maintenance, repair, retrofitting, testing, commissioning and decommissioning of energy systems used for generating or storing energy. It shall not apply to equipment associated with the generation, control, transformation, transmission, or distribution of energy installations that is under the exclusive control of an electric utility or lawfully designated agency.

1201.2 Electrical wiring and equipment. Electrical wiring and equipment used in connection with energy systems shall be installed and maintained in accordance with this chapter, Section 603 and *the California Electrical Code.*

1201.3 Mixed system installation. Where approved, the aggregate nameplate kWh energy of all energy storage systems in a fire area shall not exceed the maximum quantity specified for any of the energy systems in this chapter. Where required by the fire code official, a hazard mitigation analysis shall be provided and approved in accordance with Section 104.8.2 to evaluate any potential adverse interaction between the various energy systems and technologies.

SECTION 1202
DEFINITIONS

1202.1 Definitions. The following terms are defined in Chapter 2:

BATTERY SYSTEM, STATIONARY STORAGE.

BATTERY TYPES.

CAPACITOR ENERGY STORAGE SYSTEM.

CRITICAL CIRCUIT.

EMERGENCY POWER SYSTEM.

ENERGY STORAGE MANAGEMENT SYSTEMS.

ENERGY STORAGE SYSTEM (ESS).

ENERGY STORAGE SYSTEM, ELECTROCHEMICAL.

ENERGY STORAGE SYSTEM, MOBILE.

ENERGY STORAGE SYSTEM, WALK-IN UNIT.

ENERGY STORAGE SYSTEM CABINET.

ENERGY STORAGE SYSTEM COMMISSIONING.

ENERGY STORAGE SYSTEM DECOMMISSIONING.

FUEL CELL POWER SYSTEM, STATIONARY.

PORTABLE GENERATOR.

STANDBY POWER SYSTEM.

SECTION 1203
EMERGENCY AND STANDBY POWER SYSTEMS

1203.1 General. Emergency power systems and standby power systems required by this code or the *California Building Code* shall comply with Sections 1203.1.1 through 1203.1.9.

1203.1.1 Stationary generators. Stationary emergency and standby power generators required by this code shall be listed in accordance with UL 2200.

1203.1.2 Fuel line piping protection. Fuel lines supplying a generator set inside a high-rise building *or new Group I-2 occupancy having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* shall be separated from areas of the building other than the room the generator is located in by one of the following methods:

1. A fire-resistant pipe-protection system that has been tested in accordance with UL 1489. The system shall be installed as tested and in accordance with the manufacturer's installation instructions, and shall have a rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required rating shall be reduced to 1 hour.
2. An assembly that has a fire-resistance rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required fire-resistance rating shall be reduced to 1 hour.
3. Other approved methods.

1203.1.3 Installation. Emergency power systems and standby power systems shall be installed in accordance with the *California Building Code*, *the California Electrical Code*, NFPA 110 and NFPA 111.

1203.1.3.1 Combustion engines and gas turbines. *The installation of combustion engines and gas turbines shall be in accordance with California Building Code Section 442 and NFPA 37.*

1203.1.4 Load transfer. Emergency power systems shall automatically provide secondary power within 10 seconds after primary power is lost, unless specified otherwise in this code. Standby power systems shall automatically provide secondary power within 60 seconds after primary power is lost, unless specified otherwise in this code.

1203.1.5 Load duration. Emergency power systems and standby power systems shall be designed to provide the required power for a minimum duration of 2 hours without being refueled or recharged, unless specified otherwise in this code.

1203.1.5.1 High-rise buildings and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest floor level having building access. *Emergency power systems and standby power systems shall be designed to provide the required power for a minimum duration of 6 hours without being refueled or recharged. The minimum required fuel supply shall be maintained at all times.*

1203.1.6 Uninterruptable power source. An uninterrupted source of power shall be provided for equipment where required by the manufacturer's instructions, the listing, this code or applicable referenced standards.

1203.1.7 Interchangeability. Emergency power systems shall be an acceptable alternative for installations that require standby power systems.

1203.1.8 Group I-2 occupancies. In Group I-2 occupancies located in flood hazard areas established in Section 1612.3 of the *California Building Code* where new essential electrical systems are installed, and where new essential electrical system generators are installed, the systems and generators shall be located and installed in accordance with ASCE 24. Where connections for hook up of temporary generators are provided, the connections shall be located at or above the elevation required in ASCE 24.

1203.1.9 Maintenance. Existing installations shall be maintained in accordance with the original approval and Section 1203.4.

1203.2 Where required. Emergency and standby power systems shall be provided where required by Sections 1203.2.1 through 1203.2.19.

1203.2.1 Ambulatory care facilities. Essential electrical systems for ambulatory care facilities shall be in accordance with Section 422.6 of the *California Building Code*.

1203.2.2 Elevators and platform lifts. Standby power shall be provided for elevators and platform lifts as required in Sections 604.3, 1009.4.1 and 1009.5.

1203.2.3 Emergency responder communication coverage systems. Standby power shall be provided for in-building, two-way emergency responder communication coverage systems as required in Section 510.4.2.3. The standby power supply shall be capable of operating the in-building, two-way emergency responder communication coverage system at 100-percent system operation capacity for a duration of not less than 12 hours.

1203.2.4 Emergency voice/alarm communication systems. Standby power shall be provided for emergency voice/alarm communication systems in accordance with NFPA 72.

1203.2.5 Exhaust ventilation. Standby power shall be provided for mechanical exhaust ventilation systems as required in Section 1207.6.1.2.1. The system shall be capable of powering the required load for a duration of not less than 2 hours.

1203.2.6 Exit signs. Emergency power shall be provided for exit signs as required in Section 1013.6.3. The system shall be capable of powering the required load for a duration of not less than 90 minutes.

1203.2.7 Gas detection systems. Emergency power shall be provided for gas detection systems where required by Sections 1203.2.10 and 1203.2.17. Standby power shall be provided for gas detection systems where required by Sections 916.5 and 1207.6.1.2.4.

1203.2.8 Group I-2 occupancies. Essential electrical systems for Group I-2 occupancies shall be in accordance with Section 407.11 of the *California Building Code*.

1203.2.9 Group I-3 occupancies. Power-operated sliding doors or power-operated locks for swinging doors in Group I-3 occupancies shall be operable by a manual release mechanism at the door. Emergency power shall be provided for the doors and locks.

Exceptions:

1. Emergency power is not required in facilities where provisions for remote locking and unlocking of occupied rooms in Occupancy Condition 4 are not required as set forth in the *California Building Code*.
2. Emergency power is not required where remote mechanical operating releases are provided.

1203.2.10 Hazardous materials. Emergency and standby power shall be provided in occupancies with hazardous materials as required in the following sections:

1. Sections 5004.7 and 5005.1.5 for hazardous materials.
2. Sections 6004.2.2.8 and 6004.3.4.2 for highly toxic and toxic gases.
3. Section 6204.1.11 for organic peroxides.

1203.2.11 High-rise buildings *and Group I-2 occupancies having occupied floors more than 75 feet above the lowest level of fire department vehicle access*. Standby power and emergency power shall be provided for high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* as required in Sec-

2. Outdoor charging and storage shall comply with Section 1207.8.
3. Charging and storage on rooftops and in open parking garages shall comply with Section 1207.9.

Exceptions:

1. Electrical connections shall be permitted to be made using temporary wiring complying with the manufacturer's instructions, the UL 9540 listing and *the California Electrical Code*.
2. Fire suppression system connections to the water supply shall be permitted to use approved temporary connections.

1207.10.7 Deployed mobile ESS requirements. Deployed mobile ESS equipment and operations shall comply with this section and Table 1207.10.

1207.10.7.1 Duration. The duration of mobile ESS deployment shall not exceed 30 days.

Exceptions:

1. Mobile ESS deployments that provide power for durations longer than 30 days shall comply with Section 1207.10.6.
2. Mobile ESS deployments shall not exceed 180 days unless additional operational permits are obtained.

1207.10.7.2 Restricted locations. Deployed mobile ESS operations shall not be located indoors, in covered parking garages, on rooftops, below grade or under building overhangs.

1207.10.7.3 Clearance to exposures. Deployed mobile ESS shall be separated by a minimum of 10 feet (3048 mm) from the following exposures:

1. Public ways.
2. Buildings.
3. Stored combustible materials.
4. Hazardous materials.
5. High-piled storage.
6. Other exposure hazards.

Deployed mobile ESS shall be separated by a minimum of 50 feet (15 240 mm) from public seating areas and from tents, canopies and membrane structures with an occupant load of 30 or more.

1207.10.7.4 Electrical connections. Electrical connections shall be made in accordance with the manufacturer's instructions and the UL 9540 listing. Temporary wiring for electrical power connections shall comply with *the California Electrical Code*. Fixed electrical wiring shall not be provided.

1207.10.7.5 Local staging. Mobile ESS in transit from the charging and storage location to the deployment location and back shall not be parked within 100 feet (30 480 mm) of an occupied building for more than 1 hour during transit, unless specifically approved by the fire code official when the permit is issued.

1207.10.7.6 Fencing. An approved fence with a locked gate or other approved barrier shall be provided to keep the general public at least 5 feet (1524 mm) from the outer enclosure of a deployed mobile ESS.

1207.10.7.7 Smoking. Smoking shall be prohibited within 10 feet (3048 mm) of mobile ESS. Signs shall be posted in accordance with Section 310.

1207.11 ESS in Group R-3 and R-4 occupancies. ESS in Group R-3 and R-4 occupancies shall be installed and maintained in accordance with Sections 1207.11.1 through 1207.11.9. The temporary use of an owner or occupant's electric-powered vehicle as an ESS shall be in accordance with Section 1207.11.10.

1207.11.1 Equipment listings. ESS shall be listed and labeled in accordance with UL 9540. ESS listed and labeled solely for utility or commercial use shall not be used for residential applications.

Exception: Where approved, repurposed unlisted battery systems from electric vehicles are allowed to be installed outdoors or in detached dedicated cabinets located not less than 5 feet (1524 mm) from exterior walls, property lines and public ways.

1207.11.2 Installation. ESS shall be installed in accordance with the manufacturer's instructions and their listing.

1207.11.2.1 Spacing. Individual units shall be separated from each other by at least 3 feet (914 mm) of spacing unless smaller separation distances are documented to be adequate based on large-scale fire testing complying with Section 1207.1.5.

1207.11.3 Location. ESS shall be installed only in the following locations:

1. Detached garages and detached accessory structures.
2. Attached garages separated from the dwelling unit living space and sleeping units in accordance with Section *R302.6*.
3. Outdoors *or* on the exterior side of the exterior walls located *not less than* 3 feet (914 mm) from doors and windows *directly entering the dwelling unit.*
4. *Enclosed utility closets, basements, storage or utility spaces within dwelling units with finished or noncombustible walls and ceilings. Walls and ceilings of unfinished wood-framed construction shall be provided with not less than $^{5}/_{8}$-inch (15.9 mm) Type X gypsum wallboard.*

ESS shall not be installed in sleeping rooms, closets, spaces opening directly into sleeping rooms or in habitable spaces of dwelling units.

1207.11.4 Energy ratings. Individual ESS units shall have a maximum rating of 20 kWh. The *ratings of the ESS in each location* shall not exceed *the ratings in Table 1207.11.4. The total aggregate ratings of ESS on the property shall not exceed 600 kWh.*

ESS installations exceeding the permitted individual or aggregate ratings shall be installed in accordance with Sections 1207.1 through 1207.9.

TABLE 1207.11.4
MAXIMUM AGGREGATE RATINGS OF ESS

LOCATION	MAXIMUM AGGREGATE RATINGS (kWh)	INSTALLATION REQUIREMENTS
Within utility closets, basements, and storage or utility spaces located within dwellings	*40*	
In attached garages	*80*	
On or within 3 feet of exterior walls of dwellings and attached garages	*100*	
On or within 3 feet of exterior walls of dwellings and attached garages	*200*	*Exterior walls and eaves are constructed with noncombustible surfaces.*[a]
In detached garages and detached accessory structures	*200*	
In detached garages and detached accessory structures	*600*	*Detached garage or detached accessory structure is a minimum 10 feet away from property lines and dwellings.*
Outdoors on the ground	*200*	*ESS is a minimum 3 feet away from property lines and dwellings.*
Outdoors on the ground	*600*	*ESS is a minimum 10 feet away from property lines and dwellings.*

For SI: 1 foot = 304.8 mm

a. Noncombustible wall surface shall extend in accordance with all the following:

1. A minimum of 5 feet horizontally from the edge of the ESS.
2. A minimum of 1 foot vertically below the bottom edge of the ESS.
3. A minimum of 8 feet vertically above the ESS, or to a noncombustible eave, whichever is less.

The code official is authorized to approve reductions of installation requirements based on large-scale fire testing complying with Section 1207.1.5.

1207.11.5 Electrical installation. ESS shall be installed in accordance with *the California Electrical Code*. Inverters shall be listed and labeled in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters listed for utility interaction.

1207.11.6 Fire detection. *ESS installed in Group R-3 and R-4 occupancies shall comply with the following:*

1. Rooms and areas within dwellings units, sleeping units, *basements* and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with Section *907.2.11*.
2. *A listed heat alarm* interconnected to the smoke alarms shall be installed in locations within dwelling units, sleeping units and attached garages where smoke alarms cannot be installed based on their listing.

1207.11.7 Protection from impact. *ESS* installed in a location subject to vehicle damage *in accordance with Section 1207.11.7.1 or 1207.11.7.2 shall be provided with impact protection in accordance with Section 1207.11.7.3.*

1207.11.7.1 Garages. *Where an ESS is installed in the normal driving path of vehicle travel within a garage, impact protection complying with Section 1207.11.7.3 shall be provided. The normal driving path is a space between the garage vehicle opening and the interior face of the back wall to a height of 48 inches (1219 mm) above the finished floor. The width of the normal driving path shall be equal to the width of the garage door opening. Impact protection shall also be provided for ESS installed at either of the following locations (See Figure 1207.11.7.1):*

1. *On the interior face of the back wall and located within 36 inches (914 mm) to the left or to the right of the normal driving path.*
2. *On the interior face of a side wall and located within 24 inches (609 mm) (from the back wall and within 36 inches (914 mm) of the normal driving path.*

Exception: *Where the clear height of the vehicle garage opening is 7 feet 6 inches (2286 mm) or less, ESS installed not less than 36 inches (914 mm) above finished floor are not subject to vehicle impact protection requirements.*

1207.11.7.2 Other locations subject to vehicle impact. *Where an ESS is installed in a location other than as defined in Section 1207.11.7.1, and is subject to vehicle damage, impact protection shall be provided in accordance with Section 1207.11.7.3.*

1207.11.7.3 Impact protection options. *Where ESS is required to be protected from impact in accordance with Section 1207.11.7.1 or 1207.11.7.2, such protection shall comply with one of the following:*

1. *Bollards constructed in accordance with one of the following:*
    1.1. *Minimum 48 inches (1219 mm) in length by 3 inches (76 mm) in diameter Schedule 80 steel pipe embedded in a concrete pier not less than 12 inches (304 mm) deep and 6 inches (152 mm) in diameter, with at least 36 inches (914 mm) of pipe exposed, filled with concrete and spaced at a maximum interval of 5 feet (1524 mm). Each bollard shall be located not less than 6 inches (152 mm) from an ESS.*
    1.2. *Minimum 36 inches (914 mm) in height by 3 inches (76 mm) in diameter Schedule 80 steel pipe fully welded to a minimum 8-inch (203 mm) by $^1/_4$-inch (6.4 mm) thick steel plate and bolted to a concrete floor by means of $4^1/_2$-inch (13 mm) concrete anchors with 3-inch (76 mm) minimum embedment. Spacing shall not be greater*

than 60 inches (1524 mm), and each bollard shall be located not less than 6 inches (152 mm) from the ESS.

1.3. Pre-manufactured steel pipe bollards shall be filled with concrete and anchored in accordance with the manufacturer's installation instructions, with spacing not greater than 60 inches (1524 mm), and each bollard shall be located not less than 6 inches (152 mm) from the ESS.

2. Wheel barriers constructed in accordance with one of the following:

2.1. Four inches (102 mm) in height by 5 inches (127 mm) in width by 70 inches (1778 mm) in length wheel barrier made of concrete or polymer, anchored to the concrete floor not less than every 36 inches (914 mm) and located not less than 54 inches (1372 mm) from the ESS. Minimum $3^{1}/_{2}$-inch (89 mm) diameter concrete anchors with a 3-inch (76 mm) embedment per barrier shall be used. Spacing between barriers shall be no greater than 36 inches (914 mm).

2.2. Pre-manufactured wheel barriers shall be anchored in accordance with the manufacturer's installation instructions.

3. Approved method designed to resist a 2,000-pound (8899 Newtons) impact in the direction of travel at 24 inches (608 mm) above grade.

1207.11.8 Ventilation. Indoor installations of ESS that include batteries that produce hydrogen or other flammable gases during charging shall be provided with exhaust ventilation in accordance with Section 1207.6.1.

1207.11.9 Toxic and highly toxic gas. ESS that have the potential to release toxic or highly toxic gas during charging, discharging and normal use conditions shall not be installed within Group R-3 or R-4 occupancies.

1207.11.10 Electric vehicle use. The temporary use of an owner or occupant's electric-powered vehicle to power a dwelling unit or sleeping unit while parked in an attached or detached garage or outside shall comply with the vehicle manufacturer's instructions and *the California Electrical Code*.

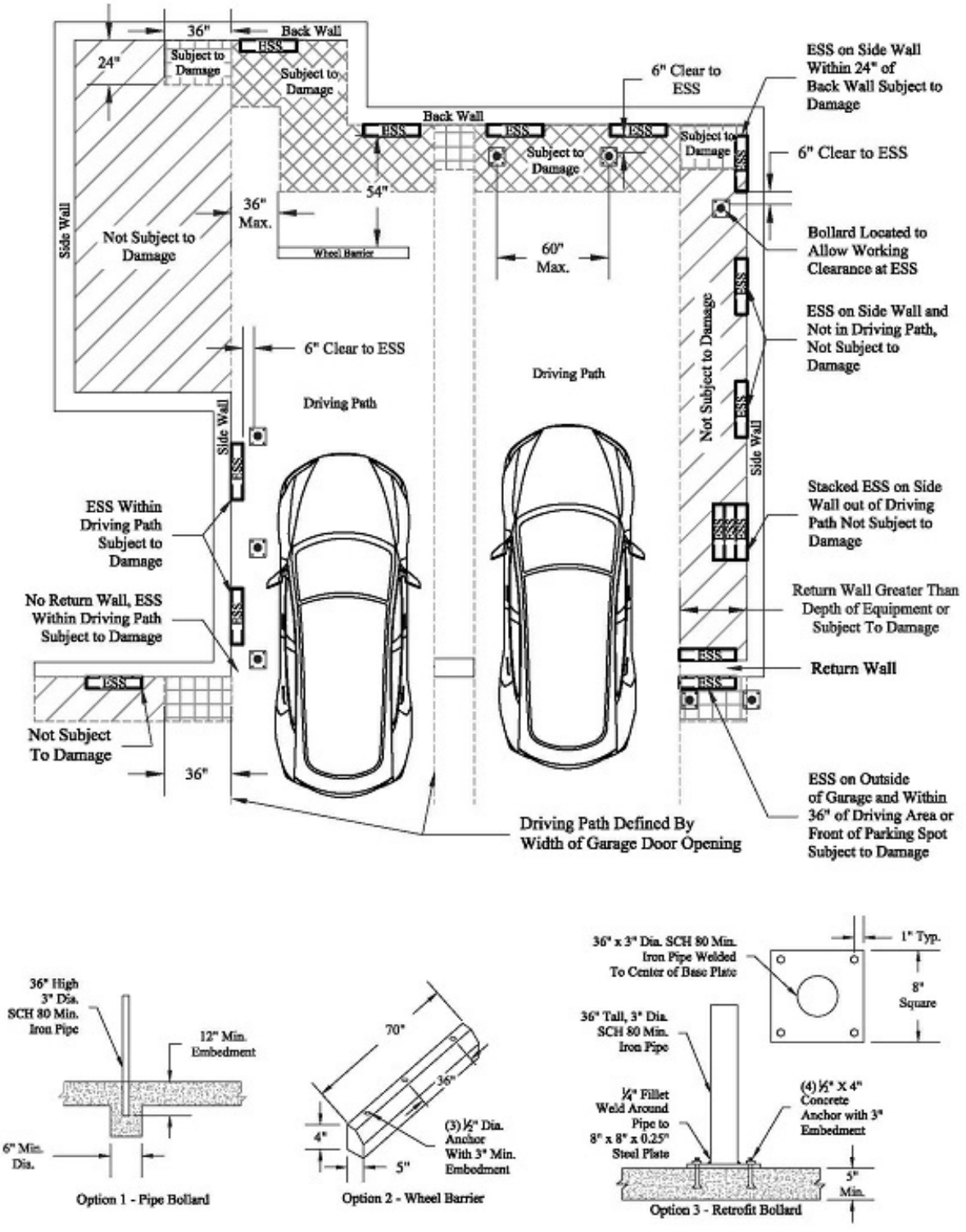


FIGURE 1207.11.7.1
ESS VEHICLE IMPACT PROTECTION

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 33 – FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]																							
Chapter / Section																							
3305.9.1			X																				
3307.2.1			X																				

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

3304.3 LP-gas heaters. Fuel supplies for liquefied-petroleum gas-fired heaters shall comply with Chapter 61 and the *California Mechanical Code*.

3304.4 Refueling. Refueling operations for liquid-fueled equipment or appliances shall be conducted in accordance with Section 5705. The equipment or appliance shall be allowed to cool prior to refueling.

3304.5 Installation. Clearance to combustibles from temporary heating devices shall be maintained in accordance with the labeled equipment. When in operation, temporary heating devices shall be fixed in place and protected from damage, dislodgement or overturning in accordance with the manufacturer's instructions.

3304.6 Supervision. The use of temporary heating devices shall be supervised and maintained only by competent personnel.

SECTION 3305
PRECAUTIONS AGAINST FIRE

3305.1 Smoking. Smoking shall be prohibited except in approved areas. Signs shall be posted in accordance with Section 310. In approved areas where smoking is permitted, approved ashtrays shall be provided in accordance with Section 310.

3305.2 Combustible debris, rubbish and waste. Combustible debris, rubbish and waste material shall comply with the requirements of Sections 3305.2.1 through 3305.2.4.

3305.2.1 Combustible waste material accumulation. Combustible debris, rubbish and waste material shall not be accumulated within buildings.

3305.2.2 Combustible waste material removal. Combustible debris, rubbish and waste material shall be removed from buildings at the end of each shift of work.

3305.2.3 Rubbish containers. Where rubbish containers with a capacity exceeding 5.33 cubic feet (40 gallons) (0.15 m^3) are used for temporary storage of combustible debris, rubbish and waste material, they shall have tight-fitting or self-closing lids. Such rubbish containers shall be constructed entirely of materials that comply with either of the following:

1. Noncombustible materials.
2. Materials that meet a peak rate of heat release not exceeding 300 kW/m^2 when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation.

3305.2.4 Spontaneous ignition. Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a listed disposal container.

3305.3 Burning of combustible debris, rubbish and waste. Combustible debris, rubbish and waste material shall not be disposed of by burning on the site unless approved.

3305.4 Open burning. Open burning shall comply with Section 307.

3305.5 Fire watch. Where required by the fire code official or the site safety plan established in accordance with Section 3303.1, a fire watch shall be provided for building demolition and for building construction.

