REVISION RECORD
FOR THE STATE OF CALIFORNIA

SUPPLEMENT

July 1, 2024

2022 Title 24, Part 2.5, California Residential 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 Residential Code, California Code of Regulations, Title 24, Part 2.5. 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 New, amended, or repealed building standards are identified by margin symbols.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 You may wish to retain the superseded material with this revision record so that the prior wording of any section can be easily ascertained.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 2.5

Remove Existing Pages	Insert Blue-Colored Pages
v through viii	v through viii
xxiii and xxiv	xxiii and xxiv
1-11 and 1-12	1-11 and 1-12
3-3 and 3-4	3-3 and 3-4
3-49 and 3-50	3-49 and 3-50
3-89 through 3-106	3-89 through 3-106.2
7-21 and 7-22	7-21 and 7-22
8-31 and 8-32	8-31 and 8-32
9-3 and 9-4	9-3 and 9-4
44-1 through 44-4	44-1 through 44-4
44-9 through 44-14	44-9 through 44-14
44-21 and 44-22	44-21 and 44-22
INDEX-3 and INDEX-4	INDEX-3 and INDEX-4
INDEX-7 and INDEX-8	INDEX-7 and INDEX-8
HIST-1 and HIST-2	HIST-1 and HIST-2

Item No. 5525S222

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 v of this code.

To learn more about the use of this code refer to pages vii and viii. 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 IRC 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 RESIDENTIAL 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	CEC	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 IRC 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	CEC	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	CEC	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																	

TABLE OF CONTENTS

SECTION 1.8.10
OTHER BUILDING REGULATIONS

1.8.10.1 Existing structures. *Notwithstanding other provisions of law, the replacement, retention and extension of original materials, and the use of original methods of construction for any existing building or accessory structure, or portions thereof, shall be permitted in accordance with the provisions of this code and the California Existing Building Code, as adopted by the Department of Housing and Community Development. For additional information, see California Health and Safety Code, Sections 17912, 17920.3, 17922 and 17958.8.*

1.8.10.2 Moved structures. *Subject to the requirements of California Health and Safety Code Sections 17922, 17922.3 and 17958.9, local ordinances or regulations relating to a moved residential building or accessory structure thereto, shall permit the replacement, retention and extension of original materials, and the use of original methods of construction so long as the structure does not become or continue to be a substandard building.*

SECTION 1.9
Reserved

SECTION 1.10
Reserved

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 day-care homes.

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

Reference—*Health and Safety Code Section 13143.*

Large family day-care 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 (465 m^2) 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 level having building access, wherein rooms used for sleeping are let above the ground floor.*

Authority cited—*Health and Safety Code Sections 13143.2 and 17921.*

Reference—*Health and Safety Code Section 13143.*

Residential care facilities. *Certified family care homes, out-of-home placement facilities, halfway houses, drug and/or alcohol rehabilitation facilities and any building or structure used or intended for use as a home or institution for the housing of any person of any age when such person is referred to or placed within such home or institution for protective social care and supervision services by any governmental agency.*

Authority cited—*Health and Safety Code Section 13143.6.*

Reference—*Health and Safety Code Section 13143.*

Tents, awnings or other fabric enclosures used in connection with any occupancy.

Authority cited—*Health and Safety Code Section 13116.*

Reference—*Health and Safety Code Section 13143.*

Fire alarm devices, equipment and systems in connection with any occupancy.

Authority cited—*Health and Safety Code Section 13114.*

Reference—*Health and Safety Code Section 13143.*

Hazardous materials.

Authority cited—*Health and Safety Code Section 13143.9.*

Reference—*Health and Safety Code Section 13143.*

Flammable and combustible liquids.

Authority cited—*Health and Safety Code Section 13143.6.*

Reference—*Health and Safety Code Section 13143.*

Public school automatic fire detection, alarm and sprinkler systems.

Authority cited—*Health and Safety Code Section 13143 and California Education Code Article 7.5, Sections 17074.50, 17074.52 and 17074.54.*

Reference—*Government Code Section 11152.5, Health and Safety Code Section 13143 and California Education Code Chapter 12.5, Leroy F. Greene School Facilities Act of 1998, Article 1.*

Wildland-Urban Interface fire area.

Authority cited—*Health and Safety Code Sections 13143, 13108.5(a) and 18949.2(b) and (c) and Government Code Section 51189.*

Reference—*Health and Safety Code Sections 13143, Government Code Sections 51176, 51177, 51178 and 51179 and Public Resources Code Sections 4201 through 4204.*

1.11.1.1 Adopting agency identification. *The provisions of this code applicable to buildings identified in this Subsection 1.11.1 will be identified in the Matrix Adoption Tables under the acronym SFM.*

1.11.2 Duties and powers of the enforcing agency.

1.11.2.1 Enforcement.

1.11.2.1.1 *The responsibility for enforcement of building standards adopted by the State Fire Marshal and published in the California Building Standards Code relating to fire and panic safety and other regulations of the State Fire Marshal shall except as provided in Section 1.11.2.1.2 be as follows:*

1. *The city, county or city and county with jurisdiction in the area affected by the standard or regulation shall delegate the enforcement of the building standards relating to fire and panic safety and other regulations of the State Fire Marshal as they relate to Group R-3 occupancies, as described in Section 1.1.3.1 or CCR, Part 2 California Building Code, Section 310.1, to either of the following:*
   1.1. *The chief of the fire authority of the city, county or city and county, or an authorized representative.*
   1.2. *The chief building official of the city, county or city and county, or an authorized representative.*
2. *The chief of any city or county fire department or of any fire protection district, and authorized representatives, shall enforce within the jurisdiction the building standards and other regulations of the State Fire Marshal, except those described in Item 1 or 4.*
3. *The State Fire Marshal shall have authority to enforce the building standards and other regulations of the State Fire Marshal in areas outside of corporate cities and districts providing fire protection services.*
4. *The State Fire Marshal shall have authority to enforce the building standards and other regulations of the State Fire Marshal in corporate cities and districts providing fire protection services on request of the chief fire official or the governing body.*
5. *Any fee charged pursuant to the enforcement authority of this section shall not exceed the estimated reasonable cost of providing the service for which the fee is charged pursuant to Section 66014 of the Government Code.*