3305.5.1 Fire watch during construction. A fire watch shall be provided during nonworking hours for new construction that exceeds 40 feet (12 192 mm) in height above the lowest adjacent grade at any point along the building perimeter, for new multistory construction with an aggregate area exceeding 50,000 square feet (4645 m^2) per story or as required by the fire code official.

3305.5.2 Fire watch personnel. Fire watch personnel shall be provided in accordance with this section.

3305.5.2.1 Duties. The primary duty of fire watch personnel shall be to perform constant patrols and watch for the occurrence of fire. The combination of fire watch duties and site security duties is acceptable.

3305.5.2.2 Training. Personnel shall be trained to serve as an on-site fire watch. Training shall include the use of portable fire extinguishers. Fire extinguishers and fire reporting shall be in accordance with Section 3310.

3305.5.2.3 Means of notification. Fire watch personnel shall be provided with not fewer than one approved means for notifying the fire department.

3305.5.3 Fire watch location and records. The fire watch shall include areas specified by the site safety plan established in accordance with Section 3303.

3305.5.4 Fire watch records. Fire watch personnel shall keep a record of all time periods of duty, including the log entry for each time the site was patrolled and each time a structure was entered and inspected. Records shall be made available for review by the fire code official upon request.

3305.6 Cutting and welding. Welding, cutting, open torches and other hot work operations and equipment shall comply with Chapter 35.

3305.7 Electrical. Temporary wiring for electrical power and lighting installations used in connection with the construction, alteration or demolition of buildings, structures, equipment or similar activities shall comply with the *California Electrical Code*.

3305.8 Cooking. Cooking shall be prohibited except in approved designated cooking areas separated from combustible materials by a minimum of 10 feet (3048 mm). Signs with a minimum letter height of 3 inches (76 mm) and a minimum brush stroke of $^1/_2$ inch (13 mm) shall be posted in conspicuous locations in designated cooking areas and state:

DESIGNATED COOKING AREA
COOKING OUTSIDE OF A DESIGNATED
COOKING AREA IS PROHIBITED

3305.9 Separations between construction areas. Separations used in Type I and Type II construction to separate construction areas from occupied portions of the building

shall be constructed of materials that comply with one of the following:

1. Noncombustible materials.
2. Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.
3. Materials exhibiting a peak heat release rate not exceeding 300 kW/m2 when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m2 in the horizontal orientation on specimens at the thickness intended for use.

3305.9.1 Group I-2 separations. *For additional requirements for occupancies in Group I-2, see Section 1105.12 and Section 1105.12.1.*

SECTION 3306
FLAMMABLE AND COMBUSTIBLE LIQUIDS

3306.1 Storage of flammable and combustible liquids. Storage of flammable and combustible liquids shall be in accordance with Section 5704.

3306.2 Class I and Class II liquids. The storage, use and handling of flammable and combustible liquids at construction sites shall be in accordance with Section 5706.2. Ventilation shall be provided for operations involving the application of materials containing flammable solvents.

3306.3 Housekeeping. Flammable and combustible liquid storage areas shall be maintained clear of combustible vegetation and waste materials. Such storage areas shall not be used for the storage of combustible materials.

3306.4 Precautions against fire. Sources of ignition and smoking shall be prohibited in flammable and combustible liquid storage areas. Signs shall be posted in accordance with Section 310.

3306.5 Handling at point of final use. Class I and II liquids shall be kept in approved safety containers.

3306.6 Leakage and spills. Leaking vessels shall be immediately repaired or taken out of service and spills shall be cleaned up and disposed of properly.

SECTION 3307
FLAMMABLE GASES

3307.1 Storage and handling. The storage, use and handling of flammable gases shall comply with Chapter 58.

3307.2 Cleaning with flammable gas. Flammable gases shall not be used to clean or remove debris from piping open to the atmosphere.

3307.2.1 Pipe cleaning and purging. The cleaning and purging of flammable gas piping systems, including cleaning new or existing piping systems, purging piping systems into service and purging piping systems out of service, shall comply with NFPA 56.

Exceptions:

1. Compressed gas piping systems other than fuel gas piping systems where in accordance with Chapter 53.
2. Piping systems regulated by the *International Fuel Gas Code.*
3. Liquefied petroleum gas systems in accordance with Chapter 61.
4. *Cleaning and purging of refrigerant piping systems shall comply with the California Mechanical Code.*

SECTION 3308
EXPLOSIVE MATERIALS

3308.1 Storage and handling. Explosive materials shall be stored, used and handled in accordance with Chapter 56.

3308.2 Supervision. Blasting operations shall be conducted in accordance with Chapter 56.

3308.3 Demolition using explosives. Approved fire hoses for use by demolition personnel shall be maintained at the demolition site wherever explosives are used for demolition. Such fire hoses shall be connected to an approved water supply and shall be capable of being brought to bear on post-detonation fires anywhere on the site of the demolition operation.

SECTION 3309
PORTABLE GENERATORS

3309.1 General. Portable generators used at construction and demolition sites shall comply with Section 1204.

SECTION 3310
FIRE REPORTING

3310.1 Emergency telephone. Emergency telephone facilities with ready access shall be provided in an approved location at the construction site, or an approved equivalent means of communication shall be provided. The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone. Alternatively, where an equivalent means of communication has been approved, the site address and fire department emergency telephone number shall be posted at the main entrance to the site, in guard shacks and in the construction site office.

SECTION 3311
ACCESS FOR FIRE FIGHTING

3311.1 Required access. Approved vehicle access for fire fighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

3311.2 Key boxes. Key boxes shall be provided as required by Chapter 5.

CHAPTER 49

REQUIREMENTS FOR WILDLAND-URBAN INTERFACE AREAS

User note:

About this chapter:

In addition to the building construction requirements in the California Building Code and California Residential Code, this chapter contains requirements for development and construction in Local Responsibility Areas (LRA) designated as Very High Fire Hazard Severity Zones and areas designated by the Board of Forestry and Fire Protection as State Responsibility Areas (SRA). While many of these provisions are found in Title 14 and Title 19 of the California Code of Regulations, they are replicated here for the code user. The local jurisdiction has the authority to apply the same regulations to LRA when the regulations are adopted by local ordinance.

The requirements in this chapter reference the process for adoption of Very High Fire Hazard Severity Zones in the LRA; criteria for evaluating existing subdivisions that are at significant fire risk and are without an adequate secondary egress; and criteria for fire safety provisions required in the Safety Element of a city or county General Plan.

The chapter includes mitigation strategies to reduce the hazards of fire originating within a structure spreading to wildland and fire originating in wildland spreading to structures. These strategies are included in the following requirements:

1. *Development of fire protection plans.*
2. *Development of landscape plans and long-term vegetation management.*
3. *Creation and maintenance of defensible space to protect structures and subdivisions.*

SECTION 4901
GENERAL

4901.1 Scope. *This chapter contains minimum requirements to mitigate conditions that might cause a fire originating in a structure to ignite vegetation in the Wildland-Urban Interface (WUI) area, and conversely, a wildfire burning in vegetative fuels to transmit fire to buildings and threaten to destroy life, overwhelm fire suppression capabilities or result in large property losses.*

4901.2 Purpose. *The purpose of this chapter is to provide minimum standards to reduce the likelihood of life and property loss due to a wildfire through the use of performance and prescriptive requirements for construction and development in State Responsibility Area (SRA) and Local Responsibility Areas (LRA) designated as a Very High Fire Hazard Severity Zone.*

SECTION 4902
DEFINITIONS

4902.1 General. *For the purpose of this chapter, certain terms are defined as follows:*

DIRECTOR. *Director of the California Department of Forestry and Fire Protection (CAL FIRE).*

FIRE PROTECTION PLAN. *A document prepared for a specific project or development proposed for a Wildland-Urban Interface (WUI) area. It describes ways to minimize and mitigate potential for loss from wildfire exposure.*

FIRE HAZARD SEVERITY ZONES. *Geographical areas designated pursuant to California Public Resources Codes, Sections 4201 through 4204 and classified as Very High, High or Moderate in State Responsibility Area or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.*

The California Code of Regulations, Title 14, Section 1280 entitles the maps of these geographical areas as "Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California."

FIRE-RESISTANT VEGETATION. *Plants, shrubs, trees and other vegetation that exhibit properties, such as high moisture content, little accumulation of dead vegetation, and low sap or resin content, that make them less likely to ignite or contribute heat or spread flame in a fire than native vegetation typically found in the region.*

[Note: The following sources contain examples of types of vegetation that can be considered fire-resistant vegetation. (Fire-resistant Plants for Home Landscapes, A Pacific Northwest Extension publication; Home Landscaping for Fire, University of California Division of Agriculture and Natural Resources; Sunset Western Garden Book)]

IGNITION-RESISTANT MATERIAL. *A type of building material that complies with the requirements in Section 704A.2 in the California Building Code.*

LOCAL RESPONSIBILITY AREAS (LRA). *Areas of the state in which the financial responsibility of preventing and suppressing fires is the primary responsibility of a city, county, city and county, or district.*

STATE RESPONSIBILITY AREA (SRA). *Lands that are classified by the Board of Forestry pursuant to Public Resources Code Section 4125 where the financial responsibility of preventing and suppressing wildfires is primarily the responsibility of the state.*

WILDFIRE. *Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property or resources as defined in Public Resources Code, Sections 4103 and 4104.*

WILDFIRE EXPOSURE. *One or a combination of radiant heat, convective heat, direct flame contact and burning embers*

being projected by vegetation fire to a structure and its immediate environment.

WILDLAND-URBAN INTERFACE (WUI). *A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code, Sections 4201 through 4204, and Government Code, Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.*

SECTION 4903
PLANS

4903.1 General. *The fire code official is authorized to require the owner or owner's authorized agent to provide a fire protection plan. The fire protection plan shall be prepared to determine the acceptability of fire protection and life safety measures designed to mitigate wildfire hazards presented for the property under consideration.*

The fire protection plan shall be prepared by a registered design professional, qualified landscape architect, qualified fire safety specialist or similar specialist acceptable to the fire code official and shall analyze the wildfire risk of the building, project, premises or region to recommend necessary changes.

The fire code official is authorized to require a preliminary fire protection plan prior to the submission of a final fire protection plan.

4903.2 Contents. *The fire protection plan shall be based on a project-specific wildfire hazard assessment that includes considerations of location, topography, aspect, and climatic and fire history.*

The plan shall identify conformance with all applicable state wildfire protection regulations, statutes and applicable local ordinances, whichever are more restrictive.

The plan shall address fire department access, egress, road and address signage, water supply in addition to fuel reduction in accordance with Public Resources Code (PRC) 4290; the defensible space requirements in accordance with PRC 4291 or Government Code 51182; and the applicable building codes and standards for wildfire safety. The plan shall identify mitigation measures to address the project's specific wildfire risk and shall include the information required in Section 4903.2.1.

4903.2.1 Project information. *The final fire protection plan shall be reviewed and approved prior to start of construction.*

4903.2.1.1 Preliminary fire protection plan. *When a preliminary fire protection plan is submitted, it shall include, at a minimum, the following:*

1. *Total size of the project.*
2. *Information on the adjoining properties on all sides, including current land uses, and if known, existing structures and densities, planned construction, natural vegetation, environmental restoration plans, roads and parks.*
3. *A map with all project boundary lines, property lines, slope contour lines, proposed structure foundation footprints, and proposed roads and driveways. The map shall identify project fuel modification zones and method of identifying the fuel modification zone boundaries.*

4903.2.1.2 Final fire protection plan. *The final fire protection plan shall include items listed in Section 4903.2.1.1 and the following:*

1. *A map identifying all proposed plants in the fuel modification zones with a legend that includes a symbol for each proposed plant species. The plan shall include specific information on each species proposed, including but not limited to:*
   a. *The plant life-form;*
   b. *The scientific and common name; and*
   c. *The expected height and width for mature growth.*
2. *Identification of irrigated and non-irrigated zones.*
3. *Requirements for vegetation reduction around emergency access and evacuation routes.*
4. *Identification of points of access for equipment and personnel to maintain vegetation in common areas.*
5. *Legally binding statements regarding community responsibility for maintenance of fuel modification zones.*
6. *Legally binding statements to be included in covenants, conditions and restrictions regarding property owner responsibilities for vegetation maintenance.*

SECTION 4904
FIRE HAZARD SEVERITY ZONES

4904.1 General. *Lands in the state are classified by the State Fire Marshal in accordance with the severity of wildfire hazard expected to prevail in those areas and the responsibility for fire protection, so that measures may be identified which will reduce the potential for losses to life, property and resources from wildfire.*

4904.2 Classifications. *The State Fire Marshal classifies lands into fire hazard severity zones in accordance with California Public Resources Code, Sections 4201 through 4204 for State Responsibility Areas and accordance with Government Code, Sections 51175 through 51189 for areas where a local agency is responsible for fire protection.*

4904.3 Local agency requirements. *Within 30 days after receiving a transmittal from the State Fire Marshal that identifies Fire Hazard Severity Zones, a local agency shall make the information available for public review. The information shall be presented in a format that is understandable and accessible to the general public, including, but not limited to, maps. A local agency shall post a notice at the office of the county recorder, county assessor and county planning agency identifying the location of the map provided by the State Fire*

Marshal pursuant to Government Code, Section 51178. If the agency amends the map, pursuant to subdivision (b) or (c) of Section 51179, the notice shall instead identify the location of the amended map.

4904.3.1 Local agency ordinances. *A local agency shall designate, by ordinance, Fire Hazard Severity Zones in its jurisdiction within 120 days of receiving recommendations from the State Fire Marshal pursuant to Section 51178. The local agency shall transmit a copy of an ordinance adopted pursuant to Section 51179 (a) to the State Board of Forestry and Fire Protection within 30 days of adoption, as specified in Title 14, Division 1.5, Chapter 7, Subchapter 3, Article 1. See Section 4911 for the state model ordinance.*

4904.3.2 Local agency discretion. *A local agency may, at its discretion, include areas within the jurisdiction of the local agency, not identified as Fire Hazard Severity Zones by the State Fire Marshal, as a Fire Hazard Severity Zone following a finding supported by substantial evidence in the record that the requirements of Government Code Section 51182 are necessary for effective fire protection within the area.*

SECTION 4905
WILDFIRE PROTECTION BUILDING CONSTRUCTION

4905.1 General. *Materials and construction methods for exterior wildfire exposure protection shall be applied within geographical areas where a wildfire burning in vegetative fuels may readily transmit fire to buildings and threaten to destroy life, overwhelm fire suppression capabilities or result in large property losses.*

4905.2 Construction methods and requirements within established limits. *Within the limits established by law, construction methods intended to mitigate wildfire exposure shall comply with the wildfire protection building construction requirements contained in the California Building Standards Code, including the following:*

1. *California Building Code, Chapter 7A,*
2. *California Residential Code, Section R337,*
3. *California Referenced Standards Code, Chapter 12-7A.*

4905.3 Establishment of limits. *The establishment of limits for the Wildland-Urban Interface (WUI) area's required construction methods shall be designated pursuant to the California Public Resources Code for State Responsibility Area (SRA) and California Government Code for Local Responsibility Areas (LRA) in Very High Fire Severity Zones or by a local agency following a finding supported by substantial evidence in the record that the requirements of this section are necessary for effective fire protection within other designated areas.*

SECTION 4906
VEGETATION MANAGEMENT

4906.1 General. *Planting of vegetation for new landscaping shall be selected to reduce non-fire-resistant vegetation in proximity to a structure and to maintain vegetation as it matures.*

4906.2 Application. *All new plantings of vegetation in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) designated as a Very High Fire Hazard Severity Zone shall comply with Sections 4906.3 through 4906.5.3.*

4906.3 Landscape plans. *Landscape plans shall be provided when required by the enforcing agency. The landscape plan shall include development and maintenance requirements for the vegetation management zone adjacent to structures and roadways, and to provide significant fire hazard reduction benefits for public and firefighting safety.*

4906.3.1 Contents*. Landscape plans shall contain the following:*

1. *Delineation of the 30-foot (9144 mm) and 100-foot (30.5 m) fuel management zones from all structures.*
2. *Identification of existing vegetation to remain and proposed new vegetation.*
3. *Identification of irrigated areas.*
4. *A plant legend with both botanical and common names, and identification of all plant material symbols.*
5. *Identification of ground coverings within the 30-foot (9144 mm) zone.*

4906.4 Vegetation. *All new vegetation shall be fire-resistant vegetation in accordance with this section.*

Exception: *Trees classified as non-fire-resistant vegetation complying with Section 4906.4.2.1.*

To be considered fire-resistant vegetation, it must meet at least one of the following:

1. *Be identified as fire-resistant vegetation in an approved book, journal or listing from an approved organization.*
2. *Be identified as fire-resistant vegetation by a licensed landscape architect with supporting justification.*
3. *Plants considered fire-resistant vegetation and approved by the local enforcing agency.*

4906.4.1 Shrubs*. All new plantings of shrubs shall comply with the following:*

1. *Shrubs shall not exceed 6 feet (1829 mm) in height.*
2. *Groupings of shrubs are limited to a maximum aggregate diameter of 10 feet (3048 mm).*
3. *Shrub groupings shall be separated from other groupings a minimum of 15 feet (4572 mm).*
4. *Shrub groupings shall be separated from structures a minimum of 30 feet (9144 mm).*
5. *Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10 feet (3048 mm), whichever is greater.*

4906.4.2 Trees*. Trees shall be managed as follows within the 30-foot (9144 mm) zone of a structure:*

1. *New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from any combustible structure.*

2. *The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet (3048 mm).*
3. *Existing trees shall be trimmed to provide a minimum separation of 10 feet (3048 mm) away from chimney and stovepipe outlets per Title 14, Section 1299.03.*

4906.4.2.1 Non-fire-resistant vegetation. *New trees not classified as fire-resistant vegetation, such as conifers, palms, pepper trees and eucalyptus species, shall be permitted provided the tree is planted and maintained so that the tree's drip line at maturity is a minimum 30 feet (9144 mm) from any combustible structure.*

SECTION 4907
DEFENSIBLE SPACE

4907.1 General. *Hazardous vegetation and fuels shall be managed to reduce the severity of potential exterior wildfire exposure to buildings and to reduce the risk of fire spreading to buildings as required by applicable laws and regulations.*

Defensible space will be managed around all buildings and structures in State Responsibility Areas (SRA) as required in Public Resources Code 4291.

4907.2 Application. *Buildings and structures located in the following areas shall maintain the required hazardous vegetation and fuel management:*

1. *All unincorporated lands designated by the State Board of Forestry and Fire Protection as a State Responsibility Area (SRA).*
2. *Land designated as a Very High Fire Hazard Severity Zone by the Director.*
3. *Land designated in ordinance by local agencies as a Very High Fire Hazard Severity Zone pursuant to Government Code Section 51179.*

4907.3 Requirements. *Hazardous vegetation and fuels around all buildings and structures shall be maintained in accordance with the following laws and regulations:*

1. *Public Resources Code, Section 4291.*
2. *California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3, Article 3, Section 1299.03.*
3. *California Government Code, Section 51182.*
4. *California Code of Regulations, Title 19, Division 1, Chapter 7, Subchapter 1, Section 3.07.*

SECTION 4908
FIRE SAFE DEVELOPMENT REGULATIONS

4908.1 General. *Pursuant to PRC 4290 all residential, commercial and industrial building construction within state responsibility areas approved after January 1, 1991, and within lands classified and designated as an LRA Very High Fire Hazard Severity Zone, as defined in subdivision (i) of Section 51177 of the Government Code after July 1, 2021, shall comply with the SRA Fire Safe Development Regulations as specified in Title 14, Division 1.5, Chapter 7, Subchapter 2.*

4908.2 Subdivision map findings. *Pursuant to Government Code (GC), Section 66474.02, before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in an SRA or an LRA Very High Fire Hazard Severity Zone, as both are defined in GC Section 51177, a legislative body of a county, except as provided in GC Subsection 66474.02(c), shall make findings regarding compliance with the SRA Fire Safe Regulations and the availability of structural fire protection and suppression services. These findings and accompanying map shall be transmitted to the Board of Forestry and Fire Protection and comply with the requirements in Title 14, Division 1.5, Chapter 7, Subchapter 1, Article 1.*

SECTION 4909
SUBDIVISION REVIEW SURVEY

4909.1 Subdivision identification. *Pursuant to Public Resources Code Section 4290.5 and Title 14, Division 1.5, Chapter 7, Subchapter 1, Article 2, the Board, in consultation with the Office of the State Fire Marshal, shall survey local governments to identify existing subdivisions, as defined in Article 2, located in an SRA area or an LRA Very High Fire Hazard Severity Zone without a secondary egress route that is at significant fire risk.*

4909.2 Fire safety recommendations. *The Board, in consultation with the Office of the State Fire Marshal and the local government that identified the subdivision, shall develop recommendations to improve the subdivision's fire safety. The Board shall provide the final recommendations to the local government that identified the subdivision and to the residents of the subdivision.*

4909.3 Implementation. *The Board shall maintain a list of the subdivisions identified and the status of the implementation of the recommendations provided.*

4909.4 Re-survey. *Beginning July 1, 2021, the Board shall conduct this survey every 5 years.*

SECTION 4910
GENERAL PLAN SAFETY ELEMENT

4910.1 General. *Pursuant to Government Code Section 65302(g)(3), the safety element of a city or county's General Plan shall be reviewed and updated as necessary to address the risk of fire for land classified as SRA, as defined in Section 4102 of the Public Resources Code, and land classified as an LRA Very High Fire Hazard Severity Zone, as defined in Section 51177.*

4910.2 Submission to the Board of Forestry and Fire Protection and local fire agencies. *Pursuant to Government Code Section 65302.5(b)(1), the draft element of, or draft amendment to, the safety element of a county or a city's general plan shall be submitted to the State Board of Forestry and Fire Protection and to every local agency that provides fire protection to territory in the city or county at least 90 days prior to either of the following: the adoption or amend-*

ment to the safety element of its general plan for each county that contains state responsibility areas; or the adoption or amendment to the safety element of its general plan for each city or county that contains a Very High Fire Hazard Severity Zone as defined pursuant to subdivision (i) of Section 51177.

4910.3 Review by the Board of Forestry and Fire Protection and local fire agencies. *The State Board of Forestry and Fire Protection shall, and a local agency may, review the draft or an existing safety element and recommend changes to the planning agency within 60 days of its receipt regarding the requirements in Government Code Section 65302.5(b)(2). The review by the Board of Forestry and Fire Protection is governed by Title 14, Division 1.5, Chapter 7, Article 6.*

4910.4 Adoption of the safety element. *Prior to the adoption of its draft element or draft amendment, the board of supervisors of the county or the council of a city shall consider the recommendations, if any, made by the State Board of Forestry and Fire Protection and any local agency that provides fire protection to territory in the city or county. The board of supervisors or city council shall respond to the Board of Forestry and Fire Protection and any local agency providing fire protection in compliance with Government Code Section 65302.5(b)(3) and (b)(4) and Title 14, Division 1.5, Chapter 7, Article 6.*

SECTION 4911
MODEL ORDINANCE FOR FIRE HAZARD SEVERITY ZONE ADOPTION

ORDINANCE NO.

An ordinance of the City (or County or District) of to designate fire hazard severity zones.

The Council (or Board) of the ordains as follows:

The City (or County or District) hereby designates the Fire Hazard Severity Zones as recommended by the California Department of Forestry and Fire Protection pursuant to Government Code Section 51178.

Or

☐ *The City (or County or District) hereby designates areas not identified as Very High Fire Hazard Severity Zones by the State Fire Marshal, as Very High Fire Hazard Severity Zones following a finding supported by substantial evidence in the record that the requirements of Government Code Section 51182 are necessary for effective fire protection within the area.*

(and/or)

☐ *The City (or County or District) hereby designates areas not identified as Moderate and High Fire Hazard Severity Zones by the State Fire Marshal, as Moderate and High Fire Hazard Severity Zones, respectively.*

The map, approved by the city (or county or district), is hereby incorporated by reference, and entitled "City (or County or District) Fire Hazard Severity Zones."
Dated ( ).

The official map is also located electronically on the following website:

On the motion of Member , seconded by Member:

The roll call vote:

Ayes: Noes: Abstain: Absent:

The foregoing ordinance was passed and adopted this day of , 20

Ordinance

(Name)
(City or County or Board of)

Attest: Approved as to form:
(Name) (Name)
Clerk City or County or District Counsel

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 50 – HAZARDOUS MATERIALS—GENERAL PROVISIONS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]																							
Chapter / Section																							
5001.5.1			X																				
5001.5.2			X																				
5003.1.1			X																				
Table 5003.1.1(1)			X																				
Table 5003.1.1(2)			X																				
Table 5003.1.1(3)			X																				
5003.8.3.5			X																				
5003.8.3.5.4			X																				
5003.10.2			X																				
5003.10.2.1			X																				
5003.10.2.2			X																				
5003.10.4			X																				
5003.10.4.1			X																				
5003.10.4.2			X																				
5003.10.4.3			X																				
5003.10.4.4			X																				
5003.10.5 – 5003.10.6.2			X																				
5003.11			X																				
5003.11.1			X																				
5003.11.2			X																				
Table 5003.11.2			X																				
5003.11.2.1			X																				
5004.3.1			X																				

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

condition resulting from normal or abnormal operations, means of ventilation shall be provided.

5001.3.3.11 Process hazard analyses. Process hazard analyses shall be conducted to ensure reasonably the protection of people and property from dangerous conditions involving hazardous materials.

5001.3.3.12 Prestartup safety review. Written documentation of prestartup safety review procedures shall be developed and enforced to ensure that operations are initiated in a safe manner. The process of developing and updating such procedures shall involve the participation of affected employees.

5001.3.3.13 Operating and emergency procedures. Written documentation of operating procedures and procedures for emergency shutdown shall be developed and enforced to ensure that operations are conducted in a safe manner. The process of developing and updating such procedures shall involve the participation of affected employees.

5001.3.3.14 Management of change. A written plan for management of change shall be developed and enforced. The process of developing and updating the plan shall involve the participation of affected employees.

5001.3.3.15 Emergency plan. A written emergency plan shall be developed to ensure that proper actions are taken in the event of an emergency, and the plan shall be followed if an emergency condition occurs. The process of developing and updating the plan shall involve the participation of affected employees.

5001.3.3.16 Accident procedures. Written procedures for investigation and documentation of accidents shall be developed, and accidents shall be investigated and documented in accordance with these procedures.

5001.3.3.17 Consequence analysis. Where an accidental release of hazardous materials could endanger people or property, either on- or off-site, an analysis of the expected consequences of a plausible release shall be performed and utilized in the analysis and selection of active and passive hazard mitigation controls.

5001.3.3.18 Safety audits. Safety audits shall be conducted on a periodic basis to verify compliance with the requirements of this section.

5001.4 Retail and wholesale storage and display. For retail and wholesale storage and display of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in Group M occupancies and storage in Group S occupancies, see Section 5003.11.

5001.5 Permits. Permits shall be required as set forth in Sections 105.5 and 105.6.

Where required by the fire code official, permittees shall apply for approval to permanently close a storage, use or handling facility. Such application shall be submitted not less than 30 days prior to the termination of the storage, use or handling of hazardous materials. The fire code official is authorized to require that the application be accompanied by an approved facility closure plan in accordance with Section 5001.6.3.

5001.5.1 Hazardous Materials Management Plan *(HMMP).* Where required by the fire code official, an application for a permit shall include a Hazardous Materials Management Plan (HMMP). The HMMP shall include a facility site plan designating the following:

1. Access to each storage and use area.
2. Location of emergency equipment.
3. Location where liaison will meet emergency responders.
4. Facility evacuation meeting point locations.
5. The general purpose of other areas within the building.
6. Location of all above-ground and underground tanks and their appurtenances including, but not limited to, sumps, vaults, below-grade treatment systems and piping.
7. The hazard classes in each area.
8. Locations of all control areas and Group H occupancies.
9. Emergency exits.

[For SFM] The HMMP shall comply with Health and Safety Code, Chapter 6.95, Sections 25500 through 25545, and Title 19, Division 2, Chapter 4.

5001.5.2 Hazardous Materials Inventory Statement (HMIS). Where required by the fire code official, an application for a permit shall include an HMIS, such as Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, Tier II Report or other approved statement. The HMIS shall include the following information:

1. Product name.
2. Component.
3. Chemical Abstract Service (CAS) number.
4. Location where stored or used.
5. Container size.
6. Hazard classification.
7. Amount in storage.
8. Amount in use-closed systems.
9. Amount in use-open systems.

[For SFM] The HMIS shall comply with Health and Safety Code, Chapter 6.95, Sections 25500 through 25545, and Title 19, Division 2, Chapter 4.

5001.6 Facility closure. Facilities shall be placed out of service in accordance with Sections 5001.6.1 through 5001.6.3.

5001.6.1 Temporarily out-of-service facilities. Facilities that are temporarily out of service shall continue to maintain a permit and be monitored and inspected.

5001.6.2 Permanently out-of-service facilities. Facilities for which a permit is not kept current or is not monitored and inspected on a regular basis shall be deemed to be permanently out of service and shall be closed in an approved

manner. Where required by the fire code official, permittees shall apply for approval to close permanently storage, use or handling facilities. The fire code official is authorized to require that such application be accompanied by an approved facility closure plan in accordance with Section 5001.6.3.

5001.6.3 Facility closure plan. Where a facility closure plan is required in accordance with Section 5001.5 to terminate storage, dispensing, handling or use of hazardous materials, it shall be submitted to the fire code official not less than 30 days prior to facility closure. The plan shall demonstrate that hazardous materials that are stored, dispensed, handled or used in the facility will be transported, disposed of or reused in a manner that eliminates the need for further maintenance and any threat to public health and safety.

SECTION 5002
DEFINITIONS

5002.1 Definitions. The following terms are defined in Chapter 2:

BOILING POINT.

CEILING LIMIT.

CHEMICAL.

CHEMICAL NAME.

CLOSED CONTAINER.

CONTAINER.

CONTROL AREA.

CYLINDER.

DAY BOX.

DEFLAGRATION.

DESIGN PRESSURE.

DETACHED BUILDING.

DISPENSING.

EXCESS FLOW CONTROL.

EXHAUSTED ENCLOSURE.

EXPLOSION.

FLAMMABLE VAPORS OR FUMES.

GAS CABINET.

GAS ROOM.

HANDLING.

HAZARDOUS MATERIALS.

HEALTH HAZARD.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).

INCOMPATIBLE MATERIALS.

LIQUID.

LOWER EXPLOSIVE LIMIT (LEL).

LOWER FLAMMABLE LIMIT (LFL).

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA.

NORMAL TEMPERATURE AND PRESSURE (NTP).

OUTDOOR CONTROL AREA.

PERMISSIBLE EXPOSURE LIMIT (PEL).

PESTICIDE.

PHYSICAL HAZARD.

PRESSURE VESSEL.

SAFETY CAN.

SAFETY DATA SHEET (SDS).

SECONDARY CONTAINMENT.

SEGREGATED.

SOLID.

STORAGE, HAZARDOUS MATERIALS.

SYSTEM.

TANK, ATMOSPHERIC.

TANK, PORTABLE.

TANK, STATIONARY.

TANK VEHICLE.

UNAUTHORIZED DISCHARGE.

USE (MATERIAL).

VAPOR PRESSURE.

SECTION 5003
GENERAL REQUIREMENTS

5003.1 Scope. The storage, use and handling of all hazardous materials shall be in accordance with this section.

5003.1.1 Maximum allowable quantity per control area. The maximum allowable quantity per control area shall be as specified in Tables 5003.1.1(1) through 5003.1.1(4).

Exception: *Medical gases utilized for patient care within patient areas of a Group I-2 occupancy when the applicable requirements of NFPA 99 Chapter 5 and Chapter 11 have been met.*

For retail and wholesale storage and display in Group M occupancies and Group S storage, see Section 5003.11.

5003.1.2 Conversion. Where quantities are indicated in pounds and where the weight per gallon of the liquid is not provided to the fire code official, a conversion factor of 10 pounds per gallon (1.2 kg/L) shall be used.

5003.1.3 Quantities not exceeding the maximum allowable quantity per control area. The storage, use and handling of hazardous materials in quantities not exceeding the maximum allowable quantity per control area indicated in Tables 5003.1.1(1) through 5003.1.1(4) shall be in accordance with Sections 5001 and 5003.

5003.1.4 Quantities exceeding the maximum allowable quantity per control area. The storage and use of hazardous materials in quantities exceeding the maximum allowable quantity per control area indicated in Tables 5003.1.1(1) through 5003.1.1(4) shall be in accordance with this chapter.

TABLE 5003.1.1(1)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, j, m, n, p]

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)
Combustible dust	NA	H-2	See Note q	NA	NA	See Note q	NA	NA	See Note q	NA
Combustible fibers[q]	Loose	H-3	(100)	NA	NA	(100)	NA	NA	(20)	NA
	Baled[o]		(1,000)			(1,000)			(200)	
Combustible liquid[c, i]	II	H-2 or H-3	NA	120[d, e]	NA	NA	120[d]	NA	NA	30[d]
	IIIA	H-2 or H-3		330[d, e]			330[d]			80[d]
	IIIB	NA		13,200[e, f]			13,200[f]			3,300[f]
Cryogenic Flammable	NA	H-2	NA	45[d]	NA	NA	45[d]	NA	NA	10[d]
Cryogenic Inert	NA	NA	NA	NA	NL	NA	NA	NL	NA	NA
Cryogenic Oxidizing	NA	H-3	NA	45[d]	NA	NA	45[d]	NA	NA	10[d]
Explosives	Division 1.1	H-1	1[e, g]	(1)[e, g]	NA	0.25[g]	(0.25)[g]	NA	0.25[g]	(0.25)[g]
	Division 1.2	H-1	1[e, g]	(1)[e, g]		0.25[g]	(0.25)[g]		0.25[g]	(0.25)[g]
	Division 1.3	H-1 or H-2	*10*[e, g]	(*10*)[e, g]		1[g]	(1)[g]		1[g]	(1)[g]
	Division 1.4	H-3	50[e, g]	(50)[e, g]		50[g]	(50)[g]		NA	NA
	Division 1.4G	H-3	125[e, l]	NA		NA	NA		NA	NA
	Division 1.5	H-1	1[e, g]	(1)[e, g]		0.25[g]	(0.25)[g]		0.25[g]	(0.25)[g]
	Division 1.6	H-1	1[e, g]	NA		NA	NA		NA	NA
Flammable gas	Gaseous *Category 1A and 1B (High BV)*[r]	H-2	NA	NA	1,000[d, e]	NA	NA	1,000[d, e]	NA	NA
	Category 1B (Low BV)[r]				*162,500*[d, e]			*162,500*[d, e]		
	Liquefied *Category 1A and 1B (High BV)*[r]			(150)[d, e]	NA		(150)[d, e]	NA		
	Category 1B (Low BV)[r]			*(10,000)*[d, e]			*(10,000)*[d, e]			
Flammable liquid[c]	IA	H-2 or H-3	NA	30[d, e]	NA	NA	30[d]	NA	NA	10d
	IB and IC			120[d, e]			120[d]			30d
Flammable liquid, combination (IA, IB, IC)	NA	H-2 or H-3	NA	120[d, e, h]	NA	NA	120[d, h]	NA	NA	30[d, h]
Flammable solid	NA	H-3	125[d, e]	NA	NA	125[d]	NA	NA	25[d]	NA

(continued)

TABLE 5003.1.1(1)—continued
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, j, m, n, p]

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)
Inert gas	Gaseous	NA	NA	NA	NL	NA	NA	NL	NA	NA
	Liquefied	NA	NA	NA	NL	NA	NA	NL	NA	NA
Organic peroxide	UD	H-1	1[e, g]	(1)[e, g]	NA	0.25[g]	(0.25)[g]	NA	0.25[g]	(0.25)[g]
	I	H-2	5[d, e]	(5)[d, e]		1[d]	(1)[d]		1[d]	(1)[d]
	II	H-3	50[d, e]	(50)[d, e]		50[d]	(50)[d]		10[d]	(10)[d]
	III	H-3	125[d, e]	(125)[d, e]		125[d]	(125)[d]		25[d]	(25)[d]
	IV	NA	NL	NL		NL	NL		NL	NL
	V	NA	NL	NL		NL	NL		NL	NL
Oxidizer	4	H-1	1[g]	(1)[e, g]	NA	0.25[g]	(0.25)[g]	NA	0.25[g]	(0.25)[g]
	3[k]	H-2 or H-3	10[d, e]	(10)[d, e]		2[d]	(2)[d]		2[d]	(2)[d]
	2	H-3	250[d, e]	(250)[d, e]		250[d]	(250)[d]		50[d]	(50)[d]
	1	NA	4,000[e, f]	(4,000)[e, f]		4,000[f]	(4,000)[f]		1,000[f]	(1,000)[f]
Oxidizing gas	Gaseous	H-3	NA	NA	1,500[d,e]	NA	NA	1,500[d,e]	NA	NA
	Liquefied			(150)[d, e]	NA		(150)[d, e]	NA		
Pyrophoric	NA	H-2	4[e, g]	(4)[e, g]	50[e, g]	1[g]	(1)[g]	10[e, g]	0	0
Unstable (reactive)	4	H-1	1[e, g]	(1)[e, g]	10[e, g]	0.25[g]	(0.25)[g]	2[e, g]	0.25[g]	(0.25)[g]
	3	H-1 or H-2	5[d, e]	(5)[d, e]	50[d, e]	1[d]	(1)[d]	10[d, e]	1[d]	(1)[d]
	2	H-3	50[d, e]	(50)[d, e]	750[d, e]	50[d]	(50)[d]	750[d, e]	10[d]	(10)[d]
	1	NA	NL	NL	NL	NL	NL	NL	NL	NL
Water reactive	3	H-2	5[d, e]	(5)[d, e]	NA	5[d]	(5)[d]	NA	1[d]	(1)[d]
	2	H-3	50[d, e]	(50)[d, e]		50[d]	(50)[d]		10[d]	(10)[d]
	1	NA	NL	NL		NL	NL		NL	NL

For SI: 1 cubic foot = 0.02832 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

NA = Not Applicable, NL = Not Limited, UD = Unclassified Detonable.

a. For use of control areas, see Section 5003.8.3.

b. The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

c. The quantities of alcoholic beverages in retail and wholesale sales occupancies shall not be limited providing the liquids are packaged in individual containers not exceeding 1.3 gallons. In retail and wholesale sales occupancies, the quantities of medicines, foodstuff or consumer products and cosmetics containing not more than 50 percent by volume of water-miscible liquids with the remainder of the solutions not being flammable shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.

d. ***[SFM]*** *In other than Group L occupancies, maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where Note e also applies, the increase for both notes shall be applied accumulatively. For Group L occupancies, refer to California Building Code Table 453.7.2.1 for approved cabinets.*

e. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, day boxes, gas cabinets, gas rooms, exhausted enclosures or in listed safety cans in accordance with Section 5003.9.10. Where Note d applies, the increase for both notes shall be applied accumulatively.

(footnotes continued)

TABLE 5003.1.1(1)—continued
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, j, m, n, p]

f. Quantities shall not be limited in a building equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.
g. Allowed only in buildings equipped throughout with an approved automatic sprinkler system.
h. Containing not more than the maximum allowable quantity per control area of Class IA, Class IB or Class IC flammable liquids.
i. The maximum allowable quantity shall not apply to fuel oil storage complying with Section 605.4.2.
j. Quantities in parenthesis indicate quantity units in parenthesis at the head of each column.
k. A maximum quantity of 220 pounds of solid or 22 gallons of liquid Class 3 oxidizers is allowed where such materials are necessary for maintenance purposes, operation or sanitation of equipment where the storage containers and the manner of storage are approved.
l. Net weight of pyrotechnic composition of the fireworks. Where the net weight of the pyrotechnic composition of the fireworks is not known, 25 percent of the gross weight of the fireworks including packaging shall be used.
m. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2.
n. For storage and display quantities in Group M and storage quantities in Group S occupancies complying with Section 5003.11, see Table 5003.11.1.
o. Densely-packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.
p. The following shall not be included in determining the maximum allowable quantities:
    1. Liquid or gaseous fuel in fuel tanks on vehicles.
    2. Liquid or gaseous fuel in fuel tanks on motorized equipment operated in accordance with this code.
    3. Gaseous fuels in piping systems and fixed appliances regulated by the *International Fuel Gas Code*.
    4. Liquid fuels in piping systems and fixed appliances regulated by the *California Mechanical Code*.
    5. Alcohol-based hand rubs classified as Class I or II liquids in dispensers that are installed in accordance with Sections 5705.5 and 5705.5.1. The location of the alcohol-based hand rub (ABHR) dispensers shall be provided in the construction documents.
q. Where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 104.8.2.
r. High Burning Velocity (High BV) Category 1B flammable gas has a burning velocity greater than 3.9 in./s (10 cm/s). Low Burning Velocity (Low BV) Category 1B flammable gas has a burning velocity of 3.9 in./s (10 cm/s) or less.

TABLE 5003.1.1(2)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A HEALTH HAZARD[a, c, f, h, i]

MATERIAL	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
	Solid pounds[d, e]	Liquid gallons (pounds)[d, e]	Gas cubic feet at NTP (pounds)[d]	Solid pounds[d]	Liquid gallons (pounds)[d]	Gas cubic feet at NTP (pounds)[d]	Solid pounds[d]	Liquid gallons (pounds)[d]
Corrosives	5,000	500	Gaseous 810[e] Liquefied (150)	5,000	500	Gaseous 810[e] Liquefied (150)	1,000	100
Highly toxics	10	(10)	Gaseous 20[g] Liquefied (4)[g]	10	(10)	Gaseous 20[g] Liquefied (4)[g]	3	(3)
Toxics	500	(500)	Gaseous 810[e] Liquefied (150)[e]	500	(500)	Gaseous 810[e] Liquefied (150)[e]	125	(125)

For SI: 1 cubic foot = 0.02832 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

a. For use of control areas, see Section 5003.8.3.

b. The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

c. In retail and wholesale sales occupancies, the quantities of medicines, foodstuff or consumer products and cosmetics, containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.

*d. **[SFM]** In other than Group L occupancies, maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where Note e also applies, the increase for both notes shall be applied accumulatively. For Group L occupancies, refer to California Building Code Table 453.7.2.1 for approved cabinets.*

e. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, gas cabinets or exhausted enclosures. Where Note d applies, the increase for both notes shall be applied accumulatively.

f. For storage and display quantities in Group M and storage quantities in Group S occupancies complying with Section 5003.11, see Table 5003.11.1.

g. Allowed only where stored in approved exhausted gas cabinets or exhausted enclosures.

h. Quantities in parentheses indicate quantity units in parentheses at the head of each column.

i. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2.

TABLE 5003.1.1(3)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD IN AN OUTDOOR CONTROL AREA[a, b, c, d]

MATERIAL	CLASS	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
		Solid pounds (cubic feet)	Liquid gallons (pounds)[d]	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)[d]	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)[d]
Flammable gas	Gaseous *Category 1A and 1B (High BV)*[e]	Not Applicable	Not Applicable	3,000	Not Applicable	Not Applicable	1,500	Not Applicable	Not Applicable
	Category 1B (Low BV)[e]			*195,000*			*97,500*		
	Liquefied *Category 1A and 1B (High BV)*[e]		(300)	Not Applicable		(150)	Not Applicable		
	Category 1B (Low BV)[e]		*(20,000)*			*(10,000)*			
Flammable solid	Not Applicable	500	Not Applicable	Not Applicable	250	Not Applicable	Not Applicable	50	Not Applicable
Inert Gas	Gaseous	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
	Liquefied	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
Cryogenic inert	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
Organic peroxide	Unclassified Detonable	1	(1)	Not Applicable	0.25	(0.25)	Not Applicable	0.25	(0.25)
Organic peroxide	I	20	(20)	Not Applicable	10	(10)	Not Applicable	2	(2)
	II	200	(200)		100	(100)		20	(20)
	III	500	(500)		250	(250)		50	(50)
	IV	Not Limited	Not Limited		Not Limited	Not Limited		Not Limited	Not Limited
	V	Not Limited	Not Limited		Not Limited	Not Limited		Not Limited	Not Limited
Oxidizer	4	2	(2)	Not Applicable	1	(1)	Not Applicable	0.25	(0.25)
	3	40	(40)		20	(20)		4	(4)
	2	1,000	(1,000)		500	(500)		100	(100)
	1	Not Limited	Not Limited		Not Limited	Not Limited		Not Limited	Not Limited
Oxidizing gas	Gaseous	Not Applicable	Not Applicable	6,000	Not Applicable	Not Applicable	1,500	Not Applicable	Not Applicable
	Liquefied		(600)	Not Applicable		(300)	Not Applicable		
Pyrophoric materials	Not Applicable	8	(8)	100	4	(4)	10	0	0
Unstable (reactive)	4	2	(2)	20	1	(1)	2	0.25	(0.25)
	3	20	(20)	200	10	(10)	10	1	(1)
	2	200	(200)	1,000	100	(100)	250	10	(10)
	1	Not Limited	Not Limited	1,500	Not Limited	Not Limited	Not Limited	Not Limited	Not Limited
Water reactive	3	20	(20)	Not Applicable	10	(10)	Not Applicable	1	(1)
	2	200	(200)		100	(100)		10	(10)
	1	Not Limited	Not Limited		Not Limited	Not Limited		Not Limited	Not Limited

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 cubic foot = 0.02832 m^3.

a. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2.

b. The aggregate quantities in storage and use shall not exceed the quantity listed for storage.

c. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed in outdoor storage per single property under the same ownership or control used for retail or wholesale sales is allowed to exceed the maximum allowable quantity per control area where such storage is in accordance with Section 5003.11.

d. Quantities in parentheses indicate quantity units in parentheses at the head of each column.

e. High Burning Velocity (High BV) Category 1B flammable gas has a burning velocity greater than 3.9 in./s (10 cm/s). Low Burning Velocity (Low BV) Category 1B flammable gas has a burning velocity of 3.9 in./s (10 cm/s) or less.