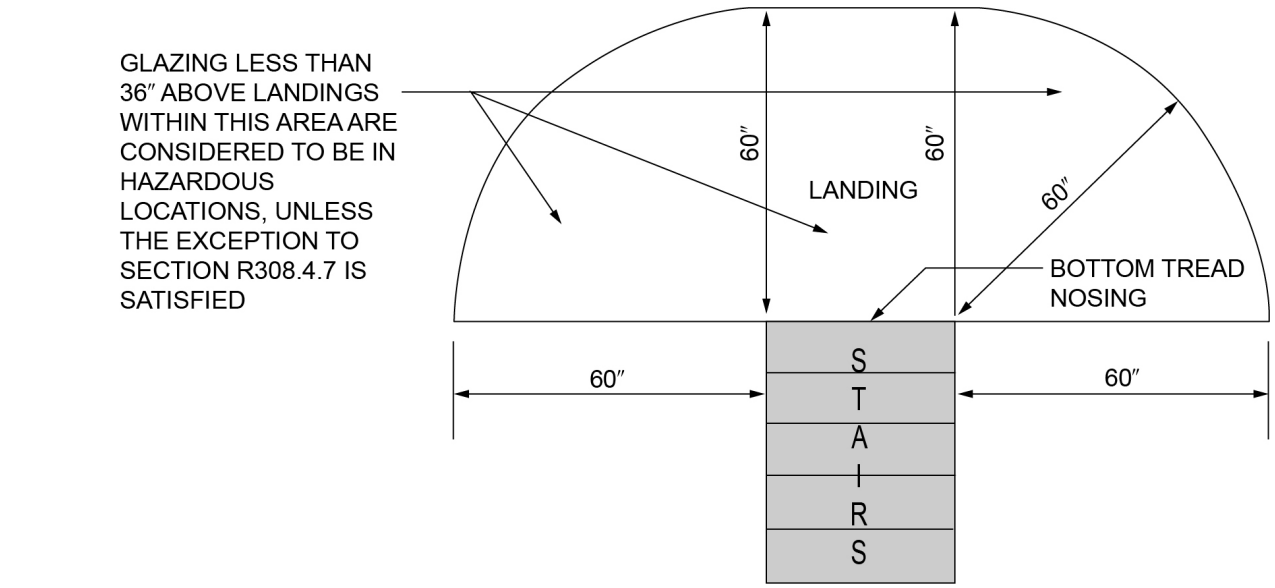
1.11.2.1.2 *Pursuant to Health and Safety Code Section 13108, and except as otherwise provided in this section, building standards adopted by the State Fire Mar-*

CALIFORNIA RESIDENTIAL CODE – MATRIX ADOPTION TABLE
CHAPTER 3 – BUILDING PLANNING—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD						BSCC	DPH	AGR	DWR	CEC	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			**X**																				
Chapter / Section																							
R326				X																			
R326.3			X																				
R327 through R327.1.4				X																			
R328.1 - *R328.12*			X																				
R328.1				X																			
R328.6				X																			
R328.9				X																			
R328.10				X																			
R329.2				X																			
R334				X																			
R334.1				X																			
R335 - R335.9			X																				
R336 - R336.8			X																				
R337 - R337.11			X																				
R338 - R338.4			X																				
R340				X																			
R340.1				X																			

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

The ◆ designation indicates that the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures subject to HCD 1.



For SI: 1 inch = 25.4 mm.

FIGURE R308.4.7
HAZARDOUS GLAZING LOCATIONS AT BOTTOM STAIR LANDINGS

R308.6.4 Screens with multiple glazing. Where the inboard pane is fully tempered, heat-strengthened or wired glass, a broken glass retention screen meeting the requirements of Section R308.6.7 shall be installed below the full area of the glass, except for Condition 1 or 2 listed in Section R308.6.5. Other panes in the multiple glazing shall be of any type listed in Section R308.6.2.

R308.6.5 Screens not required. Screens shall not be required where laminated glass complying with Item 1 of Section R308.6.2 is used as single glazing or the inboard pane in multiple glazing. Screens shall not be required where fully tempered glass is used as single glazing or the inboard pane in multiple glazing and either of the following conditions is met:

1. The glass area is 16 square feet (1.49 m^2) or less; the highest point of glass is not more than 12 feet (3658 mm) above a walking surface; the nominal glass thickness is not more than $^3/_{16}$ inch (4.8 mm); and for multiple glazing only the other pane or panes are fully tempered, laminated or wired glass.
2. The glass area is greater than 16 square feet (1.49 m^2); the glass is sloped 30 degrees (0.52 rad) or less from vertical; and the highest point of glass is not more than 10 feet (3048 mm) above a walking surface.

R308.6.6 Glass in greenhouses. Any glazing material is permitted to be installed without screening in the sloped areas of greenhouses, provided that the greenhouse height at the ridge does not exceed 20 feet (6096 mm) above grade.

R308.6.7 Screen characteristics. The screen and its fastenings shall: be capable of supporting twice the weight of the glazing; be firmly and substantially fastened to the framing members; be installed within 4 inches (102 mm) of the glass; and have a mesh opening of not greater than 1 inch by 1 inch (25 mm by 25 mm).

R308.6.8 Curbs for skylights. Unit skylights installed in a roof with a pitch of less than three units vertical in 12 units horizontal (25-percent slope) shall be mounted on a curb extending not less than 4 inches (102 mm) above the plane of the roof, unless otherwise specified in the manufacturer's installation instructions.