TABLE 5003.1.1(4)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A HEALTH HAZARD IN AN OUTDOOR CONTROL AREA[a, b, c, f]

MATERIAL	STORAGE			USE-CLOSED SYSTEMS			USE-OPEN SYSTEMS	
	Solid pounds	Liquid gallons (pounds)	Gas cubic feet at NTP (pounds)	Solid pounds	Liquid gallons (pounds)	Gas cubic feet at NTP (pounds)	Solid pounds	Liquid gallons (pounds)
Corrosives	20,000	2,000	Gaseous 1,620 Liquefied (300)	10,000	1,000	Gaseous 810 Liquefied (150)	1,000	100
Highly toxics	20	(20)	Gaseous 40[d] Liquefied (8)[d]	10	(10)	Gaseous 20[d] Liquefied (4)[d]	3	(3)
Toxics	1,000	(l,000)[e]	Gaseous 1,620 Liquefied (300)	500	50[e]	Gaseous 810 Liquefied (150)	125	(125)[e]

For SI:1 cubic foot = 0.02832 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 pound per square inch absolute = 6.895 kPa,°C = (°F – 32)/1.8.

a. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2.

b. The aggregate quantities in storage and use shall not exceed the quantity listed for storage.

c. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed in outdoor storage per single property under the same ownership or control used for retail or wholesale sales is allowed to exceed the maximum allowable quantity per control area where such storage is in accordance with Section 5003.11.

d. Allowed only where used in approved exhausted gas cabinets, exhausted enclosures or under fume hoods.

e. The maximum allowable quantity per control area for toxic liquids with vapor pressures in excess of 1 psia at 77°F shall be the maximum allowable quantity per control area listed for highly toxic liquids.

f. Quantities in parentheses indicate quantity units in parentheses at the head of each column.

5003.3.1.3 Control. Where an unauthorized discharge caused by primary container failure is discovered, the involved primary container shall be repaired or removed from service.

5003.3.1.4 Responsibility for cleanup. The person, firm or corporation responsible for an unauthorized discharge shall institute and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual, without cost to the jurisdiction. Where deemed necessary by the fire code official, cleanup can be initiated by the fire department or by an authorized individual or firm. Costs associated with such cleanup shall be borne by the owner, operator or other person responsible for the unauthorized discharge.

5003.4 Safety Data Sheets. Safety Data Sheets (SDS) shall be readily available on the premises for hazardous materials regulated by this chapter. Where a hazardous substance is developed in a laboratory, available information shall be documented.

Exception: Designated hazardous waste.

5003.5 Hazard identification signs. Unless otherwise exempted by the fire code official, visible hazard identification signs as specified in NFPA 704 for the specific material contained shall be placed on stationary containers and aboveground tanks and at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit and at specific entrances and locations designated by the fire code official.

5003.5.1 Markings. Individual containers, cartons or packages shall be conspicuously marked or labeled in an approved manner. Rooms or cabinets containing compressed gases shall be conspicuously labeled: "COMPRESSED GAS."

5003.6 Signs. Signs and markings required by Sections 5003.5 and 5003.5.1 shall not be obscured or removed, shall be in English as a primary language or in symbols allowed by this code, shall be durable, and the size, color and lettering shall be approved.

5003.7 Sources of ignition. Sources of ignition shall comply with Sections 5003.7.1 through 5003.7.3.

5003.7.1 Smoking. Smoking shall be prohibited and "No Smoking" signs provided as follows:

1. In rooms or areas where hazardous materials are stored or dispensed or used in open systems in amounts requiring a permit in accordance with Section 5001.5.
2. Within 25 feet (7620 mm) of outdoor storage, dispensing or open use areas.
3. Facilities or areas within facilities that have been designated as totally "no smoking" shall have "No Smoking" signs placed at all entrances to the facility or area. Designated areas within such facilities where smoking is permitted either permanently or temporarily, shall be identified with signs designating that smoking is permitted in these areas only.
4. In rooms or areas where flammable or combustible hazardous materials are stored, dispensed or used.

Signs required by this section shall be in English as a primary language or in symbols allowed by this code and shall comply with Section 310.

5003.7.2 Open flames. Open flames and high-temperature devices shall not be used in a manner that creates a hazardous condition and shall be listed for use with the hazardous materials stored or used.

5003.7.3 Industrial trucks. Powered industrial trucks used in areas designated as hazardous (classified) locations shall be in accordance with Section 309.2.

5003.7.4 Respiratory therapy. In Group I-2 and ambulatory care facilities, within areas with respiratory therapy services, sources of ignition shall be regulated in accordance with NFPA 99.

5003.8 Construction requirements. Buildings, control areas, enclosures and cabinets for hazardous materials shall be in accordance with Sections 5003.8.1 through 5003.8.7.2.

5003.8.1 Buildings. Buildings, or portions thereof, in which hazardous materials are stored, handled or used shall be constructed in accordance with the *California Building Code.*

5003.8.2 Required detached buildings. Group H occupancies containing quantities of hazardous materials in excess of those set forth in Table 5003.8.2 shall be in detached buildings.

5003.8.3 Control areas. Control areas shall comply with Sections 5003.8.3.1 through 5003.8.3.5.3.

5003.8.3.1 Construction requirements. Control areas shall be separated from each other by fire barriers constructed in accordance with Section 707 of the *California Building Code* or horizontal assemblies constructed in accordance with Section 711 of the *California Building Code,* or both.

5003.8.3.2 Percentage of maximum allowable quantities. The percentage of maximum allowable quantities of hazardous materials per control area allowed at each story within a building shall be in accordance with Table 5003.8.3.2.

5003.8.3.3 Number. The maximum number of control areas per floor within a building shall be in accordance with Table 5003.8.3.2. For the purposes of determining the number of control areas within a building, each portion of a building separated by one or more fire walls complying with Section 706 of the *California Building Code* shall be considered a separate building.

5003.8.3.4 Fire-resistance-rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with Table 5003.8.3.2. The floor assembly of the control area and the construction supporting the floor of the control area shall have a fire-resistance rating of not less than 2 hours.

Exception: The floor assembly of the control area and the construction supporting the floor of the control area is allowed to be 1-hour fire-resistance rated in buildings of Types IIA, IIIA, IV and VA construction, provided that both of the following conditions exist:

1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

TABLE 5003.8.2
DETACHED BUILDING REQUIRED

A DETACHED BUILDING IS REQUIRED WHERE THE QUANTITY OF MATERIAL EXCEEDS THAT LISTED HEREIN			
Material	**Class**	**Solids and liquids (tons)[a, b]**	**Gases (cubic feet)[a, b]**
Explosives	Division 1.1 Division 1.2 Division 1.3 Division 1.4 Division 1.4[c] Division 1.5 Division 1.6	Maximum Allowable Quantity Maximum Allowable Quantity Maximum Allowable Quantity Maximum Allowable Quantity 1 Maximum Allowable Quantity Maximum Allowable Quantity	Not Applicable
Oxidizers	Class 4	Maximum Allowable Quantity	Maximum Allowable Quantity
Unstable (reactives) detonable	Class 3 or 4	Maximum Allowable Quantity	Maximum Allowable Quantity
Oxidizer, liquids and solids	Class 3 Class 2	1,200 2,000	Not Applicable
Organic peroxides	Detonable Class I Class II Class III	Maximum Allowable Quantity Maximum Allowable Quantity 25 50	Not Applicable
Unstable (reactives) nondetonable	Class 3 Class 2	1 25	2,000 10,000
Water reactives	Class 3 Class 2	1 25	Not Applicable
Pyrophoric gases[d]	Not Applicable	Not Applicable	2,000

For SI: 1 pound = 0.454 kg, 1 cubic foot = 0.02832 m^3, 1 ton = 2000 lb = 907.2 kg.

a. For materials that are detonable, the distance to other buildings or lot lines shall be in accordance with Section 415.6 of the *California Building Code* or Chapter 56 based on the trinitrotoluene (TNT) equivalence of the material, whichever is greater.

b. "Maximum Allowable Quantity" means the maximum allowable quantity per control area set forth in Table 5003.1.1(1).

c. Limited to Division 1.4 materials and articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco, Firearms and Explosives regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles, providing the net explosive weight of individual articles does not exceed 1 pound.

d. Detached buildings are not required for gases in gas rooms that support H-5 fabrication facilities where the gas room is separated from other areas by a fire barrier with a fire-resistance rating of not less than 2 hours and the gas is located in a gas cabinet that is internally sprinklered, equipped with continuous leak detection, automatic shutdown, and is not manifolded upstream of pressure controls. The gas supply is limited to cylinders that do not exceed 125 pounds water capacity in accordance with DOTn 49 CFR 173.192 for Hazard Zone A toxic gases.

TABLE 5003.8.3.2
DESIGN AND NUMBER OF CONTROL AREAS

STORY		**PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA[a]**	**NUMBER OF CONTROL AREAS PER STORY**	**FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS[b]**
Above grade plane	Higher than 9	5	1	2
	7–9	5	2	2
	6	12.5	2	2
	5	12.5	2	2
	4	12.5	2	2
	3	50	2	1
	2	75	3	1
	1	100	4	1
Below grade plane	1	75	3	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

a. Percentages shall be of the maximum allowable quantity per control area shown in Tables 5003.1.1(1) and 5003.1.1(2), with all increases allowed in the footnotes to those tables.

b. Separation shall include fire barriers and horizontal assemblies as necessary to provide separation from other portions of the building.

2. The building is three stories or less above grade plane.

5003.8.3.5 Hazardous materials in Group M display and storage areas and in Group S storage areas. Hazardous materials located in Group M and Group S occupancies shall be in accordance with Sections 5003.8.3.5.1 through *5003.8.3.5.4*.

5003.8.3.5.1 Nonflammable solids and nonflammable and noncombustible liquids. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed within a single control area of a Group M display and storage area or a Group S storage area is allowed to exceed the maximum allowable quantities per control area specified in Tables 5003.1.1(1) and 5003.1.1(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with Section 5003.11.

5003.8.3.5.2 Flammable and combustible liquids. In Group M occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the maximum allowable quantities per control area as indicated in Table 5704.3.4.1, provided that the materials are displayed and stored in accordance with Chapter 57.

5003.8.3.5.3 Aerosols. The maximum quantity of aerosol products in Group M occupancy retail display areas, storage areas adjacent to retail display areas and retail storage areas shall be in accordance with Chapter 51.

5003.8.3.5.4 Flammable gas. *The aggregate quantity of Category 1B flammable gas having a burning velocity of 3.9 in./s (10 cm/s) or less stored and displayed within a single control area of a Group M occupancy, or in an outdoor control area, or stored in a single control area of a Group S occupancy, is allowed to exceed the maximum allowable quantities per control area specified in Table 5003.1.1(1) without classifying the building or use as a Group H occupancy, provided the materials are stored and displayed in accordance with Section 5003.11.2.*

5003.8.4 Gas rooms. Where a gas room is used to increase the maximum allowable quantity per control area or provided to comply with the provisions of Chapter 60, the gas room shall be in accordance with Sections 5003.8.4.1 and 5003.8.4.2.

5003.8.4.1 Construction. Gas rooms shall be protected with an automatic sprinkler system. Gas rooms shall be separated from the remainder of the building in accordance with the requirements of the *California Building Code* based on the occupancy group into which it has been classified.

5003.8.4.2 Ventilation system. The ventilation system for gas rooms shall be designed to operate at a negative pressure in relation to the surrounding area. Highly toxic and toxic gases shall also comply with Section 6004.2.2.6. The ventilation system shall be installed in accordance with the *California Mechanical Code*.

5003.8.5 Exhausted enclosures. Where an exhausted enclosure is used to increase maximum allowable quantity per control area or where the location of hazardous materials in exhausted enclosures is provided to comply with the provisions of Chapter 60, the exhausted enclosure shall be in accordance with Sections 5003.8.5.1 through 5003.8.5.3.

5003.8.5.1 Construction. Exhausted enclosures shall be of noncombustible construction.

5003.8.5.2 Ventilation. Exhausted enclosures shall be provided with an exhaust ventilation system. The ventilation system for exhausted enclosures shall be designed to operate at a negative pressure in relation to the surrounding area. Ventilation systems used for highly toxic and toxic gases shall also comply with Items 1, 2 and 3 of Section 6004.1.3. The ventilation system shall be installed in accordance with the *California Mechanical Code*.

5003.8.5.3 Fire-extinguishing system. Exhausted enclosures where flammable materials are used shall be protected by an approved automatic fire-extinguishing system in accordance with Chapter 9.

5003.8.6 Gas cabinets. Where a gas cabinet is used to increase the maximum allowable quantity per control area or where the location of compressed gases in gas cabinets is provided to comply with the provisions of Chapter 60, the gas cabinet shall be in accordance with Sections 5003.8.6.1 through 5003.8.6.3.

5003.8.6.1 Construction. Gas cabinets shall be constructed with the following:

1. Not less than 0.097-inch (2.5 mm) (No. 12 gage) steel.
2. Self-closing limited access ports or noncombustible windows to give access to equipment controls.
3. Self-closing doors.
4. Interiors treated, coated or constructed of materials that are compatible with the hazardous materials stored. Such treatment, coating or construction shall include the entire interior of the cabinet.

5003.8.6.2 Ventilation. Gas cabinets shall be provided with an exhaust ventilation system. The ventilation system for gas cabinets shall be designed to operate at a negative pressure in relation to the surrounding area. Ventilation systems used for highly toxic and toxic gases shall also comply with Items 1, 2 and 3 of Section 6004.1.2. The ventilation system shall be installed in accordance with the *California Mechanical Code*.

5003.8.6.3 Maximum number of cylinders per gas cabinet. The number of cylinders contained in a single gas cabinet shall not exceed three.

5003.8.7 Hazardous materials storage cabinets. Where storage cabinets are used to increase maximum allowable quantity per control area or to comply with this chapter, such cabinets shall be in accordance with Sections 5003.8.7.1 and 5003.8.7.2.

5003.8.7.1 Construction. The interior of cabinets shall be treated, coated or constructed of materials that are

nonreactive with the hazardous material stored. Such treatment, coating or construction shall include the entire interior of the cabinet. Cabinets shall either be listed in accordance with UL 1275 as suitable for the intended storage or constructed in accordance with the following:

1. Cabinets shall be of steel having a thickness of not less than 0.0478 inch (1.2 mm) (No. 18 gage). The cabinet, including the door, shall be double walled with a $1^1/_2$-inch (38 mm) airspace between the walls. Joints shall be riveted or welded and shall be tight fitting. Doors shall be well fitted, self-closing and equipped with a self-latching device.
2. The bottoms of cabinets utilized for the storage of liquids shall be liquid tight to a minimum height of 2 inches (51 mm).

Electrical equipment and devices within cabinets used for the storage of hazardous gases or liquids shall be in accordance with the *California Electrical Code*.

5003.8.7.2 Warning markings. Cabinets shall be clearly identified in an approved manner with red letters on a contrasting background to read:

HAZARDOUS—KEEP FIRE AWAY

5003.9 General safety precautions. General precautions for the safe storage, handling or care of hazardous materials shall be in accordance with Sections 5003.9.1 through 5003.9.10.

5003.9.1 Personnel training and written procedures. Persons responsible for the operation of areas in which hazardous materials are stored, dispensed, handled or used shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of fire, leak or spill.

5003.9.1.1 Fire department liaison. Responsible persons shall be designated and trained to be liaison personnel to the fire department. These persons shall aid the fire department in preplanning emergency responses and identifying the locations where hazardous materials are located, and shall have access to Safety Data Sheets and be knowledgeable in the site's emergency response procedures.

5003.9.2 Security. Storage, dispensing, use and handling areas shall be secured against unauthorized entry and safeguarded in a manner approved by the fire code official.

5003.9.3 Protection from vehicles. Guard posts or other approved means shall be provided to protect storage tanks and connected piping, valves and fittings; dispensing areas; and use areas subject to vehicular damage in accordance with Section 312.

5003.9.4 Electrical wiring and equipment. Electrical wiring and equipment shall be installed and maintained in accordance with the *California Electrical Code*.

5003.9.5 Static accumulation. Where processes or conditions exist where a flammable mixture could be ignited by static electricity, means shall be provided to prevent the accumulation of a static charge.

5003.9.6 Protection from light. Materials that are sensitive to light shall be stored in containers designed to protect them from such exposure.

5003.9.7 Shock padding. Materials that are shock sensitive shall be padded, suspended or otherwise protected against accidental dislodgement and dislodgement during seismic activity.

5003.9.8 Separation of incompatible materials. Incompatible materials in storage and storage of materials that are incompatible with materials in use shall be separated where the stored materials are in containers having a capacity of more than 5 pounds (2 kg), 0.5 gallon (2 L) or any amount of compressed gases. Separation shall be accomplished by:

1. Segregating incompatible materials in storage by a distance of not less than 20 feet (6096 mm).
2. Isolating incompatible materials in storage by a noncombustible partition extending not less than 18 inches (457 mm) above and to the sides of the stored material.
3. Storing liquid and solid materials in hazardous material storage cabinets.
4. Storing compressed gases in gas cabinets or exhausted enclosures in accordance with Sections 5003.8.5 and 5003.8.6.

Materials that are incompatible shall not be stored within the same cabinet or exhausted enclosure.

5003.9.9 Shelf storage. Shelving shall be of substantial construction, and shall be braced and anchored in accordance with the seismic design requirements of the *California Building Code* for the seismic zone in which the material is located. Shelving shall be treated, coated or constructed of materials that are compatible with the hazardous materials stored. Shelves shall be provided with a lip or guard where used for the storage of individual containers.

Shelf storage of hazardous materials shall be maintained in an orderly manner.

Exceptions:

1. Storage in hazardous material storage cabinets or laboratory furniture specifically designed for such use.
2. Storage of hazardous materials in amounts not requiring a permit in accordance with Section 5001.5.

5003.9.10 Safety cans. Safety cans shall be listed in accordance with UL 30 where used to increase the maximum allowable quantities per control area of flammable or combustible liquids in accordance with Table 5003.1.1(1). Safety cans listed in accordance with UL 1313 are allowed for flammable and combustible liquids where not used to increase the maximum allowable quantities per control area and for other hazardous material liquids in accordance with the listing.

5003.10 Handling and transportation. In addition to the requirements of Section 5003.2, the handling and transportation of hazardous materials in corridors or enclosures for

stairways and ramps shall be in accordance with Sections 5003.10.1 through 5003.10.3.6.

5003.10.1 Valve protection. Hazardous material gas containers, cylinders and tanks in transit shall have their protective caps in place. Containers, cylinders and tanks of highly toxic or toxic compressed gases shall have their valve outlets capped or plugged with an approved closure device in accordance with Chapter 53.

5003.10.2 Carts and trucks required. Liquids in containers exceeding *5.28 gallons (20 L) in an elevator,* a corridor or enclosure for a stairway or ramp shall be transported on a cart or truck. Containers of hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 and transported within *an elevator,* corridors or interior exit stairways and ramps, shall be on a cart or truck. Where carts and trucks are required for transporting hazardous materials, they shall be in accordance with Section 5003.10.3. *Exceptions 1 through 4 shall not apply where elevators are utilized.*

Exceptions:

1. Two hazardous material liquid containers that are hand carried in acceptable safety carriers.
2. Not more than four drums not exceeding 55 gallons (208 L) each that are transported by suitable drum trucks.
3. Containers and cylinders of compressed gases that are transported by approved hand trucks, and containers and cylinders not exceeding 25 pounds (11 kg) that are hand carried.
4. Solid hazardous materials not exceeding 100 pounds (45 kg) that are transported by approved hand trucks, and a single container not exceeding 50 pounds (23 kg) that is hand carried.

5003.10.2.1 On the 11th story and above. *On the 11th story and above of any occupancy, all vertical handling and transportation of hazardous materials in the building shall be in approved carts.*

5003.10.2.2 Transportation of hazardous materials on the 11th story and above. *The handling and transportation of hazardous materials on the 11th story and above shall be limited to 5 percent of the maximum allowable quantities of Tables 5003.1(1) and (2). Quantities are permitted to be increased by 100 percent in buildings with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Materials where footnote g applies shall not be increased.*

5003.10.3 Carts and trucks. Carts and trucks required by Section 5003.10.2 to be used to transport hazardous materials shall be in accordance with Sections 5003.10.3.1 through 5003.10.3.6.

5003.10.3.1 Design. Carts and trucks used to transport hazardous materials shall be designed to provide a stable base for the commodities to be transported and shall have a means of restraining containers to prevent accidental dislodgement. Compressed gas cylinders placed on carts and trucks shall be individually restrained.

5003.10.3.2 Speed-control devices. Carts and trucks shall be provided with a device that will enable the operator to control safely movement by providing stops or speed-reduction devices.

5003.10.3.3 Construction. Construction materials for hazardous material carts or trucks shall be compatible with the material transported. The cart or truck shall be of substantial construction.

5003.10.3.4 Spill control. Carts and trucks transporting liquids shall be capable of containing a spill from the largest single container transported.

5003.10.3.5 Attendance. Carts and trucks used to transport materials shall not obstruct or be left unattended within any part of a means of egress.

5003.10.3.6 Incompatible materials. Incompatible materials shall not be transported on the same cart or truck.

5003.10.4 Elevators utilized to transport hazardous materials.

5003.10.4.1 *When transporting hazardous materials, elevators shall have no other passengers other than the individual(s) handling the chemical transport cart.*

5003.10.4.1.1 *When transporting cryogenic or liquefied compressed gases, there shall be no occupants in the elevator.*

5003.10.4.2 *Hazardous materials liquid containers shall have a maximum capacity of 20 liters (5.28 gal).*

5003.10.4.3 *Toxic and highly-toxic gases shall be limited to a container of a maximum water capacity of 1 pound.*

5003.10.4.4 *When transporting cryogenic or liquefied compressed gases, means shall be provided to prevent the elevator from being summoned to other floors.*

5003.10.5 *Elevators or conveyance systems utilized to transport hazardous materials in excess of the quantities listed in Section 5003.10.4 shall comply with Sections 5003.10.5.1 through 5003.10.5.6.*

5003.10.5.1 *Elevators or conveyance hoist-way enclosures shall be located in a shaft constructed in accordance with Section 713 of the California Building Code.*

5003.10.5.2 *Elevators shall have no passengers other than the individual handling the chemical transport and shall comply with the requirements of Section 5003.10.4.*

5003.10.5.2.1 *When transporting cryogenic or liquefied compressed gases, there shall be no occupants in the elevator.*

5003.10.5.3 *Spill containment shall be provided for all transported liquids.*

5003.10.5.4 *Ventilation shall be provided in the elevator shaft in accordance with Section 5004.3.1.*

5003.10.5.5 *Signage shall be provided on all floors adjacent to each elevator call station to indicate the elevator is designated for hazardous materials transportation.*

5003.10.5.6 *Use of an elevator or conveyance system described in this section shall be restricted to personnel that have been properly trained.*

5003.10.5.7 *Means shall be provided to prevent the elevator from being summoned to other floors.*

5003.10.6 Posted sequence of operation. *A documented sequence of operation shall be submitted to the authority having jurisdiction for review and approval prior to the transportation of hazardous materials in elevators or conveyance systems described in Section 5003.10.5.*

5003.10.6.1 *The approved sequence of operations shall be posted in the elevator car or conveyance system.*

5003.10.6.2 *The approved sequence of operation shall be maintained and tested upon the request of the authority having jurisdiction.*

5003.11 ***Maximum allowable quantity for*** **Group M storage and display and Group S storage.** The aggregate quantity of hazardous materials stored and displayed within a single control area of a Group M occupancy, or an outdoor control area, or stored in a single control area of a Group S occupancy, is allowed to exceed the maximum allowable quantity per control area indicated in Section 5003.1 where in accordance with Sections 5003.11.1 *and 5003.11.2.*

5003.11.1 ***Nonflammable solid and nonflammable or noncombustible liquid hazardous materials.*** The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single control area of a Group M occupancy, *or an outdoor control area,* or stored in a single control area of a Group S occupancy shall not exceed the amounts set forth in Table 5003.11.1.