R308.6.9 Testing and labeling. Unit skylights and tubular daylighting devices shall be tested by an approved independent laboratory, and bear a label identifying manufacturer, performance grade rating and approved inspection agency to indicate compliance with the requirements of AAMA/WDMA/CSA 101/I.S.2/A440.

R308.6.9.1 Comparative analysis for glass-glazed unit skylights. Structural wind load design pressures for glass-glazed unit skylights different than the size tested in accordance with Section R308.6.9 shall be permitted to be different than the design value of the tested unit where determined in accordance with one of the following comparative analysis methods:

1. Structural wind load design pressures for glass-glazed unit skylights smaller than the size tested in accordance with Section R308.6.9 shall be permitted to be higher than the design value of the tested unit provided that such higher pressures are determined by accepted engineering analysis. Components of the smaller unit shall be the same as those of the tested unit. Such calculated design pressures shall be validated by an additional test

of the glass-glazed unit skylight having the highest allowable design pressure.

2. In accordance with WDMA I.S.11.

SECTION R309
GARAGES AND CARPORTS

R309.1 Floor surface. Garage floor surfaces shall be of approved noncombustible material.

The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.

R309.2 Carports. Carports shall be open on not less than two sides. Carport floor surfaces shall be of approved noncombustible material. Carports not open on two or more sides shall be considered to be a garage and shall comply with the provisions of this section for garages.

The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.

Exception: Asphalt surfaces shall be permitted at ground level in carports.

R309.3 Flood hazard areas. Garages and carports located in flood hazard areas as established by Table R301.2 shall be constructed in accordance with Section R322.

R309.4 Automatic garage door openers. Automatic garage door openers, if provided, shall be listed and labeled in accordance with UL 325. *See Health and Safety Code Sections 19890, 19891 and 19892 for additional provisions for residential garage door openers.*

R309.5 Fire sprinklers *location on property*. Private garages shall be protected by fire sprinklers where the garage wall has been designed based on Table R302.1(2), Note a. Sprinklers in garages shall be connected to an automatic sprinkler system that complies with Section *R313*. Garage sprinklers shall be residential sprinklers or quick-response sprinklers, designed to provide a density of 0.05 gpm/ft^2. Garage doors shall not be considered obstructions with respect to sprinkler placement.

R309.6 Fire sprinklers, attached garages and carports with habitable space above. *Attached garages and carports with habitable space above shall be protected by fire sprinklers in accordance with this section and Section R313. Protection shall be provided in accordance with one of the following:*

1. *Residential sprinklers installed in accordance with their listing.*
2. *Extended coverage sprinklers discharging water not less than their listed flow rate for Light Hazard in accordance with NFPA 13.*
3. *Quick-response spray sprinklers at light hazard spacing in accordance with NFPA 13 designed to discharge at 0.05 gpm/ft^2 density (minimum).*

The system demand shall be permitted to be limited to the number of sprinklers in the compartment but shall not exceed two sprinklers for hydraulic calculation purposes. Garage doors shall not be considered obstructions and shall be permitted to be ignored for placement and calculation of sprinklers.

Exception: *An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing carports and/or garages that do not have an automatic residential fire sprinkler system installed in accordance with this section.*

R309.7 Extension garage door springs. *Every extension garage door spring sold or offered for sale, whether new or sold as a replacement, or installed in any garage or carport which is accessory to a dwelling covered by this code, shall conform to the requirements for garage door springs located in Section 1210 of the California Building Code.*

R309.8 Electric vehicle (EV) charging infrastructure. *Newly constructed one- and two-family dwellings and townhouses with attached private garages shall comply with EV infrastructure requirements in accordance with the California Green Building Standards Code, Chapter 4, Division 4.1.*

SECTION R310
EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 Emergency escape and rescue opening required. Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way or to a yard or court that opens to a public way.

Exceptions *[SFM]:*

1. *Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.*
2. *Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior egress balcony that opens to a public way.*
3. *Basements without habitable spaces and having not more than 200 square feet (18.6 m^2) in floor area shall not be required to have emergency escape and rescue openings.*
4. *Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500.*
5. *Where the dwelling unit or townhouse unit is equipped with an automatic sprinkler system installed in accordance with Section R313, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:*
   - 5.1. *One means of egress complying with Section R311 and one emergency escape and rescue opening.*
   - 5.2. *Two means of egress complying with Section R311.*

installed grab bars or when factory-installed reinforcement for grab bars is provided.

3. *Shower enclosures that do not permit installation of reinforcement and/or grab bars shall be permitted, provided reinforcement for installation of floor-mounted grab bars or an alternate method is approved by the enforcing agency.*
4. *Bathtubs with no surrounding walls, or where wall panels do not permit the installation of reinforcement shall be permitted, provided reinforcement for installation of floor-mounted grab bars adjacent to the bathtub or an alternate method is approved by the enforcing agency.*
5. *Reinforcement of floors shall not be required for bathtubs and water closets installed on concrete slab floors.*

R327.1.1.1 Documentation for grab bar reinforcement. *Information and/or drawings identifying the location of grab bar reinforcement shall be placed in the operation and maintenance manual in accordance with the California Green Building Standards Code, Chapter 4, Division 4.4.*

R327.1.2 Electrical receptacle outlet, switch and control heights. *Electrical receptacle outlets, switches and controls (including controls for heating, ventilation and air conditioning) intended to be used by occupants shall be located no more than 48 inches (1219.2 mm) measured from the top of the outlet box and not less than 15 inches (381 mm) measured from the bottom of the outlet box above the finish floor.*

Exceptions:

1. *Dedicated receptacle outlets; floor receptacle outlets; controls mounted on ceiling fans and ceiling lights; and controls located on appliances.*
2. *Receptacle outlets required by the California Electrical Code on a wall space where the distance between the finished floor and a built-in feature above the finish floor, such as a window, is less than 15 inches (381 mm).*