5003.11.1.1 **Storage and display.** Storage and display shall be in accordance with Sections 5003.11.1.1.1 through 5003.11.1.1.11.

5003.11.1.1.1 **Density.** Storage and display of solids shall not exceed 200 pounds per square foot (976 kg/m^2) of floor area actually occupied by solid merchandise. Storage and display of liquids shall not exceed 20 gallons per square foot (0.50 L/m^2) of floor area actually occupied by liquid merchandise.

5003.11.1.1.2 **Storage and display height.** Display height shall not exceed 6 feet (1829 mm) above the finished floor in display areas of Group M occupancies. Storage height shall not exceed 8 feet (2438 mm) above the finished floor in storage areas of Group M and Group S occupancies.

5003.11.1.1.3 **Container location.** Individual containers less than 5 gallons (19 L) or less than 25 pounds (11 kg) shall be stored or displayed on pallets, racks or shelves.

5003.11.1.1.4 **Racks and shelves.** Racks and shelves used for storage or display shall be in accordance with Section 5003.9.9.

5003.11.1.1.5 **Container type.** Containers shall be approved for the intended use and identified as to their content.

5003.11.1.1.6 **Container size.** Individual containers shall not exceed 100 pounds (45 kg) for solids or 10 gallons (38 L) for liquids in storage and display areas.

5003.11.1.1.7 **Incompatible materials.** Incompatible materials shall be separated in accordance with Section 5003.9.8.

5003.11.1.1.8 **Floors.** Floors shall be in accordance with Section 5004.12.

5003.11.1.1.9 **Aisles.** Aisles 4 feet (1219 mm) in width shall be maintained on three sides of the storage or display area.

5003.11.1.1.10 **Signs.** Hazard identification signs shall be provided in accordance with Section 5003.5.

5003.11.1.1.11 **Storage plan.** A storage plan illustrating the intended storage arrangement, including the location and dimensions of aisles, and storage racks shall be provided.

5003.11.2 Category 1B flammable gas with low burning velocity. *The aggregate quantity of Category 1B flammable gas having a burning velocity of 3.9 in./s (10 cm/s) or less stored and displayed within a single control area of a Group M occupancy, or an outdoor control area, or stored in a single control area of a Group S occupancy shall not exceed the amounts set forth in Table 5003.11.2.*

TABLE 5003.11.2
MAXIMUM ALLOWABLE QUANTITY OF LOW BURNING VELOCITY CATEGORY 1B FLAMMABLE GAS IN GROUP M AND S OCCUPANCIES PER CONTROL AREA[a]

FLAMMABLE GAS CATEGORY	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
	Sprinklered in Accordance with Note b	Non-sprinklered
Category 1B (Low BV)[d]		
Gaseous	*390,000 cu. ft.*	*195,000 cu. ft.*
Liquefied	*40,000 lbs.[c]*	*20,000 lbs.*

For SI: 1 pound = 0.454 kg, 1 sq. ft = 0.0929 m², 1 gallon per minute per sq. ft = 40.75 L/min./m²

a. Control areas shall be separated from each other by not less than a 1-hour fire barrier.

b. The building shall be equipped throughout with an approved automatic sprinkler system with minimum sprinkler design density of Ordinary Hazard Group 2 in the area where flammable gases are stored or displayed.

c. Where storage areas exceed 50,000 square feet in area, the maximum allowable quantities are allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to not more than 100 percent of the table amounts. The aggregate amount shall not exceed 80,000 pounds.

d. Low Burning Velocity (Low BV) Category 1B flammable gas has a burning velocity of 3.9 in./s (10 cm/s) or less.

5003.11.2.1 Fire protection and storage arrangements. *Fire protection and container storage arrangements for quantities of Category 1B flammable gases permitted by Table 5003.11.2 shall be in accordance with all the following:*

1. *Storage on shelves shall not exceed 6 feet (1829 mm) in height, and shelving shall be metal.*
2. *Rack storage, pallet storage or piles greater than 6 feet 6 inches (1829 mm) in height shall be provided with an automatic sprinkler system with a minimum design of Extra Hazard Group 1.*
3. *Combustible commodities shall not be stored above flammable gases.*
4. *Flammable liquids shall be separated by a distance of 20 feet (6096 mm). The separation is permitted to be reduced to 10 feet (3048 mm) where secondary containment or diking is pro-*

TABLE 5003.11.1
MAXIMUM ALLOWABLE QUANTITY PER INDOOR AND OUTDOOR CONTROL AREA IN GROUP M AND S OCCUPANCIES—NONFLAMMABLE SOLIDS, NONFLAMMABLE AND NONCOMBUSTIBLE LIQUIDS[d, e, f]

CONDITION		MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
Material[a]	Class	Solids (pounds)	Liquids (gallons)
A. Health-Hazard Materials—Nonflammable and Noncombustible Solids and Liquids			
1. Corrosives[b, c]	Not Applicable	9,750	975
2. Highly toxics	Not Applicable	20[b, c]	2[b, c]
3. Toxics[b, c]	Not Applicable	1,000[k]	100
B. Physical-Hazard Materials—Nonflammable and Noncombustible Solids and Liquids			
1. Oxidizers[b, c]	4	Not Allowed	Not Allowed
	3	1,350[g]	135
	2	2,250[h]	225
	1	18,000[i, j]	1,800[i, j]
2. Unstable (reactives)[b, c]	4	Not Allowed	Not Allowed
	3	550	55
	2	1,150	115
	1	Not Limited	Not Limited
3. Water reactives	3[b, c]	550	55
	2[b, c]	1,150	115
	1	Not Limited	Not Limited

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 cubic foot = 0.02832 m^3.

a. Hazard categories are as specified in Section 5001.2.2.

b. Maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Where Note c applies, the increase for both notes shall be applied accumulatively.

c. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets in accordance with Section 5003.8. Where Note b applies, the increase for both notes shall be applied accumulatively.

d. See Table 5003.8.3.2 for design and number of control areas.

e. Maximum allowable quantities for other hazardous material categories shall be in accordance with Section 5003.1.

f. Maximum allowable quantities shall be increased 100 percent in outdoor control areas.

g. Maximum allowable quantities shall be increased to 2,250 pounds where individual packages are in the original sealed containers from the manufacturer or packager and do not exceed 10 pounds each.

h. Maximum allowable quantities shall be increased to 4,500 pounds where individual packages are in the original sealed containers from the manufacturer or packager and do not exceed 10 pounds each.

i. Quantities are unlimited where protected by an automatic sprinkler system.

j. Quantities are unlimited in an outdoor control area.

k. Maximum allowable quantity of consumer products shall be increased to 10,000 pounds where individual packages are in the original sealed containers from the manufacturer and the toxic classification is exclusively based on the LC_{50} threshold and no other hazardous materials classifications apply.

vided to retain a flammable liquid spill at a distance of 10 feet (3048 mm) from the flammable gas storage.

5003.12 Outdoor control areas. Outdoor control areas for hazardous materials shall be in accordance with the following general requirements:

1. Outdoor control areas shall be kept free from weeds, debris and common combustible materials not necessary to the storage. The area surrounding an outdoor control area shall be kept clear of such materials for not less than 15 feet (4572 mm).
2. Outdoor control areas shall be located not closer than 20 feet (6096 mm) from a public street, public alley, public way or lot line that can be built on.

   Exceptions:

   1. For solid and liquid hazardous materials, a 2-hour fire-resistance-rated wall without openings extending not less than 30 inches (762 mm) above and to the sides of the storage area shall be allowed in lieu of such distance.
   2. For compressed gas hazardous materials, unless otherwise specified, the minimum required distances shall not apply where fire barriers without openings or penetrations having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the storage and the exposure. The configuration of the fire barrier shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.
3. Where a property exceeds 10,000 square feet (929 m^2), a group of two outdoor control areas is allowed where approved and where each control area is separated by a minimum distance of 50 feet (15 240 mm).
4. Where a property exceeds 35,000 square feet (3252 m^2), additional groups of outdoor control areas are allowed where approved and where each group is separated by a minimum distance of 300 feet (91 440 mm).

SECTION 5004
STORAGE

5004.1 Scope. Storage of hazardous materials in amounts exceeding the maximum allowable quantity per control area as

set forth in Section 5003.1 shall be in accordance with Sections 5001, 5003 and 5004. Storage of hazardous materials in amounts not exceeding the maximum allowable quantity per control area as set forth in Section 5003.1 shall be in accordance with Sections 5001 and 5003. Retail and wholesale storage and display of nonflammable solid and nonflammable and noncombustible liquid hazardous materials in Group M occupancies and Group S storage shall be in accordance with Section 5003.11.

5004.2 Spill control and secondary containment for liquid and solid hazardous materials. Rooms, buildings or areas used for the storage of liquid or solid hazardous materials shall be provided with spill control and secondary containment in accordance with Sections 5004.2.1 through 5004.2.3.

Exception: Outdoor storage of containers on approved containment pallets in accordance with Section 5004.2.3.

5004.2.1 Spill control for hazardous material liquids. Rooms, buildings or areas used for the storage of hazardous material liquids in individual vessels having a capacity of more than 55 gallons (208 L), or in which the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L), shall be provided with spill control to prevent the flow of liquids to adjoining areas. Floors in indoor locations and similar surfaces in outdoor locations shall be constructed to contain a spill from the largest single vessel by one of the following methods:

1. Liquid-tight sloped or recessed floors in indoor locations or similar areas in outdoor locations.
2. Liquid-tight floors in indoor locations or similar areas in outdoor locations provided with liquid-tight raised or recessed sills or dikes.
3. Sumps and collection systems.
4. Other approved engineered systems.

Except for surfacing, the floors, sills, dikes, sumps and collection systems shall be constructed of noncombustible material, and the liquid-tight seal shall be compatible with the material stored. Where liquid-tight sills or dikes are provided, they are not required at perimeter openings having an open-grate trench across the opening that connects to an approved collection system.

5004.2.2 Secondary containment for hazardous material liquids and solids. Where required by Table 5004.2.2, buildings, rooms or areas used for the storage of hazardous materials liquids or solids shall be provided with secondary containment in accordance with this section where the capacity of an individual vessel or the aggregate capacity of multiple vessels exceeds both of the following:

1. Liquids: Capacity of an individual vessel exceeds 55 gallons (208 L) or the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L).
2. Solids: Capacity of an individual vessel exceeds 550 pounds (250 kg) or the aggregate capacity of multiple vessels exceeds 10,000 pounds (4540 kg).

5004.2.2.1 Containment and drainage methods. The building, room or area shall contain or drain the hazardous materials and fire protection water through the use of one of the following methods:

1. Liquid-tight sloped or recessed floors in indoor locations or similar areas in outdoor locations.
2. Liquid-tight floors in indoor locations or similar areas in outdoor locations provided with liquid-tight raised or recessed sills or dikes.
3. Sumps and collection systems.
4. Drainage systems leading to an approved location.
5. Other approved engineered systems.

5004.2.2.2 Incompatible materials. Incompatible materials used in open systems shall be separated from each other in the secondary containment system.

5004.2.2.3 Indoor design. Secondary containment for indoor storage areas shall be designed to contain a spill from the largest vessel plus the design flow volume of fire protection water calculated to discharge from the fire-extinguishing system over the minimum required system design area or area of the room or area in which the storage is located, whichever is smaller. The containment capacity shall be designed to contain the flow for a period of 20 minutes.

5004.2.2.4 Outdoor design. Secondary containment for outdoor storage areas shall be designed to contain a spill from the largest individual vessel. If the area is open to rainfall, secondary containment shall be designed to include the volume of a 24-hour rainfall as determined by a 25-year storm and provisions shall be made to drain accumulations of groundwater and rainwater.

5004.2.2.5 Monitoring. An approved monitoring method shall be provided to detect hazardous materials in the secondary containment system. The monitoring method is allowed to be visual inspection of the primary or secondary containment, or other approved means. Where secondary containment is subject to the intrusion of water, a monitoring method for detecting water shall be provided. Where monitoring devices are provided, they shall be connected to approved visual or audible alarms.

5004.2.2.6 Drainage system design. Drainage systems shall be in accordance with the *California Plumbing Code* and all of the following:

1. The slope of floors to drains in indoor locations, or similar areas in outdoor locations shall be not less than 1 percent.
2. Drains from indoor storage areas shall be sized to carry the volume of the fire protection water as determined by the design density discharged from the automatic fire-extinguishing system over the minimum required system design area or area of the room or area in which the storage is located, whichever is smaller.
3. Drains from outdoor storage areas shall be sized to carry the volume of the fire flow and the volume of a 24-hour rainfall as determined by a 25-year storm.
4. Materials of construction for drainage systems shall be compatible with the materials stored.
5. Incompatible materials used in open systems shall be separated from each other in the drainage system.

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 57 – FLAMMABLE AND COMBUSTIBLE LIQUIDS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			**X**																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]				**X**																			
Chapter / Section																							
[T-19 §3.15]				X																			
5702			X																				
5703.4.1			X																				
5703.6.2			X																				
5703.6.2.2			X																				
5704.2			X																				
5704.2.1			X																				
5704.2.7.4			X																				
5706.5.1.11			X																				
5707			†																				

The state agency does not adopt sections identified with the following symbol: †

* The *California Code of Regulations* (CCR), Title 19, Division 1 provisions that are found in the *California Fire Code* are a reprint from the current CCR, Title 19, Division 1 text for the code user's convenience only. The scope, applicability and appeals procedures of CCR, Title 19, Division I remain the same.

with the applicable standard listed in Table 5703.6.2. Where such materials are used outdoors in above-ground piping systems or within buildings, they shall be in accordance with the applicable standard listed in Table 5703.6.2 and one of the following:

1. Suitably protected against fire exposure.
2. Located where leakage from failure would not unduly expose people or structures.
3. Located where leakage can be readily controlled by operation of remotely located valves in a location provided with ready access.

In all cases, nonmetallic piping shall be used in accordance with Section 27.4.6 of NFPA 30.

TABLE 5703.6.2
PIPING STANDARDS

PIPING USE	STANDARD
Power piping	ASME B31.1
Process piping	ASME B31.3
Pipeline transportation systems for liquid hydrocarbons and other liquids	ASME B31.4
Building services piping	ASME B31.9
Double containment piping	UL 971A, UL 1369

5703.6.2.2 Below-grade or underground piping systems connected to a tank in an underground area. *Below-grade or underground piping systems that are connected to a tank in an underground area shall have secondary containment. The building, room or area in which the flammable or combustible liquid is stored or located may be used as secondary containment if it meets the containment and drainage methods as described in Section 5004.2.2.1.*

All portions of below-grade and underground piping systems shall be monitored for leaks by one of the following methods:

1. *A listed or approved leak detection system that either activates an audible and visual alarm or stops the flow of product when a leak is detected.*
2. *Direct visual inspection conducted monthly by designated personnel.*
3. *Indirect visual inspection conducted monthly through the use of, but not limited to, mirrors, cameras or video equipment.*
4. *If the above methods cannot be met, an alternative means shall be provided in accordance with Section 1.11.2.4.*

Exceptions:

1. *Piping systems connected to a tank in an underground area that is used solely in connection with a fire pump or emergency system, legally required standby system or optional standby system as specified in Health and Safety Code Section 25270.2(o)(1)(C)(iii).*
2. *Piping systems connected to a tank in an underground area that contains petroleum to be used or previously used as a lubricant or coolant in a motor engine or transmission or oil-filled operational equipment or oil-filled manufacturing equipment, as described in Health and Safety Code Section 25270.2(o)(1)(C)(i).*
3. *Piping systems connected to a petroleum hazardous waste tank in an underground area that complies with the hazardous waste tank standards pursuant to the California Code of Regulations, Title 22, Chapter 15, Article 10 (commencing with Section 66265.190), and the facility has been issued a unified program facility permit pursuant to Health and Safety Code Section 25404.2 for generation, treatment, accumulation or storage of hazardous waste, as described in Health and Safety Code Section 25270.2(o)(1)(C)(ii).*

5703.6.3 Testing. Unless tested in accordance with the applicable section of ASME B31.9, piping, before being covered, enclosed or placed in use, shall be hydrostatically tested to 150 percent of the maximum anticipated pressure of the system, or pneumatically tested to 110 percent of the maximum anticipated pressure of the system, but not less than 5 pounds per square inch gauge (psig) (34.47 kPa) at the highest point of the system. This test shall be maintained for a sufficient time period to complete visual inspection of joints and connections. For not less than 10 minutes, there shall be no leakage or permanent distortion. Care shall be exercised to ensure that these pressures are not applied to vented storage tanks. Such storage tanks shall be tested independently from the piping.

5703.6.3.1 Existing piping. Existing piping shall be tested in accordance with this section where the fire code official has reasonable cause to believe that a leak exists. Piping that could contain flammable or combustible liquids shall not be tested pneumatically. Such tests shall be at the expense of the owner or operator.

Exception: Vapor-recovery piping is allowed to be tested using an inert gas.

5703.6.4 Protection from vehicles. Guard posts or other approved means shall be provided to protect piping, valves or fittings subject to vehicular damage in accordance with Section 312.

5703.6.5 Protection from external corrosion and galvanic action. Where subject to external corrosion, piping, related fluid-handling components and supports for both underground and above-ground applications shall be fabricated from noncorrosive materials, and coated or provided with corrosion protection. Dissimilar metallic parts that promote galvanic action shall not be joined.

5703.6.6 Valves. Piping systems shall contain a sufficient number of manual control valves and check valves to

operate the system properly and to protect the plant under both normal and emergency conditions. Piping systems in connection with pumps shall contain a sufficient number of such valves to control properly the flow of liquids in normal operation and in the event of physical damage or fire exposure.

5703.6.6.1 Backflow protections. Connections to pipelines or piping by which equipment (such as tank cars, tank vehicles or marine vessels) discharges liquids into storage tanks shall be provided with check valves or block valves for automatic protection against backflow where the piping arrangement is such that backflow from the system is possible. Where loading and unloading is done through a common pipe system, a check valve is not required. However, a block valve, located in an area where it is provided with ready access or remotely operable, shall be provided.

5703.6.6.2 Manual drainage. Manual drainage-control valves shall be located at approved locations remote from the tanks, diked area, drainage system and impounding basin to ensure their operation in a fire condition.

5703.6.7 Connections. Above-ground tanks with connections located below normal liquid level shall be provided with internal or external isolation valves located as close as practical to the shell of the tank. Except for liquids whose chemical characteristics are incompatible with steel, such valves, where external, and their connections to the tank shall be of steel.

5703.6.8 Piping supports. Piping systems shall be substantially supported and protected against physical damage and excessive stresses arising from settlement, vibration, expansion, contraction or exposure to fire. The supports shall be protected against exposure to fire by one of the following:

1. Draining liquid away from the piping system at a minimum slope of not less than 1 percent.
2. Providing protection with a fire-resistance rating of not less than 2 hours.
3. Other approved methods.

5703.6.9 Flexible joints. Flexible joints shall be listed and approved and shall be installed on underground liquid, vapor and vent piping at all of the following locations:

1. Where piping connects to underground tanks.
2. Where piping ends at pump islands and vent risers.
3. At points where differential movement in the piping can occur.

5703.6.9.1 Fiberglass-reinforced plastic piping. Fiberglass-reinforced plastic (FRP) piping is not required to be provided with flexible joints in locations where both of the following conditions are present:

1. Piping does not exceed 4 inches (102 mm) in diameter.
2. Piping has a straight run of not less than 4 feet (1219 mm) on one side of the connection where such connections result in a change of direction.

In lieu of the minimum 4-foot (1219 mm) straight run length, approved and listed flexible joints are allowed to be used under dispensers and suction pumps, at submerged pumps and tanks, and where vents extend above ground.

5703.6.10 Pipe joints. Joints shall be liquid tight and shall be welded, flanged or threaded except that listed flexible connectors are allowed in accordance with Section 5703.6.9. Threaded or flanged joints shall fit tightly by using approved methods and materials for the type of joint. Joints in piping systems used for Class I liquids shall be welded where located in concealed spaces within buildings.

Nonmetallic joints shall be approved and shall be installed in accordance with the manufacturer's instructions.

Pipe joints that are dependent on the friction characteristics or resiliency of combustible materials for liquid tightness of piping shall not be used in buildings. Piping shall be secured to prevent disengagement at the fitting.

5703.6.11 Bends. Pipe and tubing shall be bent in accordance with ASME B31.9.

SECTION 5704
STORAGE

5704.1 General. The storage of flammable and combustible liquids in containers and tanks shall be in accordance with this section and the applicable sections of Chapter 50.

5704.2 Tank storage. The provisions of this section shall apply to:

1. The storage of flammable and combustible liquids in fixed above-ground and underground tanks.

   Exception: *Tanks connected to building heating systems installed in accordance with Section 605.4.*

2. The storage of flammable and combustible liquids in fixed above-ground tanks inside of buildings.

   Exception: *Tanks connected to building heating systems installed in accordance with Section 605.4.*

3. The storage of flammable and combustible liquids in portable tanks whose capacity exceeds 660 gallons (2498 L).
4. The installation of such tanks and portable tanks.

5704.2.1 Change of tank contents. Tanks subject to change in contents shall be in accordance with Section 5704.2.7. Prior to a change in contents, the fire code official is authorized to require testing of a tank.

Tanks that have previously contained Class I liquids shall not be loaded with Class II or Class III liquids until such tanks and all piping, pumps, hoses and meters connected thereto have been completely drained and flushed.

Exception: *When approved by the Enforcing Agency, the procedures prescribed in API (API-RP-2003) Recommended Practices 2003, entitled: "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents," may be used for changing tank contents.*

CALIFORNIA FIRE CODE – MATRIX ADOPTION TABLE
CHAPTER 80 – REFERENCED STANDARDS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]																							
Chapter / Section																							
ANSI/APA PRG 320-18			X																				
ASHRAE 15-2022			X																				
ASME A17.1/CSA B44			X																				
ASME BPE-2009			X																				
ASTM E108-2020a			X																				
ASTM F2374			X																				
CA CA-116			X																				
CA CA-117			X																				
D3498—11			X																				
FM3260—00			X																				
FM3011—99			X																				
FM4430—80			X																				
ICC ES AC 331			X																				
ICC ES AC 77			X																				
NFPA 2—20			X																				
NFPA 10—*21*			X																				
NFPA 13—22			X																				
NFPA 13D—*22*			X																				
NFPA 14—19			X																				
NFPA 24—22			X																				
NFPA 25—13 CA			X																				
NFPA 32—16			X																				
NFPA 37—15			X																				
NFPA 54—15			X																				
NFPA 68—13			X																				
NFPA 72—22			X																				
NFPA 76—16			X																				
NFPA 82—14			X																				
NFPA 111—16			X																				
NFPA 241—19			X																				
NFPA 260—19			X																				
NFPA 289—19			X																				
NFPA 409—22			X																				
NFPA 502—14			X																				
NFPA 1225—22			X																				

(continued)

CHAPTER 80 – REFERENCED STANDARDS—continued

Adopting Agency	BSC	BSC-CG	SFM		HCD			DSA		OSHPD						BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
			T-24	T-19*	1	2	1/AC	AC	SS	1	1R	2	3	4	5								
Adopt Entire Chapter																							
Adopt Entire Chapter as amended (amended sections listed below)			X																				
Adopt only those sections that are listed below																							
[California Code of Regulations, Title 19, Division 1]																							
Chapter / Section																							
NFPA 2001—18			X																				
SFM 12-3			X																				
SFM 12-7-3			X																				
SFM 12-7A-1			X																				
SFM 12-7A-2			X																				
SFM 12-7A-3			X																				
SFM 12-7A-4			X																				
SFM 12-7A-4A			X																				
SFM 12-7A-5			X																				
SFM 12-8-100			X																				
SFM 12-10-1			X																				
SFM 12-10-2			X																				
SFM 12-10-3			X																				
UL 13—96			X																				
UL 38—99			X																				
UL 193—04			X																				
UL 199—95			X																				
UL 228—97			X																				
UL 260—04			X																				
UL 262—04			X																				
UL 268A—98			X																				
UL 312—04			X																				
UL 346—05			X																				
UL 464—03			X																				
UL 497B—04			X																				
UL 521—99			X																				
UL 539—00			X																				
UL 632—00			X																				
UL 753—04			X																				
UL 790 *Edition 9—2022*			X																				
UL 791—06			X																				
UL 813—96			X																				
UL 864—03			X																				
UL 1974—17			X																				
UL 9540 *Edition 2—2020*			X																				
UL 9540A *Edition 4—2019*			X																				

Part VI—Referenced Standards

CHAPTER 80

REFERENCED STANDARDS

User note:

About this chapter: *This code contains numerous references to standards promulgated by other organizations that are used to provide requirements for materials and methods of construction. This chapter contains a comprehensive list of all standards that are referenced in this code. These standards, in essence, are part of this code to the extent of the reference to the standard.*

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.7.