R327.1.3 Interior doors. *Effective July 1, 2024, at least one bathroom and one bedroom on the entry level shall provide a doorway with a net clear opening of not less than 32 inches (812.8 mm), measured with the door positioned at an angle of 90 degrees from the closed position; or, in the case of a two- or three-story single family dwelling, on the second or third floor of the dwelling if a bathroom or bedroom is not located on the entry level.*

R327.1.4 Doorbell buttons. *Doorbell buttons or controls, when installed, shall not exceed 48 inches (1219.2 mm) above exterior floor or landing, measured from the top of the doorbell button assembly. Where doorbell buttons integrated with other features are required to be installed above 48 inches (1219.2 mm) measured from the exterior floor or landing, a standard doorbell button or control shall also be provided at a height not exceeding 48 inches (1219.2 mm) above exterior floor or landing, measured from the top of the doorbell button or control.*

SECTION R328
ENERGY STORAGE SYSTEMS

R328.1 General. Energy storage systems (ESS) shall comply with the provisions of this section.

Exceptions:

1. ESS listed and labeled in accordance with UL 9540 and marked "For use in residential dwelling units" where installed in accordance with the manufacturer's instructions and *the California Electrical Code.*
2. ESS less than 1 kWh (3.6 megajoules).

R328.2 Equipment listings. Energy storage systems (ESS) shall be listed and labeled in accordance with UL 9540.

Exception: Where approved, repurposed unlisted battery systems from electric vehicles are allowed to be installed outdoors or in detached sheds located not less than 5 feet (1524 mm) from exterior walls, property lines and public ways.

R328.3 Installation. ESS shall be installed in accordance with the manufacturer's instructions and their listing.

R328.3.1 Spacing. Individual units shall be separated from each other by not less than 3 feet (914 mm) except where smaller separation distances are documented to be adequate based on large-scale fire testing complying with Section 1207.1.5 of the *California Fire Code*.

R328.4 Locations. 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 in accordance with Section R302.6.
3. Outdoors or on the exterior side of 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, or closets or spaces opening directly into sleeping rooms *or in habitable spaces of dwelling units.*

R328.5 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 R328.5. 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 Section *1207.1 through 1207.9* of the *California Fire Code*.

R328.6 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.

TABLE R328.5
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 non-combustible 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 non-combustible 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 of the California Fire Code.

R328.7 Fire detection. Rooms and areas within dwelling units, basements and attached garages in which *ESS* are installed shall be protected by smoke alarms in accordance with Section R314. A heat detector, listed and interconnected to the smoke alarms, shall be installed in locations within dwelling units and attached garages where smoke alarms cannot be installed based on their listing.

[SFM] *ESS installed in Group R-3 and townhomes 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 R314.*
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.*

R328.8 Protection from impact. ESS installed in a location subject to vehicle damage *in accordance with Section R328.8.1 or R328.8.2 shall be provided with impact protection in accordance with Section R328.8.3.*

R328.8.1 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 R328.8.1):*

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 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.*

R328.8.2 Other locations subject to vehicle impact. *Where an ESS is installed in a location other than as defined in Section R328.8.1, and is subject to vehicle damage, impact protection shall be provided in accordance with Section R328.8.3.*

R328.8.3 Impact protection options. *Where ESS is required to be protected from impact in accordance with Section R328.8.1 or R328.8.2, 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 be not 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*