AASHTO

American Association of State Highway and Transportation Officials
444 North Capitol Street, NW, Suite 249
Washington, DC 20001

HB-17—2002: Specification for Highway Bridges, 17th Edition 2002
503.2.6

AFSI

Architectural Fabric Structures Institute
c/o Industrial Fabric Association International
1801 County Road B West
Roseville, MN 55113

FSAAS—16: Fabric Structures Associated Air Structures 2016
3103.10.2

ANSI

American National Standards Institute
25 West 43rd Street, 4th Floor
New York, NY 10036

ANSI E1.21—2013: Entertainment Technology: Temporary Structures Used for Technical Production of Outdoor Entertainment Events
3105.1, 3105.4, 3105.5

APA

APA – The Engineered Wood Association
7011 S. 19th Street
Tacoma, WA 98466-5333

ANSI/APA PRG 320—18: Standard for Performance-rated Cross Laminated Timber
701.6, 914.3.1.2, 3303.5

API

American Petroleum Institute
1220 L Street, NW
Washington, DC 20005

Publ 2009—7th Edition (2002, R2012): Safe Welding and Cutting Practices in Refineries, Gas Plants and Petrochemical Plants
5706.7

Publ 2028 3rd Edition—(2002, R2010): Flame Arrestors in Piping Systems
5704.2.7.3.2

Publ 2201 5th Edition—(2003, R2010): Procedures for Welding or Hot Tapping on Equipment in Service
5706.7

RP 651—4th Edition (2014): Cathodic Protection of Aboveground Petroleum Storage Tanks
5706.7, 5706.7.1

API—continued

RP 752— 3rd Edition (2009): Management of Hazards Associated with Location of Process Plant Buildings, CMA Managers Guide
5706.7

RP 1604—3rd Edition (1996 R2010): Closure of Underground Petroleum Storage Tanks
5704.2.13

RP 1615—(1996) 6th Edition (2011): Installation of Underground-petroleum Storage Systems
5704.2.13.1.5, 5706.7

RP 2001—9th Edition (2012): Fire Protection in Refineries, 8th Edition
5706.7

RP 2003—8th Edition (2015): Protection Against Ignitions Arising out of Static, Lightning and Stray Currents
5706.7

RP 2023—3rd Edition (2001, R2006): Guide for Safe Storage and Handling of Heated Petroleum-derived Asphalt Products and Crude-oil Residue
5706.7, 5706.7.3

Std 653—5th Edition (2018): Tank Inspection, Repair, Alteration and Reconstruction
5706.7

Std 2000—7th Edition (2014): Venting Atmosphere and Low-pressure Storage Tanks: Nonrefrigerated and Refrigerated
5704.2.7.3.2

Std 2015—8th Edition 2001 (2018): Requirements for Safe Entry and Clearing of Petroleum Storage Tanks
5706.7, 5706.7.2

Std 2350— 4th Edition (2012): Overfill Protection for Storage Tanks in Petroleum Facilities, 3rd Edition
5704.2.7.5.8, 5706.4.6, 5706.7

ASCE/SEI

American Society of Civil Engineers
Structural Engineering Institute
Reston, VA 20191-4400

ASCE/SEI 24—20: Flood Resistant Design and Construction
1203.1.8

ASHRAE

ASHRAE
1791 Tullie Circle NE
Atlanta, GA 30329

15—*2022*

Safety Standard for Refrigeration Systems
608.1.1, 608.18.2

170—2017

Ventilation of Health Care Facilities
1020.6

ASME

American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990

A13.1—2020: Scheme for the Identification of Piping Systems
3509.3, 5003.2.2.1, 5303.4.3, 5503.4.5, 5703.5.2

A17.1—2019/CSA B44—19 *the edition as referenced in*: Safety Code for Elevators and Escalators*, California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders*
508.1.6, 604.2, *606.2.5*, *606.8.6*, *606.8.6.1*, *606.8.6.2*, *606.8.6.3*, *606.8.6.4*, 907.3.3, 1009.4.1, *1103.3.3*

A17.3—2020: Safety Code for Existing Elevators and Escalators *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders*
1103.3.1, 1103.3.2

B16.18—2018: Cast Copper-alloy Solder-joint Pressure Fittings
909.13.1

ASME—continued

B16.22—2018: Wrought Copper and Copper-alloy Solder-joint Pressure Fittings
909.13.1

B31.1—2020: Power Piping
5003.2.2, Table 5703.6.2

B31.3—2020: Process Piping
5003.2.2.2, Table 5703.6.2

B31.4—2019: Pipeline Transportation Systems for Liquids and Slurries
Table 5703.6.2

B31.9—2020: Building Services Piping
Table 5703.6.2, 5703.6.3, 5703.6.11

BPE—2009: Bioprocessing Equipment Standard

BPVC—2019: ASME Boiler and Pressure Vessel Code (Sections I, II, IV, V & VI, VIII)
5003.2.1, 5303.2, 5303.3.2, 5503.2.6, 5503.4.3, 5503.7, 5704.2.13.1.5, 5806.3.1, 5806.4.1, 5806.4.8

ASSP

American Society of Safety Professionals
520 N. Northwest Highway
Park Ridge, IL 60068

ANSI/ASSP Z359.1—2020: The Fall Protection Code
1015.6, 1015.7

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959

B42—15a: Specification for Seamless Copper Pipe, Standard Sizes
909.13.1

B43—15: Specification for Seamless Red Brass Pipe, Standard Sizes
909.13.1

B68/B68M—11: Specification for Seamless Copper Tube, Bright Annealed (Metric)
909.13.1

B88—16: Specification for Seamless Copper Water Tube
909.13.1

B251/B251M—17: Specification for General Requirements for Wrought Seamless Copper and Copper-alloy Tube
909.13.1

B280—18: Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
909.13.1

D56—16a: Test Method for Flash Point by Tag Closed Cup Tester
202

D86—17: Test Method for Distillation of Petroleum Products at Atmospheric Pressure
202

D92—18: Test Method for Flash and Fire Points by Cleveland Open Cup Tester
202, 2401.2, 5001.1, 5104.1.1, 5104.1.2, 5701.2

D93—18: Test Method for Flash Point by Pensky-Martens Closed Up Tester
202

D323—15A: Test Method for Vapor Pressure of Petroleum Products (Reid Method)
202

D2859—16: Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
804.3.3.1, 804.3.3.2

D3278—96(2011): Test Methods for Flash Point of Liquids by Small Scale Closed-cup Apparatus
202

D3498—03(2011): Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems
701.6, 914.3.1.2, 3303.5

ASTM—continued

E84—18b: Standard Test Method for Surface Burning Characteristics of Building Materials
202, 803.1, 803.1.2, 803.3, 803.5.2, 803.10, 803.12, 803.13, 804.1.1, 804.1.2, 804.2.4, 3305.9

E108—*2020a*: Standard Test Methods for Fire Tests of Roof Coverings
317.2, 317.3

E648—17a: Standard Test Method for Critical Radiant Flux of Floor-covering Systems Using a Radiant Heat Energy Source
804.3.1, 804.3.2, 804.4

E681—09(2015): Test Method for Concentration Limits of Flammability of Chemicals (Vapors and Gases)
202

E1354—17: Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
304.3.2, 304.3.4, 318.1, 808.1, 808.2, 2310.5.3, 3305.2.3, 3305.9, 3603.4

E1529—16e1: Standard Test Method for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies
5704.2.9.2.3

E1537—16: Test Method for Fire Testing of Upholstered Furniture
805.1.1.2, 805.2.1.2, 805.3.1.2, 805.4.1.2

E1590—17: Test Method for Fire Testing of Mattresses
805.1.2.2, 805.2.2.2, 805.3.2.2.1, 805.4.2.2

E1966—15: Standard Test Method for Fire-resistant Joint Systems
202

E2072—14: Standard Specification for Photoluminescent (Phosphorescent) Safety Markings
1025.4

E2404—17: Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facing and Veneers to Assess Surface Burning Characteristics
803.5.1, 803.5.2, 803.12

E2573—17: Standard Practice for Specimen Preparation and Mounting of Site-fabricated Stretch Systems to Assess Surface Burning Characteristics
803.10

E2579—15: Standard Practice for Specimen Preparation and Mounting of Wood Products to Assess Surface Burning Characteristics
803.13

E3082—17: Standard Test Methods for Determining the Effectiveness of Fire-retardant Treatments for Natural Christmas Trees
806.1.4

F1085—14: Standard Specification for Mattress and Box Springs for Use in Berths in Marine Vessels
805.3.2.2.2

F2006—17: Standard/Safety Specification for Window Fall Prevention Devices for Non-emergency Escape (Egress) and Rescue (Ingress) Windows
1015.8

F2090—17: Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms
1015.8, 1015.8.1, 1031.2.1

F2200—17: Standard Specification for Automated Vehicular Gate Construction
503.5, 503.6

F2374—21a: Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices
3106.2

BHMA

Builders Hardware Manufacturers' Association
355 Lexington Avenue, 15th Floor
New York, NY 10017

A156.10—2017: Power-operated Pedestrian Doors
1010.3.2

A156.19—2019: Power Assist and Low-energy Power-operated Doors
1010.3.2

A156.27—2019: Power- and Manual-operated Revolving Pedestrian Doors
1010.3.1, 1010.3.1.1

BHMA—continued

A156.38—2019: Low-energy Power-operated Sliding and Folding Doors
1010.3.2

CA

State of California Department of Consumer Affairs
Bureau of Electronics and Appliance Repair, Home Furnishings and Thermal Insulation
4244 South Market Court, Suite D
Sacramento, CA 95834-1243

California Technical Bulletin 116: Flammability Test Procedure for Mattresses for Use in Public Buildings
805.1.2.2, 805.2.2.2, 805.3.2.2.1, 805.4.2.2

California Technical Bulletin *116*: *Requirements, Test Procedure and Apparatus for Testing of the Flame Retardance of Upholstered Furniture*
805.2.1.2, 805.4.1.2

California Technical Bulletin 117: Requirements, Test Procedure and Apparatus for Testing the Smolder Resistance of Materials Used in Upholstered Furniture
805.2.1.2, 805.4.1.2

CGA

Compressed Gas Association
14501 George Carter Way, Suite 103
Chantilly, VA 20151

ANSI/CGA G-13—(2016): Storage and Handling of Silane and Silane Mixtures (an American National Standard)
6404.1, 6404.2, 6405.3

ANSI/CGA P-18—(2013): Standard for Bulk Inert Gas Systems
5501.1

C-7—(2014): Guide to Classification and Labeling of Compressed Gases
5303.4.2, 5503.4.2

P-1—(2015): Standard for Safe Handling of Compressed Gases in Containers
5305.7

S-1.1—(2011): Pressure Relief Device Standards—Part 1—Cylinders for Compressed Gases
5303.3.2, 5503.2

S-1.2—(2009): Pressure Relief Device Standards—Part 2—Cargo and Portable Tanks for Compressed Gases
5303.3.2, 5503.2

S-1.3—(2008): Pressure Relief Device Standards—Part 3—Stationary Storage Containers for Compressed Gases
5303.3.2, 5503.2

V-1—(2013): Standard for Gas Cylinder Valve Outlet and Inlet Connections
3505.2.1

CGR

Coast Guard Regulations
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

46 CFR Parts 30, 32, 35 & 39—1999: Shipping
5706.8

CPSC

Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD 20814

16 CFR Part 1500—2009: Hazardous Substances and Articles; Administration and Enforcement Regulations
202, 5601.1.3

16 CFR Part 1500.41—2009: Method for Testing Primary Irritant Substances
202

16 CFR Part 1500.42—2009: Test for Eye Irritants
202

16 CFR Part 1500.44—2009: Method for Testing Extremely Flammable and Flammable Solids
202

CPSC—continued

16 CFR Part 1507—2002: Fireworks Devices
202, 5601.1.3

16 CFR Part 1630—2007: Standard for the Surface Flammability of Carpets and Rugs
804.3.3.1, 804.3.3.2

CSA

CSA Group
8501 East Pleasant Valley Road
Cleveland, OH 44131

ANSI Z21.69/CSA 6.16—2015: Connectors for Movable Gas Appliances
319.5, 606.4

ANSI Z83.26/CSA 2.37—2014: Gas-fired Outdoor Infrared Patio Heaters
605.5.2.2.1

CSA FC1—2012: Stationary Fuel Cell Power Systems
1206.3

CSA/ANSI NGV 2—2016: Compressed Natural Gas Vehicle Fuel Containers
319.9.1.3

CSA/ANSI NGV 5.1—2016: Residential Fueling Appliances
2308.2.3

CSA/ANSI NGV 5.2—2017: Vehicle Fueling Appliances
2308.2.4

DOC

U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

16 CFR Part 1632—2015: Standard for the Flammability of Mattress and Mattress Pads (FF 4-72, Amended)
805.1.2.1, 805.2.2.1, 805.3.2.1, 805.4.2.1

DOL

U.S. Department of Labor
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

29 CFR Part 1910.1000—2015: Air Contaminants
202, 2104.2.1

29 CFR Part 1910.1200—2015: Hazard Communication
202, 5603.6

DOTn

U.S. Department of Transportation
Office of Hazardous Material Safety
1200 New Jersey Avenue SE
East Building 2nd Floor
Washington, DC 20590

33 CFR Part 154—2015: Facilities Transferring Oil or Hazardous Material in Bulk
5706.8

33 CFR Part 155—2015: Oil or Hazardous Material Pollution Prevention Regulations for Vessels
5706.8

33 CFR Part 156—2015: Oil and Hazardous Material Transfer Operations
5706.8

49 CFR Part 172—2015: Hazardous Materials Tables, Special Provisions, Hazardous Materials Communications, Emergency Response Information and Training Requirements
5604.6.5.2

ICC—continued

CPC—22*: *California Plumbing Code
201.3, 903.3.5, 904.11.1.3, 912.6, 2311.2.3, 5004.2.2.6

CRC—22*: *California Residential Code
102.5, 202, 913.1, 1001.1, 1205.1, 1205.2.1

ICC 300—17: Standard on Bleachers, Folding and Telescopic Seating and Grandstands
1030.1.1, 1030.17

ICC ES AC 331*: *Acceptance Criteria for Smoke and Heat Vents
910.3.1

ICC ES AC 77: Acceptance Criteria for Smoke Containment Systems Used with Fire-resistance-rated Elevator Hoistway Doors and Frames
707.14.1

ICC 500—20: ICC/NSSA Standard on the Design and Construction of Storm Shelters
1031.2

ICC A117.1—17: Accessible and Usable Buildings and Facilities
907.5.2.3.3, 1009.8.2, 1009.9, 1009.11, 1010.2.13.1, 1012.1, 1012.6.5, 1012.10, 1013.4, 1023.11

IIAR

International Institute of Ammonia Refrigeration
1001 N. Fairfax Street, Suite 503
Alexandria, VA 22314

ANSI/IIAR 2—2014, including Addendum A: Safe Design of Closed-circuit Ammonia Refrigeration Systems
608.1.2, 608.9

ANSI/IIAR 6—2019: Standard for Inspection, Testing, and Maintenance of Closed-circuit Ammonia Refrigeration Systems
608.1.2

ANSI/IIAR 7—2019: Developing Operating Procedures for Closed-circuit Ammonia Refrigeration Systems
608.1.2

ANSI/IIAR 8—2020: Decommissioning of Closed-circuit Ammonia Refrigeration Systems
608.1.2

ANSI/IIAR 9—2020: Standard for Minimum System Safety Requirements for Existing Closed-circuit Ammonia Refrigeration Systems
608.1.2

IKECA

International Kitchen Exhaust Cleaning Association
100 North 20th Street, Suite 400
Philadelphia,, PA 19103

ANSI/IKECA C10—2016: Standard for the Methodology for Cleaning of Commercial Kitchen Exhaust Systems
606.3.3.2

ISO

International Organization for Standardization (ISO)
ISO Central Secretariat 1 ch, de la Voie-Creuse, Case postale 56
CH-1211 Geneva 20, Switzerland

ISO 8115—86: Cotton Bales—Dimensions and Density
Table 2704.2.2.1, Table 5003.1.1(1)

NEMA

National Electrical Manufacturer's Association
1300 North 17th Street Suite 900
Arlington, VA 22209

250—2018: Enclosures for Electrical Equipment (1,000 Volt Maximum)
6005.2

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

02—*20*: Hydrogen Technologies Code
1206.3, 1206.4, 2309.1, 2309.3.1.1, 2309.3.1.2, 2309.4, 2309.6, 2311.8, 2311.8.2, 2311.8.10, 2311.8.11, 5301.1, 5801.1

04—21: Standard for Integrated Fire Protection and Life Safety System Testing
901.6.2.1, 901.6.2.2

10—*21*: Standard for Portable Fire Extinguishers
Table 901.6.1, 906.2, Table 906.3(1), Table 906.3(2), 906.3.2, 906.3.4, 3006.3

11—16: Standard for Low-, Medium-, and High-expansion Foam
904.7, 5704.2.9.2.2

12—18: Standard on Carbon Dioxide Extinguishing Systems
Table 901.6.1, 904.8, 904.13, 1207.5.5

12A—18: Standard on Halon 1301 Fire Extinguishing Systems
Table 901.6.1, 904.9

13—*22*: Standard for the Installation of Sprinkler Systems *as amended
903.2.6.2, *903.2.15*, *903.2.16*, 903.3.1.1, 903.3.2, 903.3.8.2, 903.3.8.5, 904.13, 905.3.4, 907.6.4, 914.3.2, 1019.3, 1019.3, *1031.2.1*, 1103.4.8, *1114.27*, 3201.1, 3204.2, 3205.5, Table 3206.2, 3206.4.1, 3206.10, 3207.2, 3207.2.1, 3208.2.2, 3208.2.2.1, 3208.4, 3210.1, 3401.1, 5104.1, 5104.1.1, 5106.5.7, 5704.3.3.9, Table 5704.3.6.3(7), 5704.3.7.5.1, 5704.3.8.4

NFPA 13, Amended Sections as follows:

Revise Section 2.2 and add publications as follows:
2.2 NFPA Publications.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2013 California edition.*

Revise Section 6.4.3.1.1 as follows:

6.4.3.1.1* Pipe joints shall not be located under foundation footings. *The pipe under the building or building foundation shall not contain mechanical joints.*

Exceptions:

1. *Where allowed in accordance with Section 6.4.3.1.*
2. *Alternate designs may be utilized where designed by a registered professional engineer and approved by the enforcing agency.*

Revise Section 9.2.1.16 as follows:

9.2.1.16 *Exterior columns under 10 ft^2 (0.93m^2) in total area, formed by studs or wood joist, with no sources of ignition within the column, supporting exterior canopies that are fully protected with a sprinkler system, shall not require sprinkler protection.*

Revise Section 9.2.3.1* as follows:

9.2.3.1* *Sprinklers shall be permitted to be omitted where the exterior canopies, roofs, portecocheres, balconies, decks or similar projections are constructed with materials that are noncombustible, limited-combustible or fire retardant treated wood as defined in NFPA 703, Standard for Fire Retardant–Treated Wood and Fire-Retardant Coatings for Building Materials.*

Delete Section A.9.2.3.1 of Annex

Revise Section 9.2.3.2

9.2.3.2 *Sprinklers shall be permitted to be omitted from below the canopies, roofs, balconies, decks or similar projections are combustible construction, provided the exposed finish material on the roof or canopy is noncombustible, limited-combustible or fire retardant treated wood as defined in NFPA 703, Standard for Fire Retardant–Treated Wood and Fire-Retardant Coatings for Building Materials, and the roofs or canopies contains only sprinklered concealed spaces or any of the following unsprinklered combustible concealed spaces:*

(1) Combustible concealed spaces filled entirely with noncombustible insulation.

(2) Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are directly attached to the bottom of solid wood joists so as to create enclosed joist spaces 160 ft^3 (4.5 m^3) or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered attic [See 11.2.3.1.5.2(9)].

(3) Concealed spaces over isolated small roofs or canopies not exceeding 55 ft^2 (5.1 m^2).

Delete language to section 9.2.3.3 and reserve section number.
9.2.3.3 Reserved.

NFPA—continued

Delete Sections 9.3.6.1 and 9.3.6.2
9.3.6.1* Reserved.
9.3.6.2 Reserved.

Revise Section 9.3.6.1 as follows:

9.3.6.1 Automatic fire sprinklers shall not be required in elevator machine rooms, elevator machinery spaces, control spaces or hoistways of traction elevators installed in accordance with the applicable provisions in *the California Building Code*, where all of the following conditions are met:

(1) The elevator machine room, machinery space, control room, control space or hoistway of traction elevator is dedicated to elevator equipment only.

(2) The elevator machinery space, control room, control space or hoistway of traction elevators is separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire resistance rating of not less than that specified by the applicable building code.

(3) No materials unrelated to elevator equipment are permitted to be stored in elevator machine rooms, machinery spaces, control rooms, control spaces or hoistways of traction elevators.

(4) The elevator machinery is not of the hydraulic type.

Add new Section 9.3.6.1.1 as follows:

9.3.6.1.1 *The sprinkler required at the top and bottom of the elevator hoistway by 8.15.5.6 shall not be required where permitted by Chapter 30 of the California Building Code.*

Revise Section 9.3.19.1* as follows:

9.3.19.1* *Unless the requirements of 9.2.3.1 or 9.2.3.2 are met, sprinklers shall be installed under exterior roofs, canopies, porte-cochere, balconies, decks or similar projections exceeding 4 ft (1.2 m) in width.*

Revise Annex Section A9.3.19.2 as follows:

A9.3.19.2 *The presence of planters, newspaper machines and similar items, should not be considered storage.*

Add Section 9.3.19.3 as follows:

9.3.19.3 *Sprinklers may be omitted for following structures:*

(1) Solar photovoltaic panel structures with no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath including storage.

(2) Solar photovoltaic (PV) panels supported by framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.