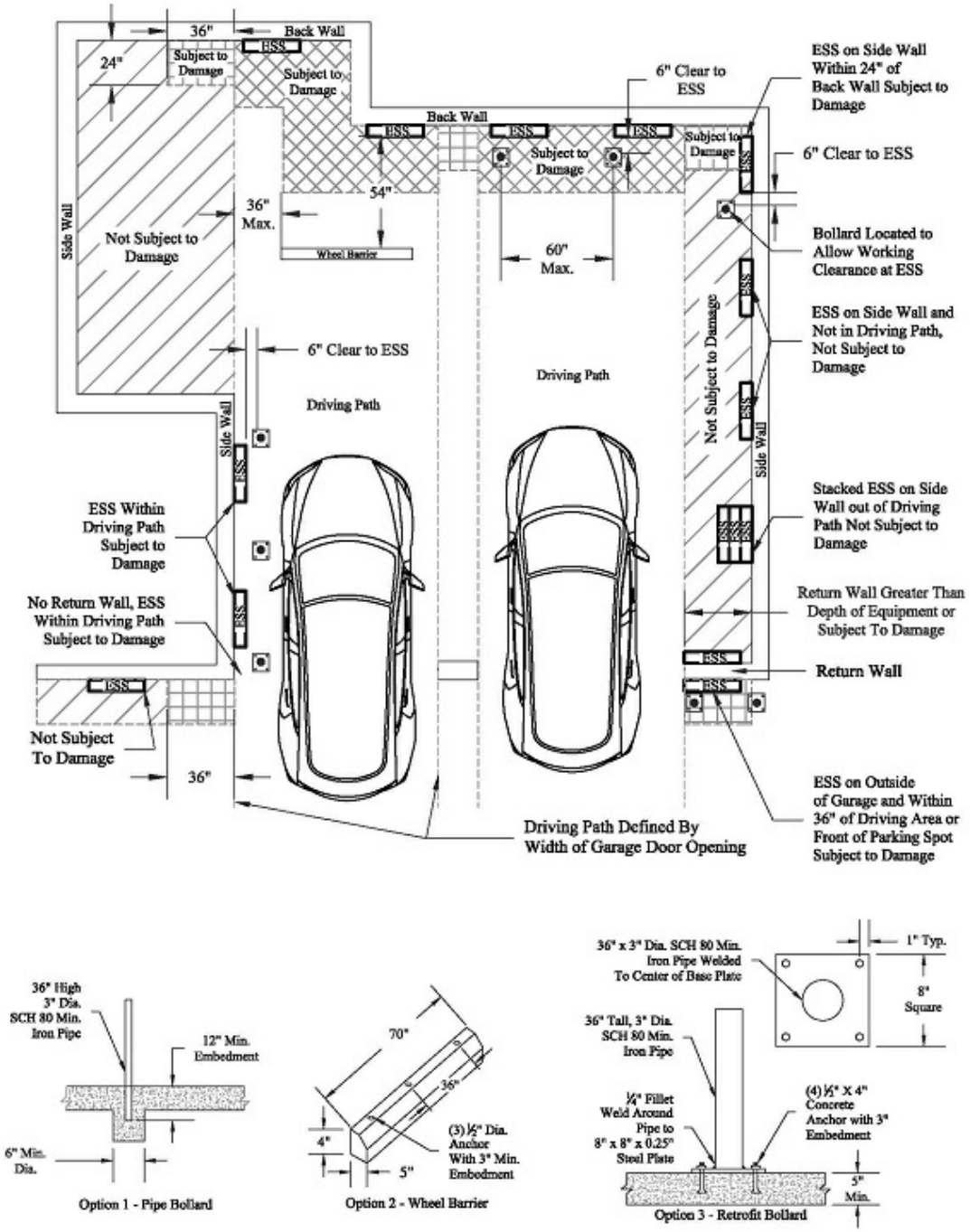


FIGURE R328.8.1
ESS VEHICLE IMPACT PROTECTION

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 2000-lb. (8899 Newtons) impact in the direction of travel at 24 inches (608 mm) above grade.*

R328.9 Ventilation. Indoor installations of ESS that produce hydrogen or other flammable gases during charging shall be provided with mechanical ventilation in accordance with *the California Mechanical Code*.

R328.10 Electric vehicle use. The temporary use of an owner or occupant's electric-powered vehicle to power a dwelling unit while parked in an attached or detached garage or outdoors shall comply with the vehicle manufacturer's instructions and *the California Electrical Code.*

R328.11 Documentation and labeling. The following information shall be provided:

1. A copy of the manufacturer's installation, operation, maintenance and decommissioning instructions shall be provided to the owner or placed in a conspicuous location near the ESS equipment.
2. A label on the installed system containing the contact information for the qualified maintenance and service providers.

R328.12 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.*

SECTION R329
STATIONARY ENGINE GENERATORS

R329.1 General. Stationary engine generators shall be listed and labeled in accordance with UL 2200 and shall comply with this section. The connection of stationary engine generators to the premise wiring system shall be by means of a listed transfer switch.

R329.2 Installation. The installation of stationary engine generators shall be in an approved location and in accordance with the listing, the manufacturer's installation instructions and *the California Electrical Code.*

SECTION R330
STATIONARY FUEL CELL POWER SYSTEMS

R330.1 General. Stationary fuel cell power systems in new and existing buildings and structures shall comply with Section 1206 of the *California Fire Code*.

SECTION R334
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

R334.1 Construction waste management. *Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with the California Green Building Standards Code, Chapter 4, Division 4.4.*

SECTION R335
SPECIAL PROVISIONS FOR LICENSED 24-HOUR CARE FACILITIES IN A GROUP R-3.1

R335.1 Scope. *The provisions of this section shall apply to 24-hour care facilities in a Group R-3.1 occupancy licensed by a governmental agency.*

R335.2 General. *The provisions in this section shall apply in addition to general requirements in this code.*

R335.2.1 *Restraint shall not be practiced in a Group R-3.1 occupancy.*

Exception: *Occupancies which meet all the requirements for a Group I-3 occupancy.*

R335.2.2 *Pursuant to Health and Safety Code Section 13133, regulations of the state fire marshal pertaining to 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 inconsistent 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.*

Exception: *Local regulations relating to roof coverings in facilities licensed as a Residential Care Facility for the Elderly (RCFE) per Health and Safety Code Section 13133.*

R335.3 Building height and area provisions.

R335.3.1 Limitations six or less clients. *Group R-3.1 occupancies where nonambulatory clients are housed above the first story, having more than two stories in height or having more than 3,000 square feet (279 m^2) of floor area above the first story shall not be of less than one-hour fire-resistance-rated construction throughout.*

In Group R-3.1 occupancies housing a bedridden client, the client sleeping room shall not be located above or below the first story.

Exception: *Clients who become bedridden as a result of a temporary illness as defined in Health and Safety Code Sections 1566.45, 1568.0832 and 1569.72. A temporary illness is an illness which persists for 14 days or less. A bedridden client may be retained in excess of the 14 days upon approval by the Department of Social Services and may continue to be housed on any story in a Group R-3.1 occupancy classified as a licensed residential facility.*

Every licensee 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.

R335.3.2. *Buildings housing protective social-care homes or in occupancies housing inmates who are not restrained need not be of one-hour fire-resistive construction when not more than two stories in height. In no case shall individual floor areas exceed 3,000 square feet (279 m^2). The fire-resistive protection of the exterior walls shall not be less than one hour where such walls are located within 5 feet (1524 mm) of the property line. Openings within such walls are not permitted. Openings in exterior nonrated walls need not be protected.*

R335.4 Interior finish provisions.

R335.4.1 Interior wall and ceiling finish. *Group R-3.1 occupancies housing a bedridden client shall comply with Interior Wall and Ceiling Finish requirements specified for Group I-2 occupancies in Table 803.11 of the California Building Code.*

R335.5 Fire protection system provisions.