Add new Sections 16.9.3.1.3.4 and 16.9.3.1.3.5 as follows:

16.9.3.1.3.4 *Where a system includes floor control valves, a hydraulic design information sign containing information for the floor shall be provided at each floor control valve. A hydraulic design information sign shall be provided for each area calculated. The installing contractor shall identify a hydraulically designed sprinkler system with a permanently marked weatherproof metal or rigid plastic sign secured with corrosion resistant wire, chain or other approved means. Such signs shall be placed at the alarm valve, dry pipe valve, preaction valve or deluge valve supplying the corresponding hydraulically designed area.*

16.9.3.1.3.5 *Control valves, check valves, drain valves, antifreeze valves shall be readily accessible for inspection, testing and maintenance. Valves located more than 7 feet above the finished floor shall be provided with a means of opening and closing the valve from the floor level.*

Add new Sections 16.9.10.5, 16.9.10.5.1, 16.9.10.5.1.1, 16.9.10.5.1.2, 16.9.10.5.1.3, 16.9.10.5.1.4, 16.9.10.5.2 as follows:

16.9.10.5 Sectional Valves.

16.9.10.5.1 *Private fire service main systems shall have sectional control valves at appropriate points in order to permit sectionalizing the system in the event of a break or for the making of repairs or extensions.*

16.9.10.5.1.1 *Sectional control valves are not required when the fire service main system serves less than six fire appurtenances.*

16.9.10.5.1.2 *Sectional control valves shall be indicating valves in accordance with Section 16.9.3.2.*

16.9.10.5.1.3 *Sectional control valves shall be located so that no more than five fire appurtenances are affected by shut-down of any single portion of the fire service main. Each fire hydrant, fire sprinkler system riser and standpipe riser shall be considered a separate fire appurtenance. In-rack sprinkler systems shall not be considered as a separate appurtenance.*

16.9.10.5.1.4 *The number of fire appurtenances between sectional control valves is allowed to be modified by the authority having jurisdiction.*

16.9.10.5.2 *A valve shall be provided on each bank where a main crosses a body of water or outside the building foundation(s) where the main or section of main runs under a building.*

Add new Section 17.2.2.9.1 as follows:

17.2.2.9.1 *Powder-driven studs used for attaching hangers to the building structure are prohibited in Seismic design Categories C, D, E and F.*

NFPA—continued

Revise Section 18.5.11.4 as follows:

18.5.11.4 *Where threaded pipe is used for sway bracing, it shall have a wall thickness of not less than Schedule 40.*

Replace Section 18.5.12.5 as follows:

18.5.12.5 *Lag screws or power-driven fasteners shall not be used to attach braces to the building structure.*

Replace Section 18.5.12.6 as follows:

18.5.12.6 *Fastening methods other than those identified in 9.3.5.12 shall not apply to other fastening methods, which shall be acceptable for use if certified by a registered professional engineer to support the loads determined in accordance with the criteria in 18.5.9. Calculations shall be submitted to the authority having jurisdiction.*

Revise Section 18.5.12.7.4 as follows:

18.5.12.7.4 *Concrete anchors when identified in 18.5.11.11 shall be acceptable for use where designed in accordance with the requirements of the building code and certified by a registered professional engineer.*

Revise Section 18.6.1(3) as follows:

18.6.1*(3) *No. 12, 440 lb (200 Kg) wire installed at least 45 degrees from the vertical plane and anchored on both sides of the pipe. Powder-driven fasteners for attaching restraint is allowed to be used provided that the restraint component does not support the dead load.*

Revise Section 19.2.3.1.5.2(9) as follows:

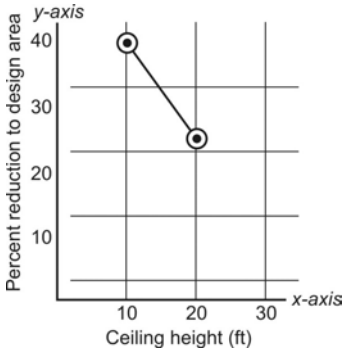
19.2.3.1.5.2(9) *Exterior columns under 10 ft^2 (0.93m^2) in total area, formed by studs or wood joist, with no sources of ignition within the column, supporting exterior canopies that are fully protected with a sprinkler system.*

Revise Section 19.2.3.2.3.1 as follows:

19.2.3.2.3.1 *Where listed quick-response sprinklers, excluding extended coverage quick-response sprinklers, are used throughout a system or portion of a system having the same hydraulic design basis, the system area of operation shall be permitted to be reduced without revising the density as indicated in Figure 19.2.3.2.3.1 when all of the following conditions are satisfied:*

(1) Wet pipe system
(2) Light hazard occupancy
(3) 20 ft (6.1 m) maximum ceiling height
(4) There are no unprotected ceiling pockets as allowed by 10.2.9 and 11.2.7 exceeding 32 ft^2 (3 m^2)

FIGURE 19.2.3.2.3.1
DESIGN AREA REDUCTION FOR QUICK-RESPONSE SPRINKLERS



Note: $y = \frac{-3x}{2} + 55$

For ceiling height ≥ 10 ft and ≤ 20 ft, $y = \frac{-3x}{2} + 55$
For ceiling height < 10 ft, y = 40
For ceiling height > 20 ft, y = 0
For SI units, 1 ft = 0.31 m.

Revise Section 19.2.3.2.3.2 as follows:

19.2.3.2.3.2 *The number of sprinklers in the design area shall never be less than seven.*

Revise Section 20.9.5.2 as follows:

20.9.5.2 *Early suppression fast-response (ESFR) sprinklers shall not be used in buildings with automatic heat or smoke vents unless the vents use a standard-response operating mechanism with a minimum temperature rating of 360ºF (182ºC) or 100ºF (56ºC) above the operating temperature of the sprinklers, whichever is higher.*

NFPA—continued

13R—*22*: Standard for the Installation of Sprinkler Systems in Low-rise Residential Occupancies *as amended**

903.3.1.2, 903.3.5.1.1, 903.3.5.1.2, 903.3.5.2, 903.4

NFPA 13R, Amended Sections as follows:

Revise Section 2.2 and add publications as follows:

2.2 NFPA Publications.

NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2013 California edition.

Add new Sections 6.6.10 and 6.10.1 as follows:

6.6.10 Solar photovoltaic panel structures

6.6.10.1 *Sprinklers shall be permitted to be omitted from the following structures:*

(1) Solar photovoltaic panel structures with no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath including storage.

(2) Solar photovoltaic (PV) panels supported by framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.

Revise Section 11.4 as follows:

11.4 Instructions.

The installing contractor shall provide the property owner or the property owner's authorized representative with the following:

(1) All literature and instructions provided by the manufacturer describing proper operation and maintenance of any equipment and devices installed.

(2) NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems 2013 California Edition and Title 19, California Code of Regulations, Chapter 5.

(3) Once the system is accepted by the authority having jurisdiction a label as prescribed by Title 19, California Code of Regulations, Chapter 5, shall be affixed to each system riser.

14—19: Standard for the Installation of Standpipe and Hose System, *as amended**

905.2, 905.3.4, 905.4.2, 905.6.2, 905.8

NFPA 14, Amended Sections as follows:

Replace Section 6.3.7.1

6.3.7.1 *System water supply valves, isolation control valves, and other valves in fire mains shall be supervised in an approved manner in the open position by one of the following methods:*

(1) Where a building has a fire alarm system or a sprinkler monitoring system installed, the valve shall be supervised by:

(a) a central station, proprietary or remote supervising station, or

(b) a local signaling service that initiates an audible signal at a constantly attended location.

(2) Where a building does not have a fire alarm system or a sprinkler monitoring system installed, the valve shall be supervised by:

(a) Locking the valves in the open position, or

(b) Sealing of valves and an approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.

16—19: Standard for the Installation of Foam-water Sprinkler and Foam-water Spray Systems

904.7, 904.13

17—21: Standard for Dry Chemical Extinguishing Systems

904.6, 904.13

17A—21: Standard for Wet Chemical Extinguishing Systems

904.5, 904.13

20—19: Standard for the Installation of Stationary Pumps for Fire Protection

412.2.4.1, 913.1, 913.2, 913.2.1, 913.5

22—18: Standard for Water Tanks for Private Fire Protection

507.2.2

24—*22*: Standard for Installation of Private Fire Service Mains and Their Appurtenances*, as amended**

3109F

NFPA 24, Amended Sections as follows:

Amend Section 4.2.1 as follows:

Section 4.2.1. Installation work shall be done by fully experienced and responsible *contractors. Contractors shall be appropriately licensed in the State of California to install private fire service mains and their appurtenances.*

NFPA—continued

Revise Section 4.2.2 as follows:

4.2.2 *Installation or modification of private fire service mains shall not begin until plans are approved and appropriate permits secured from* the authority having jurisdiction.

Add Section 4.2.2.1 as follows:

4.2.2.1 *As approved by the authority having jurisdiction, emergency repair of existing system may start immediately, with plans being submitted to the authority having jurisdiction within 96 hours from the start of the repair work.*

Revise Section 5.9.5.1 as follows:

5.9.5.1 Fire department connections shall be on the street side of buildings and *as approved by the authority having jurisdiction.*

Add Sections 6.6.1.1, 6.6.1.2, 6.6.1.3 and 6.6.1.4 as follows:

6.6.1.1 *Sectional control valves are not required when the fire service main system serves less than six fire appurtenances.*

6.6.1.2 *Sectional control valves shall be indicating valves in accordance with NFPA 13, Section 6.7.1.3.*

6.6.1.3 *Sectional control valves shall be located so that no more than five fire appurtenances are affected by shut-down of any single portion of the fire service main. Each fire hydrant, fire sprinkler system riser and standpipe riser shall be considered a separate fire appurtenance. In-rack sprinkler systems shall not be considered as a separate appurtenance.*

6.6.1.4 *The number of fire appurtenances between sectional control valves is allowed to be modified by the authority having jurisdiction.*

Revise Section 10.4.3.1.1 as follows:

10.4.3.1.1 Pipe joints shall not be located under foundation footings. *The pipe under the building or building foundation shall not contain mechanical joints.*

Exceptions:

1. Where allowed in accordance with 10.4.3.2.

2. Alternate designs may be utilized where designed by a registered professional engineer and approved by the enforcing agency.

Revise Section 10.9.1 as follows:

10.9.1 *Backfill shall be well tamped in layers or puddle under and around pipes to prevent settlement or lateral movement.* Backfill shall consist of clean fill sand or pea gravel to a minimum 6″ below and to a minimum of 12″ above the pipe *and shall contain no ashes, cinders, refuse, organic matter or other corrosive materials. Other backfill materials and methods are permitted where designed by a registered professional engineer and approved by the enforcing agency.*

25—13CA: California NFPA 25 Edition (Based on the 2011 Edition) *Inspection, Testing and Maintenance of Water-based Fire Protection Systems*
Chapter 31F, 3108F

30—21: Flammable and Combustible Liquids Code
415.6.1, 415.6.2, 507.8.1.1.1, 507.8.1.1.2

30A—21: Code for Motor Fuel Dispensing Facilities and Repair Garages
406.2.9.2

31—20: Standard for the Installation of Oil-burning Equipment
2113.15

32—16: Standard for Dry Cleaning Facilities, *as amended**
415.9.3, *2101.1.1*

****NFPA 32, Amended Sections as follows:***

Delete the following publications from Section 2.2:

2.2 NFPA Publications.

NFPA 10, *Standard for Portable Fire Extinguishers,* 2010 edition.
NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems,* 2011 edition.
NFPA 70, *National Electrical Code®,* 2011 edition.
NFPA *101®, Life Safety Code®,* 2009 edition.
NFPA 5000®, *Building Construction and Safety Code®*, 2009 edition.

Revise Section 4.4.1.1 as follows:

4.4.1.1 General building and structure design and construction shall be in accordance with *California Building Code.*

Delete language to Sections 4.4.1.2 and 4.4.1.3 and reserve section numbers.

4.4.1.2 Reserved

4.4.1.3 Reserved

NFPA—continued

Revise Section 4.4.4 as follows:

4.4.4 Means of Egress. Means of egress shall conform with the provisions of *the California Building Code.*

Revise Section 4.6.2 as follows:

4.6.2 Automatic Sprinkler Systems. Where required by this standard, automatic sprinkler systems shall be installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems,* and periodically inspected, tested and maintained in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5.*

Revise Section 4.6.4 as follows:

4.6.4 Portable Fire Extinguishers. Suitable numbers and types of portable fire extinguishers shall be installed and maintained throughout the drycleaning plant in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 3.*

Revise Section 7.3.2 as follows:

7.3.2 Electrical Installations. Electrical equipment and wiring in a Type II drycleaning room shall comply with the provisions of *California Electrical Code*, for use in Class I, Division 2 hazardous locations.

37—18: Installation and Use of Stationary Combustion Engines and Gas Turbines

40—19: Standard for the Storage and Handling of Cellulose Nitrate Film
409.1

51—18: Design and Installation of Oxygen-fuel Gas Systems for Welding, Cutting and Allied Processes
3501.5, 3507.1, 3509.1

52—19: Vehicular Gaseous Fuel System Code
319.9.2, 5301.1

54—18: National Fuel Gas Code

55—20: Compressed Gases and Cryogenic Fluids Code
3508.1, 5301.1, 5307.4.2, 5501.1, 5801.1, 6301.1

56—20: Standard for Fire and Explosion Prevention during Cleaning and Purging of Flammable Gas Piping Systems
3307.2.1

58—20: Liquefied Petroleum Gas Code
415.9.2

61—20: Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Product Facilities
426.1

68—13: Standard on Explosion Protection by Deflagration Venting
Table 414.5.1, 911.1 , 911.4 , Table 2205.1

70—20: National Electrical Code
108.3, 406.2.7, 406.2.9, 412.5.7, 415.11.1.8, Table 509.1, 904.3.1, 907.6.1, 909.12.2, 909.16.3, 910.4.6, 1204.4.1, 2701.1, 2702.1.3, 3111.3

72—*22*: National Fire Alarm and Signaling Code, *as amended**
508.1.6, *604.6.3,* Table 901.6.1, 903.4.1, 904.3.5, 907.1.2, *907.1.5,* 907.2, 907.2.6, *907.2.6.3.3,* 907.2.9.3, 907.2.11, *907.2.11.8,* 907.2.13.2, *907.2.26.1, 907.2.26.4,* 907.3, 907.3.3, 907.3.4, 907.5.2.1.2, 907.5.2.1.3, *907.5.2.1.3.1,* 907.5.2.1.3.2, 907.5.2.2, 907.5.2.3.3, *907.5.2.3.4,* 907.6, 907.6.1, *907.6.1.1,* 907.6.2, *907.6.4.1,* 907.6.6, *907.6.6.1, 907.6.6.4,* 907.7, 907.7.1, 907.7.2, 907.8, 907.8.2, *907.8.2.4,* 907.8.4, 917.1, *1009.12,* 1103.3.2, 1203.2.4, 1207.5.4, 1207.6.1.2.3, 1207.6.1.2.4, Table 1207.7, 2810.11

****NFPA 72, Amended Sections as follows:***

Revise Section 10.3.1 as follows:

10.3.1 Equipment constructed and installed in conformity with this Code shall be listed for the purpose for which it is used. *Fire alarm systems and components shall be California State Fire Marshal approved and listed in accordance with California Code of Regulations, Title 19, Division 1.*

Revise Section 10.3.3 as follows:

10.3.3 All devices and appliances that receive their power from the initiating device circuit or signaling line circuit of a control unit shall be *California State Fire Marshal* listed for use with the control unit.

Revise Section 12.3.8.1 as follows:

12.3.8.1 The outgoing and return (redundant) circuit conductors shall be permitted in the same cable assembly (i.e., multiconductor cable), enclosure or raceway only under the following conditions:

(1) For a distance not to exceed 10 ft (3.0 m) where the outgoing and return conductors enter or exit the initiating device, notification appliance or control unit enclosures.

NFPA—continued

(2) Single drops installed in the raceway to individual devices or appliances.

(3)*In a single room not exceeding 1000 ft^2 (93 m^2) in area, a drop installed in the raceway to multiple devices or appliances that does not include any emergency control function devices.

(4) Where the vertically run conductors are contained in a 2-hour rated cable assembly, or enclosed (installed) in a 2-hour rated enclosure or a listed circuit integrity (C.I.) cable, which meets or exceeds a 2-hour fire-resistive rating.

Revise Section 14.4.6.1 as follows:

14.4.6.1 Testing. Household fire alarm systems shall be tested in *accordance with the manufacturer's published instructions* according to the methods of Table 14.4.3.2.

Revise Section 17.15 as follows:

17.*16 Fire Extinguisher Electronic Monitoring Device*. A fire extinguisher electronic monitoring device shall indicate those conditions for a specific fire extinguisher required by *California Code of Regulations, Title 19, Division 1, Chapter 1, Section 574.2 (c) and California Fire Code to a fire alarm control unit.*

Delete the amendments to Section 21.3.6 and adopt the model text.

Revise Section 12.3.8 as follows:

12.3.8*(5)* Where the vertically run conductors are contained in a 2-hour rated cable assembly, or enclosed (installed) in a 2-hour rated enclosure or a listed circuit integrity (C.I.) cable, which meets or exceeds a 2-hour fire resistive rating.

23.8.1.2 Positive Alarm Sequence

23.8.1.2.1 *Systems that have positive alarm features complying with 23.8.1.2 shall be permitted if approved by the authority having jurisdiction. Operation of a patient room smoke detector in Group I-2 and R-2.1 occupancies shall not include a positive alarm sequence feature.*

Revise Section 23.8.5.1.2 as follows:

23.8.5.1.2* Where connected to a supervising station, fire alarm systems employing automatic fire detectors or waterflow detection devices shall include a manual fire alarm box to initiate a signal to the supervising station.

Exception: Fire alarm systems dedicated to elevator recall control, supervisory service and fire sprinkler monitoring *as permitted in section 17.15 of NFPA 72.*

Revise Section 23.8.5.4.1 as follows:

23.8.5.4.1 Systems equipped with alarm verification features shall be permitted under the following conditions:

(1) The alarm verification feature is not initially enabled unless conditions or occupant activities that are expected to cause nuisance alarms are anticipated in the area that is protected by the smoke detectors. Enabling of the alarm verification feature shall be protected by password or limited access.

(2) A smoke detector that is continuously subjected to a smoke concentration above alarm threshold does not delay the system functions of Sections 10.7 through 10.16, 23.8.1.1 or 21.2.1 by more than 30 seconds.

(3) Actuation of an alarm-initiating device other than a smoke detector causes the system functions of Sections 10.7 through 10.16, 23.8.1.1 or 21.2.1 without additional delay.

(4) The current status of the alarm verification feature is shown on the record of completion *(see Figure 7.8.2(a), Item 4.3).*

(5) Operation of a patient room smoke detector in I-2 and R-2.1 occupancies shall not include an alarm verification feature.

Revise Section 29.3.1 as follows:

29.3.1 All devices, combinations of devices, and equipment to be installed in conformity with this chapter shall be approved *and* listed *by the California State Fire Marshal* for the purposes for which they are intended.

Revise Section 29.8.2.1.1 as follows:

29.8.2.1.1* Smoke and Heat Alarms. *Where connected to a supervising station unless* exempted by applicable laws, codes or standards, smoke or heat alarms used to provide a fire-warning function, and when two or more alarms are installed within a dwelling unit, suite of rooms or similar area, shall be arranged so that the operation of any smoke or heat alarm causes all alarms within these locations to sound.

*Note: Exception to **29.8.2.1.1** not adopted by the SFM.*

Add Section 29.10.2.1 as follows:

29.10.2.1 *The alarm verification feature shall not be used for household fire warning equipment.*

Add Section 29.10.6.8.1 as follows:

29.10.6.8.1 *The alarm verification feature shall not be used for household fire warning equipment.*

76—16: Standard for the Fire Protection of Telecommunications Facilities

1207.1.2.1, 1207.2.1, 1207.3.1, 1207.3.7.1, 1207.4.1, 1207.5.1, 1207.5.2, 1207.5.3, 1207.5.5, Table 1207.6, 1207.6.2.3, Table 1207.7

NFPA—continued

80—19: Standard for Fire Doors and Other Opening Protectives
410.2.5, 509.4.2, 716.1, 716.2.5.1, 716.2.6.4, 716.2.9, 716.3.4.1, 716.3.5, 716.4.3, 1010.3.3

82—19: Standard on Incinerators and Waste and Linen Handling Systems and Equipment
713.13

85—19: Boiler and Combustion System Hazards Code
426.1

92—18: Standard for Smoke Control Systems
909.7, 909.8

96—20: Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
606.2, 904.13

99—21: Health Care Facilities Code
407.11, 422.6, 425.1

101—21: Life Safety Code
1030.6.2

105—19: Standard for Smoke Door Assemblies and Other Opening Protectives
405.4.2, 710.5.2.2, 716.2.10, 909.20.4.1

110—19: Standard for Emergency and Standby Power Systems
2702.1.3, *3111F*

111—19: Standard on Stored Electrical Energy Emergency and Standby Power Systems
2702.1.3, *3111F*

120—20: Standard for Fire Prevention and Control in Coal Mines
426.1

170—18: Standard for Fire Safety and Emergency Symbols
1025.2.6.1

211—19: Standard for Chimneys, Fireplaces, Vents and Solid Fuel-burning Appliances
2112.5

221—21: Standard for High Challenge Fire Walls, Fire Walls and Fire Barrier Walls
706.2, Table 716.1(2)

241—19: Standard for Safeguarding Construction, Alteration and Demolition Operations
3301.1, 3303.2

252—17: Standard Methods of Fire Tests of Door Assemblies
Table 716.1(1), 716.1.1, 716.1.2.2.1, 716.2.1.1, 716.2.1.2, 716.2.2.1, 716.2.2.2, 716.2.2.3.1, 716.2.5.1.1

253—19: Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
406.2.4, 424.2, 804.2, 804.3

257—17: Standard for Fire Test for Window and Glass Block Assemblies
Table 716.1(1), 716.1.1, 716.1.2.2.2, 716.3.1.1, 716.3.1.2, 716.3.2.1.3, 716.3.4

259—18: Standard Test Method for Potential Heat of Building Materials
2603.4.1.10, 2603.5.3

260—19 Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture
805.1.1.1, 805.2.1.1, 805.3.1.1, 805.4.1.1

265—19: Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile or Expanded Vinyl Wall Coverings on Full Height Panels and Walls
803.5.1, 803.5.1.1

268—19: Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source
1405.1.1.1, 1405.1.1.1.1, 1405.1.1.1.2, 2603.5.7

275—17: Standard Method of Fire Tests for the Evaluation of Thermal Barriers
508.4.4.1, 509.4.1.1, 1406.10.2, 1408.10.2, 2603.4

276—19: Standard Method of Fire Tests for Determining the Heat Release Rate of Roofing Assemblies with Combustible Above-deck Roofing Components
1508.1, 2603.3, 2603.4.1.5

285—19: Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components
718.2.6, 1402.5, 1406.10.3, 1408.10.4, 1511.6.2, 2603.5.5

NFPA—continued

286—15: Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
402.6.4.4, 424.2, 803.1.1, 803.1.1.1, 803.11, 803.12, 803.13, 1406.10.2, 1408.10.3, 2603.7, 2603.9, 2604.2.4, 2614.4, 3105.3

288—17: Standard Methods of Fire Tests of Horizontal Fire Door Assemblies Installed in Horizontal in Fire-resistance-rated Floor Systems
712.1.13.1

289—19: Standard Method of Fire Test for Individual Fuel Packages
402.6.2, 402.6.4.5, 424.2, 806.4

409—*22*: Standard for Aircraft Hangars
412.3.6, Table 412.3.6, 412.3.6.1, 412.5.5

418—16: Standard for Heliports
412.7.4

484—19: Standard for Combustible Metals
426.1

495—18: Explosive Materials Code
202, 911.1, 911.5, 5601.1.1, 5601.1.5, 5604.2, 5604.6.2, 5604.6.3, 5604.7.1, 5605.1, 5605.2.3, 5606.1, 5606.5.2.1, 5607.1, 5607.9, 5607.11, 5607.15

502—14*: *Standard for Road Tunnels, Bridges, and Other Limited Access Highways
429

652—19: Standard on the Fundamentals of Combustible Dust
426.1

654—20: Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids
426.1

655—17: Standard for the Prevention of Sulfur Fires and Explosions
426.1

664—20: Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities
426.1

701—19: Standard Methods of Fire Tests for Flame Propagation of Textiles and Films
410.2.6, 424.2, 806.4, 3102.3, 3102.3.1, 3102.6.1.1, 3105.3

704—17: Standard System for the Identification of the Hazards of Materials for Emergency Response
202, 415.5.2

750—19: Standard on Water Mist Fire Protection Systems
202, 904.11.1.1, 904.13

1123—18: Code for Fireworks Display
202, 5604.2, 5608.1, 5608.2.2, 5608.5, 5608.6

1124—06: Code for the Manufacture, Transportation and Storage and Retail Sales of Fireworks and Pyrotechnic Articles
5601.1.3

1124—17: Code for the Manufacture, Transportation and Storage of Fireworks and Pyrotechnic Articles
202, 5604.2, 5605.1, 5605.3, 5605.4, 5605.5, 5609.1

1225—22: Standard for Emergency Services Communications
510.4.2, 510.5

2001—18: Standard on Clean Agent Fire Extinguishing Systems, *as amended
904.10

NFPA 2001, Amended Sections as follows:
Add Sections 4.3.5.1.1 and 4.3.5.2.1 to read as follows:
4.3.5.1.1 *Alarms signals from the fire extinguishing system shall not interfere with the building fire alarm signal.*
4.3.5.2.1 *The lens on visual appliances shall be "red" in color.*
Exception: *Other lens colors are permitted where approved by the enforcing agency.*

2010—20: Standard for Fixed Aerosol Fire-extinguishing Systems
Table 901.6.1, 904.12, 1207.5.5

SFM

State of California
Department of Forestry and Fire Protection
Office of the State Fire Marshal
P.O. Box 944246
Sacramento, CA 94246-2460

SFM 12-3	*Releasing Systems for Security Bars in Dwellings*
SFM 12-7-3	*Fire-testing Furnaces*
SFM 12-7A-1	*Exterior Wall Siding and Sheathing*
SFM 12-7A-2	*Exterior Window*
SFM 12-7A-3	*Under Eave*
SFM 12-7A-4	*Decking*
SFM 12-7A-4A	*Decking Alternate Method A*
SFM 12-7A-5	*Ignition Resistant Building Material*
SFM 12-8-100	*Room Fire Tests for Wall and Ceiling Materials*
SFM 12-10-1	*Power Operated Exit Doors*
SFM 12-10-2	*Single Point Latching or Locking Devices*
SFM 12-10-3	*Emergency Exit and Panic Hardware*

(The Office of the State Fire Marshal standards referred to above are found in the California Code of Regulations, Title 24, Part 12.)