R335.5.1 Automatic sprinkler systems in Group R-3.1 occupancies. *An automatic sprinkler system shall be installed where required in Section R313.*

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 R335.6.3.3.*
3. *Pursuant to Health and Safety Code Section 13113 existing 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 existing 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).*

R335.5.2 Smoke alarms in Groups R-3.1 occupancies. *Smoke alarms shall be installed where required in Section R314. In addition to the provisions set forth in Section R314 the following shall apply:*

1. *Smoke alarms shall be provided throughout the habitable areas of the dwelling unit except kitchens.*
2. *Facilities housing a bedridden client:*
    2.1. *Smoke alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source and shall be equipped with a battery backup.*
    2.2. *Smoke alarms shall be electrically interconnected so as to cause all smoke alarms to sound a distinctive alarm signal upon actuation of any single smoke alarm. Such alarm signal shall be audible throughout the facility at a minimal 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.*

R335.5.2.1 Audible alarm signal. *The audible signal shall be the standard fire alarm evacuation signal, ANSI S3.41 Audible Emergency Evacuation Signal, "three pulse temporal pattern," as described in NFPA 72.*

R335.5.2.2 Hearing impaired. *See Section 907.5.2.3 of the California Building Code.*

R335.5.2.3 Visible alarms. *Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through 907.5.2.3.5 of the California Building Codes.*

Exceptions:

1. *Visible alarm notification appliances are not required in alterations, except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed.*
2. *Visible alarm notification appliances shall not be required in enclosed exit stairways, exterior exit stairs and exterior exit ramps.*
3. *Visible alarm notification appliances shall not be required in elevator cars.*

R335.5.2.4 Group R-3.1. *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 activated upon initiation of the fire alarm system or the smoke alarms.*

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

R335.6 Means of egress provisions.

R335.6.1 General. *In addition to the general means of egress requirements of Chapter 10 of the California Building Code, this section shall apply to Group R-3.1 occupancies.*

R335.6.2 Number of exits.

R335.6.2.1. *Group R-3.1 occupancies shall have a minimum of two exits.*

R335.6.3 Egress arrangements.

R335.6.3.1. *Egress through adjoining dwelling units shall not be permitted.*

R335.6.3.2 Group R-3.1 occupancies housing nonambulatory clients. *In a Group R-3.1 occupancy, bedrooms used by nonambulatory clients shall have access to at least one of the required exits which shall conform to one of the following:*

1. *Egress through a hallway or area into a bedroom in the immediate area which has an exit directly to the exterior and the corridor/hallway is con-*

structed consistent with the dwelling unit interior walls. The hallway shall be separated from common areas by a solid wood door not less than $1^3/_8$ inch (35 mm) in thickness, maintained self-closing or shall be automatic closing by actuation of a smoke detector installed in accordance with Section 716.5.9 of the California Building Code.

2. *Egress through a hallway which has an exit directly to the exterior. The hallway shall be separated from the rest of the house by a wall constructed consistent with the dwelling unit interior walls and opening protected by a solid wood door not less than $1^3/_8$ inch (35 mm) in thickness, maintained self-closing or shall be automatic closing by actuation of a smoke detector installed in accordance with Section 716.5.9 of the California Building Code.*
3. *Direct exit from the bedroom to the exterior, such doors 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, 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).*
4. *Egress through an adjoining bedroom which exits to the exterior.*

R335.6.3.3 Group R-3.1 occupancies housing only one bedridden client. *In Group R-3.1 occupancies housing a bedridden client and not provided with an approved automatic fire sprinkler system, all of the following shall apply:*

1. *In Group R-3.1 Occupancies housing a bedridden client, a direct exit to the exterior of the residence shall be provided from the client sleeping room.*
2. *Doors to a bedridden client's sleeping room shall be of a self-closing, positive latching $1^3/_8$ inch 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 Section 716.5.9 of the California Building Code.*
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 of the California Building Code.*
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).*

R335.6.3.4 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.*

R335.6.4 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% slope). Changes in level greater than 0.5 inch (12.7 mm) shall be accomplished by means of a ramp.*

R335.6.5 Stairways. *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).*

R335.6.6 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.*

R335.6.6.1 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.*

R335.6.7 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.

R335.6.8 Basement exits. *One exit is required to grade level when the basement is accessible to clients.*

R335.6.9 Delayed egress locks. *See Section 1010.1.9.7 of the California Building Code.*

R335.7 Request for alternate means of protection for facilities housing bedridden clients. *Request for alternate means of protection shall apply to Sections R335 through R335.7. 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 authority having jurisdiction 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 authority having jurisdiction 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 authority having jurisdiction 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.

R335.8 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-3.1 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.*

R335.9 Group R. *Buildings housing protective social-care homes or in occupancies housing inmates who are not restrained need not be of one-hour fire-resistive construction when not more than two stories in height. In no case shall individual floor areas exceed 3,000 square feet (279 m^2). The fire-resistive protection of the exterior walls shall not be less than one hour where such walls are located within 5 feet (1524 mm) of the property line. Openings within such walls are not permitted. Openings in exterior nonrated walls need not be protected.*

SECTION R336
LARGE FAMILY DAY-CARE HOMES

R336.1 Large family day-care homes.

R336.2 Health and Safety Code Section 1597.46. *For purposes of clarification, Health and Safety Code Section 1597.46 is repeated.*

1597.46.

(a) A large family day-care home shall abide by all standards, in addition to the requirements of the State Uniform Building Standards Code, that are specifically designed to promote fire and life safety in large family day-care homes. The State Fire Marshal shall adopt separate building standards specifically relating to the subject of fire and life safety in family day-care homes, which shall be published in Title 24 of the California Code of Regulations. These standards shall apply uniformly throughout the state and shall include, but not be limited to, all of the following:

(1) The requirement that a large family day-care home contain a fire extinguisher or smoke detector device, or both, that meets child care standards established by the State Fire Marshal.

(2) Specification as to the number of required exits from the home.

(3) Specification as to the floor or floors on which child care may be provided and the number of required exits on each floor.

(b) A large family day-care home for children shall have one or more carbon monoxide detectors in the facility that meet the standards established in Chapter 8 (commencing with Section 13260) of Part 2 of Division 12. The department shall account for the presence of these detectors during inspections.

(c) Enforcement of this section shall be in accordance with Sections 13145 and 13146. A city, county, city and county, or district shall not adopt or enforce a building ordinance or local rule or regulation relating to the subject of fire and life safety in large family day-care homes that is inconsistent with those standards adopted by the State Fire Marshal, except to the extent the building ordinance or local rule or regulation applies to all residences with the same zoning designation in which child care is provided.