UL

Underwriters Laboratories LLC
333 Pfingsten Road
Northbrook, IL 60062

10C—2016: Positive Pressure Fire Tests of Door Assemblies
1010.2.9.3

13—96: Power-limited Circuit Cables

30—1995: Metal Safety Cans—with revisions through June 2014
5003.9.10, 5005.1.10, 5705.2.4, 5707.2

38—99: Manually Actuated Signaling Boxes—with Revisions through February 2, 2005 as amended.*

Amend Section 14.1.5 as follows:

14.1.5 A signaling box having a glass panel, disc, rod or similar part that must be broken to operate it for a signal or for access to its actuating means shall satisfactorily complete five part-breaking operations using the means provided with the box, without jamming of the mechanism or other interference by broken particles. It shall be practicable to remove and replace the broken parts. A signaling box shall not have a glass panel, disc, rod or similar part requiring a striking action by grasping a tool to operate it for a signal. The force required to activate controls shall be no greater than 5 pounds (22 N) of force.

Add Appendix B chapter to UL 38 (1999) as follows:

Appendix B,

14.1.5 Operation. *Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist.*

UL—continued

58—2018: Steel Underground Tanks for Flammable and Combustible Liquids
5704.2.13.1.5

80—2007: Steel Tanks for Oil-burner Fuels and Other Combustible Liquids—with revisions through January 2014
319.7.1, 605.4.2.1, 605.4.2.2, 607.2

87A—2015: Power-operated Dispensing Devices for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent—with revisions through June 2017
2306.8.1

142—2006: Steel Aboveground Tanks for Flammable and Combustible Liquids—with revisions through August 2014
319.7.1, 605.4.1.1, 605.4.2.1, 605.4.2.2, 607.2, 2306.2.3

193—04: Alarm Valves for Fire-Protection Service
199—95: Automatic Sprinklers for Fire Protection Service—with Revisions through August 19, 2005

199E—2004: Outline of Investigation for Fire Testing of Sprinklers and Water Spray Nozzles for Protection of Deep Fat Fryers
904.13.4.1

217—2015: Single and Multiple Station Smoke Alarms—with revisions through November 2016
907.2.11, 915.4.4

228—97: Door Closers/Holders, with or without Integral Smoke Detectors—with Revisions through January 26, 2006
260—04: Dry Pipe and Deluge Valves for Fire Protection Service
262—04: Gate Valves for Fire Protection Service

268—2016: Smoke Detectors for Fire Alarm Systems—with revisions through July 2016
907.2.6.2, 907.2.11.7, 915.5.3

268A—09: Smoke Detectors for Duct Application—with Revisions through October 22, 2003
294—2018: Access Control System Units—with revisions through October 2018
1010.2.11, 1010.2.12, 1010.2.13.1, 1010.2.14

300—2005: Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment—with revisions through December 2014
904.13

300A—2006: Outline of Investigation for Extinguishing System Units for Residential Range Top Cooking Surfaces
904.14.1.1

305—2012: Panic Hardware—with revisions through March 2017
1010.2.9.3

312—04: Check Valves for Fire-Protection Service
325—2017: Standard for Door, Drapery, Gate, Louver and Window Operators and Systems
503.5, 503.6

498A—2008: Current Taps and Adaptors—with revisions through June 2016
603.5.1

346—05: Waterflow Indicators for Fire Protective Signaling Systems
464—03: Audible Signal Appliances—with Revisions through October 10, 2003
497B—04: Protectors for Data Communication and Fire Alarm Circuits

499—2014: Standard for Electrical Heating Appliances—with revisions through February 2017
607.6

521—99: Heat Detectors for Fire Protective Signaling Systems—with Revisions through July 20, 2005
539—00: Single- and Multiple-Station Heat Detectors—with Revisions through August 15, 2005
632—00: Electrically Actuated Transmitters

647—1993: Standard for Unvented Kerosene-fired Room Heaters and Portable Heaters—with revisions through April 2010
605.5

710—2012: Exhaust Hoods for Commercial Cooking Equipment—with revisions through June 2018
606.2

710B—2011: Recirculating Systems—with revisions through August 2014
606.2, 904.13

723—2018: Standard for Test for Surface Burning Characteristics of Building Materials
202, 803.1, 803.1.2, 803.3, 803.5.2, 803.10, 803.12, 803.13, 804.1.1, 804.1.2, 804.2.4, 3305.9

UL—continued

753—04: Alarm Accessories for Automatic Water Supply Valves for Fire Protection Service

790 *Edition 9—2022*: Standard Test Methods for Fire Tests of Roof Coverings
317.2, 317.3, 1207.9.5

791—2006: Standard for Residential Incinerators—with revisions through November 2014
605.8.1

791—06: Standard for Residential Incinerators
605.8

793—2008: Automatically Operated Roof Vents for Smoke and Heat—with revisions through March 2017
910.3.1

813—96: Commercial Audio Equipment—with Revisions through December 7, 1999

817—2015: Standard for Cord Sets and Power-supply Cords—with revisions through August 2018
603.6

864—2014:Control Units and Accessories for Fire Alarm Systems—with revisions through March 2018
909.12

Amend No. 55.1 as follows:

RETARD-RESET-RESTART PERIOD – MAXIMUM 30 SECONDS —*No alarm obtained from control unit. Maximum permissible time is 30 seconds.*

Amend Section 55.2.2 as follows:

Where an alarm verification feature is provided, the maximum retard-reset-restart period before an alarm signal can be confirmed and indicated at the control unit, including any control unit reset time and the power-up time for the detector to become operational for alarm, shall not exceed 30 seconds. (The balance of the section text is to remain unchanged).

Add Section 55.2.9 as follows:

Smoke detectors connected to an alarm verification feature shall not be used as releasing devices.

Exception: *Smoke detectors which operate their releasing function immediately upon alarm actuation independent of alarm verification feature.*

Amend Section 89.1.10 as follows:

The existing text of this section is to remain as printed with one editorial amendment as follows:

THE TOTAL DELAY (CONTROL UNIT PLUS SMOKE DETECTORS) SHALL NOT EXCEED 30 SECONDS.

(The balance of the section text is to remain unchanged).

900—2015: Air Filter Units
2404.7.8

924—2016: Standard for Safety Emergency Lighting and Power Equipment—with revisions through May 2018
1013.5, 3103.12.6.1

971A—2006: Outline of Investigation for Metallic Underground Fuel Pipe
Table 5703.6.2

1037—2016: Antitheft Alarms and Devices—with revisions through September 2017
506.1

1046—2010: Grease Filters for Exhaust Ducts—with revisions through April 2017
606.3.1

1275—2014: Flammable Liquid Storage Cabinets—with revisions through February 2018
5003.8.7.1, 5704.3.2.1.1

1313—2015: Nonmetallic Safety Cans for Petroleum Products
5003.9.10

1315—2017: Safety for Metal Waste Paper Containers
808.1, 808.2

1316—1994: Glass Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol-gasoline Mixtures—with revisions through May 2006
5704.2.13.1.5

1363—2018: Relocatable Power Taps
603.5.1

UL—continued

1363A—2014: Outline of Investigation for Special Purpose Relocatable Power Taps
603.5.1.1

1369—2018: Aboveground Piping Requirements
Table 5703.6.2

1389—2019: Plant Oil Extraction Equipment for Installation and Use in Ordinary (Unclassified) Locations and Hazardous (Classified) Locations
3904.2.1

1489—2016: Fire Resistant Pipe Protection Systems Carrying Combustible Liquids
1203.1.2

1741—2010: Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources—with revisions through February 2018
1207.3.3, 1207.11.5

1805—2002: Laboratory Hoods and Cabinets—with revisions through June 2006
3805.2.2

1973—2018: Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications and Stationary Applications
Table 1207.6

1974—2017: Standard for Evaluation for Repurposing Batteries
1207.3.9

1975—2006: Fire Tests for Foamed Plastics Used for Decorative Purpose
807.5.1.1, 808.3

1994—2015: Standard for Luminous Egress Path Marking Systems
1008.2.1, 1025.2.1, 1025.2.3, 1025.2.4, 1025.2.5, 1025.4

2011—2019: Outline for Machinery
320.2.1, 320.3.2

2017—2008: General-purpose Signaling Devices and Systems—with revisions through January 2016
3905.1.2

2034—2017: Single and Multiple Station Carbon Monoxide Alarms—with revisions through September 2018
915.4.2, 915.4.4

2075—2013: Standard for Gas and Vapor Detectors and Sensors—with revisions through December 2017
915.5.1, 915.5.3

2079—2015: Tests for Fire Resistance of Building Joint Systems
202

2085—1997: Protected Aboveground Tanks for Flammable and Combustible Liquids—with revisions through September 2010
202, 605.4.1.1, 605.4.2.1, 605.4.2.2, 2306.2.2, 2306.2.3, 5704.2.7.4, 5704.2.9.2.3, 5704.2.9.7.4, 5705.3.8.2

2152—2016: Outline of Investigation for Special Purpose Nonmetallic Containers and Tanks for Specific Combustible or Noncombustible Liquids
607.3

2196—2017: Standard for Fire Test for Circuit Integrity of Fire-resistive Power, Instrumentation, Control and Data Cables
913.2.2, 1203.3

2200—2012: Stationary Engine Generator Assemblies—with revisions through October 2015
1203.1.1

2201—2018: Standard for Carbon Monoxide (CO) Emission Rate of Portable Generators
1204.2

2208—2010: Solvent Distillation Units—with revisions through September 2015
5705.4.1

2245—2006: Below-grade Vaults for Flammable Liquid Storage Tanks
5704.2.8.1

2335—2010: Fire Tests of Storage Pallets—with revisions through August 2017
315.7.5, 3206.4.1.1

UL—continued

2360—2000: Test Methods for Determining the Combustibility Characteristics of Plastics Used in Semi-conductor Tool Construction—with revisions through October 2017
2703.10.1.2

2524—2019: Standard for In-building 2-way Emergency Radio Communication Enhancement Systems
510.4

9540 *Edition 2—2020*: Standard for Energy Storage Systems and Equipment
1207.3.1, 1207.3.2, 1207.3.7, 1207.10.6, 1207.10.7.4, 1207.11.1, 1207.11.5

9540A *Edition 4—2019*: Standard for Safety Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
1207.1.5, 1207.6.3

60601-1—2003: Medical Electrical Equipment, Part I: General Requirements for Safety
603.5.1.1

60950-1—2014: Information Technology Equipment—Safety Requirements
320.2.1

62368-1—2014: Audio/video, Information and Communication Technology Equipment—Safety Requirements
320.2.1

USC

United States Code
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

18 USC Part 1, Chapter 40: Importation, Manufacture, Distribution and Storage of Explosive Materials
202

21 USC Chapter 9: United States Food, Drug and Cosmetic Act
202

solid wood door. Such doors shall be provided with a gasket so installed as to provide a seal where the door meets the jam on both sides and across the top. Doors shall be maintained self-closing or shall be automatic closing by actuation of a smoke detector in accordance with California Building Code, Section 716.5.9.

3. *Group R-3.1 occupancies housing a bedridden client shall not have a night latch, dead bolt, security chain or any similar locking device installed on any interior door leading from a bedridden client's sleeping room to any interior area such as a corridor, hallway and/or general use areas of the residence in accordance with Chapter 10.*
4. *The exterior exit door to a bedridden client's sleeping room shall be operable from both the interior and exterior of the residence.*
5. *Every required exit doorway from a bedridden client sleeping room shall be of a size as to permit the installation of a door not less than 3 feet (914 mm) in width and not less than 6 feet 8 inches (2032 mm) in height. When installed in exit doorways, exit doors shall be capable of opening at least 90 degrees and shall be so mounted that the clear width of the exit way is not less than 32 inches (813 mm).*

***Note:** A sliding glass door can be used as an exterior exit doorway as long as it is operable from the inside and outside and the clear width of the exit way is not less than 32 inches (813 mm).*

***435.8.3.4 Intervening rooms.** A means of exit shall not pass through more than one intervening room. A means of egress shall not pass through kitchens, storerooms, closets, garages or spaces used for similar purposes.*

***Exception:** Kitchens which do not form separate rooms by construction.*

435.8.4 Corridors.

***435.8.4.1** Unless specified by Section 435.8.4, corridors serving Group R-2.1 and Group R-4 occupancies shall comply with Section 1018.1.*

***435.8.4.2** The minimum clear width of a corridor shall be as follows:*

1. *Group R-2.1 occupancies shall have 60 inches (1524 mm) on floors housing nonambulatory clients and 44 inches (1118 mm) on floors housing only ambulatory clients.*
2. *Group R-4 occupancies shall have 44 inches (1118 mm) on floors housing clients.*

Exceptions:

1. *Corridors serving an occupant load of 10 or less shall not be less than 36 inches (914 mm) in width.*
2. *Corridors serving ambulatory persons only and having an occupant load of 49 or less shall not be less than 36 inches (914 mm) in width.*

In Group R-2.1 occupancies provided with fire sprinklers throughout and which are required to have rated corridors, door closers need not be installed on doors to client sleeping rooms.

***435.8.4.3** In a Group R-2.1 and Group R-4 occupancies having smoke barriers, cross-corridor doors in corridors 6 feet (1829 mm) or less in width shall have, as a minimum, a door 36 inches (914 mm) in width.*

***435.8.5 Changes in level.** In Group R-3.1 occupancies housing nonambulatory clients, interior changes in level up to 0.25 inch (6 mm) may be vertical and without edge treatment. Changes in level between 0.25 inch (6 mm) and 0.5 inch (12.7 mm) shall be beveled with a slope no greater than 1 unit vertical in 2 units horizontal (50-percent slope). Changes in level greater than 0.5 inch (12.7 mm) shall be accomplished by means of a ramp.*

435.8.6 Stairways.

***435.8.6.1** Group R-2.1 and Group R-4 occupancies housing more than six nonambulatory clients above the first floor shall be provided with two vertical exit enclosures. Stairway enclosures shall be in compliance with Section 1022.*

***435.8.6.2** Group R-3.1 occupancies may continue to use existing stairways (except for winding and spiral stairways which are not permitted as a required means of egress) provided the stairs have a maximum rise of 8 inches (203 mm) with a minimum run of 9 inches (229 mm). The minimum stairway width may be 30 inches (762 mm).*

***435.8.7 Floor separation.** Group R-3.1 occupancies with non-ambulatory clients housed above the first floor shall be provided with a non-fire-resistance constructed floor separation at stairs which will prevent smoke migration between floors. Such floor separation shall have equivalent construction of 0.5 inch (12.7 mm) gypsum wallboard on one side of wall framing.*

Exceptions:

1. *Occupancies with at least one exterior exit from floors occupied by clients.*
2. *Occupancies provided with automatic fire sprinkler systems complying with Chapter 9.*

***435.8.7.1 Doors within floor separations.** Doors within such floor separations shall be tight fitting solid wood at least $1^{3}/_{8}$ inches (35 mm) in thickness. Door glazing shall not exceed 1296 square inches (32 918 mm^2) with no dimension greater than 54 inches (1372 mm). Such doors shall be positive latching, smoke gasketed and shall be automatic-closing by smoke detection.*

***435.8.8 Fences and gates.** Grounds of a Residential Care for the Elderly facility serving Alzheimer clients may be fenced and gates therein equipped with locks, provided safe dispersal areas are located not less than 50 feet (15 240 mm) from the buildings. Dispersal areas shall be sized to provide an area of not less than 3 square*

feet (0.28 m^2) per occupant. Gates shall not be installed across corridors or passageways leading to such dispersal areas unless they comply with egress requirements.

435.8.9 Basement exits. *One exit is required to grade level when the basement is accessible to clients.*

435.8.10 Delayed egress locks. *See Section 1010.2.13.*

435.9 Request for alternate means of protection for facilities housing bedridden clients*. Request for alternate means of protection shall apply to Sections 435 through 435.9. Request for approval to use an alternative material, assembly or materials, equipment, method of construction, method of installation of equipment or means of protection shall be made in writing to the local fire enforcing agency by the facility, client or the client's authorized representative. Sufficient evidence shall be submitted to substantiate the need for an alternate means of protection.*

The facility, client or the client's representative or the local fire enforcing agency may request a written opinion from the State Fire Marshal concerning the interpretation of the regulations promulgated by the State Fire Marshal for a particular factual dispute. The State Fire Marshal shall issue the written opinion within 45 days following the request.

Approval of a request for use of an alternative material, assembly or materials, equipment, method of construction, method of installation of equipment or means of protection made pursuant to this section shall be limited to Group R-3.1 occupancies housing a bedridden client.

Approvals made by the local fire enforcing agency and the written opinion by the State Fire Marshal shall be applicable only to the requesting facility and shall not be construed as establishing any precedent for any future request by that facility or any other facility.

435.10 Temporarily bedridden clients. *Clients who become temporarily bedridden as defined in Health and Safety Code, Section 1569.72, as enforced by the Department of Social Services, may continue to be housed on any story in Group R-2.1, R-3.1 or R-4 occupancies classified as Residential Care Facilities for the Elderly (RCFE). Every Residential Care Facility for the Elderly (RCFE) admitting or retaining a bedridden resident shall, within 48 hours of the resident's admission or retention in the facility, notify the local fire authority with jurisdiction of the estimated length of time the resident will retain his or her bedridden status in the facility.*

SECTION 436
GROUP I-4 [SFM]

436.1 Group I-4 special provisions. *Rooms classified as Group I-4 shall not be located above or below the first story.*

Exceptions:

1. *Basements or stories having floor levels located within 4 feet (1219 mm), measured vertically, from adjacent ground level at the level of exit discharge, provided the basement or story has exterior exit doors at that level.*
2. *Group I-4 child-care center or adult cay care may be located above the first story in buildings of Types I-A, I-B, II-A, III-A, IV-A, IV-B and IV-C construction, subject to the limitation of Section 503 when:*

   2.1. *Group I-4 child-care center with children under the age of seven or containing more than 12 children per story shall not be located above the fourth floor; and*

   2.2. *The entire story in which the Group I-4 child-care center or adult day care is located is equipped with an approved manual fire alarm and automatic smoke-detection system. (See the California Fire Code.) Actuation of an initiating device shall sound an audible alarm throughout the entire story. When a building fire alarm system is required by other provisions of this code or the Fire Code, the alarm system shall be connected to the building alarm system. An approved alarm signal shall sound at an approved location in the Group I-4 facility to indicate a fire alarm or sprinkler flow condition in other portions of the building; and*

   2.3. *Group I-4 child-care center or adult day care, if more than 1,000 square feet (92.9 m^2) in area, is divided into at least two compartments of approximately the same size by a smoke barrier with door openings protected by smoke- and draft-control assemblies having a fire-protection rating of not less than 20 minutes. Smoke barriers shall have a fire-resistive rating of not less than one hour. In addition to the requirements of Section 508.3.3 of the California Building Code, occupancy separations between Group I-4 child-care center or adult day care and other occupancies shall be constructed as smoke barriers. Door openings in the smoke barrier shall be tightfittinq, with gaskets installed as required by Section 710 of the California Building Code, and shall be automatic closing by actuation of the automatic sprinklers, fire alarm or smoke-detection system.*

   2.4. *Each compartment formed by the smoke barrier has not less than two exits or exit access doors, one of which is permitted to pass through the adjoining compartment; and*

   2.5. *Where two or more exits or exit access are required, at least one shall not share a common path of travel. The egress system shall comply with the requirements of Section 709 for smoke barriers.*

   2.6. *The building is equipped with an automatic sprinkler system throughout.*

F

HISTORY NOTE APPENDIX

2022 California Fire Code
California Code of Regulations, Title 24, Part 9

HISTORY:

For prior code history, see the History Note Appendix to the *California Fire Code*, 2019 Triennial Edition, effective January 1, 2020.

1. (BSC 08/21, SFM 06/21) Adoption by reference of the 2021 *International Fire Code* with necessary amendments to become the 2022 *California Fire Code*, and repeal of the 2018 edition of the *International Fire Code*; effective on January 1, 2023.
2. Erratum to correct editorial errors in Matrix Adoption Tables and miscellaneous corrections throughout chapters 1, 2, 4, 9, 10, 24 and 80 effective January 1, 2023.
3. 2022 Intervening Cycle update (SFM 07/22) – Approved by the California Adoption of amendments to the 2022 *California Fire Code*. Effective on July 1, 2024.

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