(Repealed and added by Stats. 2019, Ch. 244, Sec. 12. (SB 234) Effective January 1, 2020.)

R336.3 Smoke alarms. *Large family day-care homes shall be equipped with State Fire Marshal approved and listed single station residential type smoke alarms. The number and placement of smoke alarms shall be determined by the enforcement authority.*

R336.4 Fire extinguishers. *Large and small family day-care homes shall be equipped with a portable fire extinguisher having a minimum 2A10BC rating.*

R336.5 Fire alarm devices. *Every large family day-care home shall be provided with at least one manual device at a location approved by the authority having jurisdiction. 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 may be of any type acceptable to the enforcing agent, provided that such devices are distinctive in tone and are audible throughout the structure.

R336.6 Compliance. *Every large family day-care home shall comply with the provisions for Group R-3 occupancies and, if appropriate, Section R336.1. For the purposes of Section R336.1, the first story shall be designated as the floor used for residential occupancy nearest to the street level which provides primary access to the building.*

R336.7 Special hazards. *Every unenclosed gas-fired water heater or furnace which is within the area used for child care in a large family day-care home shall be protected in such a way as to prevent children from making contact with those appliances.*

Exception: *This does not apply to kitchen stoves or ovens.*

R336.8 Exiting. *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 (813mm) in clear width and not less than 6 feet 8 inches (2032 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.

SECTION R337
MATERIALS AND CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE

SECTION R337.1
SCOPE, PURPOSE AND APPLICATION

R337.1.1 Scope. *Section R337 and all subsections apply to building materials, systems and/or assemblies used in the exterior design and construction of new buildings located within a Wildland-Urban Interface (WUI) area as defined in Section R337.2.*

R337.1.2 Purpose. *The purpose of Section R337 is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Area (SRA) or Local Responsibility Area (LRA) or any Wildland-Urban Interface (WUI) area as specified in Section R337.1.3.1 to resist the intrusion of flame or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.*

R337.1.3 Application. *New buildings located in any Fire Hazard Severity Zone or any Wildland-Urban Interface (WUI) area designated by the enforcing agency constructed after the application date shall comply with the provisions of this section. This shall include all new buildings with residential, commercial, educational, institutional or similar occupancy type use, which shall be referred to in this section as "applicable building" (see definition in Section R337.2), as well as new buildings and structures accessory to those applicable buildings (see Exceptions 1 and 4).*

Exceptions:

1. *Group U occupancy accessory buildings of any size located at least 50 feet (15 m) from an applicable building on the same lot.*
2. *Group U occupancy agricultural buildings, as defined in Section 202 of the California Building code, of any size located at least 50 feet (15 m) from an applicable building.*
3. *Group C occupancy special buildings conforming to the limitations specified in Section 450.4.1 of the California Building Code.*
4. *New accessory buildings and miscellaneous structures specified in Section R337.10 shall comply only with the requirements of that section.*
5. *Additions to and remodels of buildings originally constructed prior to July 1, 2008.*

R337.1.3.1 Application date and where required. *New buildings for which an application for a building permit is submitted on or after July 1, 2008, located in any Fire Hazard Severity Zone or Wildland-Urban Interface area shall comply with all sections of this chapter, including all the following areas:*

1. *All unincorporated lands designated by the State Board of Forestry and Fire Protection as State Responsibility Area (SRA) including:*
   - *1.1. Moderate Fire Hazard Severity Zones.*
   - *1.2. High Fire Hazard Severity Zones.*
   - *1.3. Very-High Fire Hazard Severity Zones.*
2. *Land designated as Very-High Fire Hazard Severity Zone by cities and other local agencies.*
3. *Land designated as a Wildland-Urban Interface area by cities and other local agencies.*

   Exceptions:

   1. *New buildings located in any Fire Hazard Severity Zone within a State Responsibility Area, for which an application for a building permit is submitted on or after January 1, 2008, shall comply with all sections of this chapter.*
   2. *New buildings located in any Fire Hazard Severity Zone within a State Responsibility Area, or any Wildland-Urban Interface*

area designated by cities and other local agencies for which an application for a building permit is submitted on or after December 1, 2005, but prior to July 1, 2008, shall only comply with the following sections of this chapter:

2.1. Section R337.5 – Roofing.

2.2. Section R337.6 – Vents.

R337.1.4 Inspection and certification. *Building permit applications and final completion approvals for buildings within the scope and application of this chapter shall comply with the following:*

1. *Building permit issuance. The local building official shall, prior to construction, provide the owner or applicant a certification that the building as proposed to be built complies with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter. Issuance of a building permit by the local building official for the proposed building shall be considered as complying with this section.*
2. *Building permit final. The local building official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter. Issuance of a certificate of occupancy by the local building official for the proposed building shall be considered as complying with this section.*

R337.1.5 Vegetation management compliance. *Prior to building permit final approval, the property shall be in compliance with the vegetation management requirements prescribed in California Fire Code Section 4906 and 4907, including California Public Resources Code 4291 or California Government Code Section 51182. Acceptable methods of compliance inspection and documentation shall be determined by the enforcing agency and shall be permitted to include any of the following:*

1. *Local, state or federal fire authority or designee authorized to enforce vegetation management requirements.*
2. *Enforcing agency.*
3. *Third party inspection and certification authorized to enforce vegetation management requirements.*
4. *Property owner certification authorized by the enforcing agency.*

SECTION R337.2 DEFINITIONS

For the purposes of Section R337, certain terms are defined below:

APPLICABLE BUILDING. *A building that has residential, commercial, educational, institutional or similar occupancy type use.*

DIRECTOR *means the Director of the California Department of Forestry and Fire Protection (CAL FIRE).*

EXTERIOR COVERING. *The exposed siding or cladding material applied to the exterior side of an exterior wall, roof eave soffit, floor projection or exposed underfloor framing.*

EXTERIOR WALL ASSEMBLY. *A system or assembly of exterior wall components, including exterior wall covering materials, that provides protection of the building structural members, including framing and sheathing materials, and conditioned interior space, from the detrimental effects of the exterior environment.*

EXTERIOR WALL COVERING. *A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather-resisting barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, architectural trim and embellishments such as cornices, soffits, facias, gutters and leaders.*

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. See the California Fire Code, Chapter 49, for required elements of a Fire Protection Plan.*

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 a State Responsibility Area or as Local Responsibility Areas in Very-High Fire Hazard Severity Zones designated pursuant to California Government Code Sections 51175 through 51189. See California Fire Code Chapter 49.*

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 which 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 as 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 R337.4.*

LOCAL RESPONSIBILITY AREA (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.*

LOG WALL CONSTRUCTION. *A type of construction in which exterior walls are constructed of solid wood members and where the smallest horizontal dimension of each solid wood member is at least 6 inches (152 mm).*

RAFTER TAIL. *The portion of roof rafter framing in a sloping roof assembly that projects beyond and overhangs an exterior wall.*

ROOF EAVE. *The lower portion of a sloping roof assembly that projects beyond and overhangs an exterior wall at the lower end of the rafter tails. Roof eaves may be either "open" or "enclosed." Open roof eaves have exposed rafter tails and an unenclosed space on the underside of the roof deck. Enclosed roof eaves have a boxed-in roof eave soffit with a horizontal underside or sloping rafter tails with an exterior covering applied to the underside of the rafter tails.*

ROOF EAVE SOFFIT. *An enclosed boxed-in soffit under a roof eave with exterior covering material applied to the soffit framing creating a horizontal surface on the exposed underside.*

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 forest fires 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 R337.3
STANDARDS OF QUALITY

R337.3.1 General. *Building material, systems, assemblies and methods of construction used in Section R337 shall be in accordance with Section R337.3.*

R337.3.2 Qualification by testing. *Material and material assemblies tested in accordance with the requirements of Section R337.3 shall be accepted for use when the results and conditions of those tests are met. Product evaluation testing of material and material assemblies shall be approved or listed by the State Fire Marshal, or identified in a current report issued by an approved agency.*

R337.3.3 Approved agency. *Product evaluation testing shall be performed by an approved agency as defined in Section 1702 of the California Building Code. The scope of accreditation for the approved agency shall include building product compliance with the California Building Code.*

R337.3.4 Labeling. *Material and material assemblies tested in accordance with the requirements of Section R337.3 shall bear an identification label showing the fire test results. That identification label shall be issued by a testing and/or inspecting agency approved by the State Fire Marshal.*

1. *Identification mark of the approved testing and/or inspecting agency.*
2. *Contact and identification information of the manufacturer.*
3. *Model number or identification of the product or material.*
4. *Pre-test weathering specified in this section.*
5. *Compliance standard as described under Section R337.3.7.*

R337.3.5 Weathering and surface treatment protection.

R337.3.5.1 General. *Material and material assemblies tested in accordance with the requirements of Section R337.3 shall maintain their fire test performance under conditions of use when installed in accordance with the manufacturers instructions.*

R337.3.5.2 Weathering. *Fire-retardant-treated wood and fire-retardant-treated wood shingles and shakes shall meet the fire test performance requirements of this section after being subjected to the weathering conditions contained in the following standards, as applicable to the materials and the conditions of use.*

R337.3.5.2.1 Fire-retardant-treated wood. *Fire-retardant-treated wood shall be tested in accordance with ASTM D2898 (Method A), and the requirements of Section 2303.2 of the California Building Code.*

R337.3.5.2.2 Fire-retardant-treated wood shingles and shakes. *Fire-retardant-treated wood shingles and shakes shall be approved and listed by the State Fire Marshal in accordance with Section 208(c), Title 19 California Code of Regulations.*

R337.3.5.3 Surface treatment protection. *The use of paints, coatings, stains or other surface treatments are not an approved method of protection as required in this section.*

R337.3.6 Alternates for materials, design, tests and methods of construction. *The enforcing agency is permitted to modify the provisions of this chapter for site-specific conditions in accordance with Section 1.11.2.4. When required by the enforcing agency for the purposes of granting modifications, a fire protection plan shall be submitted in accordance with the California Fire Code, Chapter 49.*

R337.3.7 Standards of quality. *The State Fire Marshal standards for exterior wildfire exposure protection listed below and as referenced in this chapter are located in the*

California Referenced Standards Code, Part 12 and Chapter 44 of this code.

SFM Standard 12-7A-1, *Exterior Wall Siding and Sheathing. A fire resistance test standard consisting of a 150 kW intensity direct flame exposure for a 10 minutes duration.*

SFM Standard 12-7A-2, *Exterior Windows. A fire resistance test standard consisting of a 150 kW intensity direct flame exposure for an 8-minute duration.*

SFM Standard 12-7A-3, *Horizontal Projection Underside A fire resistance test standard consisting of a 300 kW intensity direct flame exposure for a 10 minute duration.*

SFM Standard 12-7A-4, *Decking. A two-part test consisting of a heat release rate (Part A) deck assembly combustion test with an under deck exposure of 80 kW intensity direct flame for a 3 minute duration, and a (Part B) sustained deck assembly combustion test consisting of a deck upper surface burning ember exposure with a 12 mph wind for 40 minutes using a 2.2 lb (1 kg) burning "Class A" size 12" × 12" × 2.25" (300 mm x 300 mm x 57 mm) roof test brand.*

SFM Standard 12-7A-4A, *Decking Alternate Method A. A heat release rate deck assembly combustion test with an under deck exposure of 80 kW intensity direct flame for a 3 minute duration.*

ASTM D2898, *Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing*

ASTM D3909/D3909M, *Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules*

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*

ASTM E2632/E2632M, *Standard Test Method for Evaluating the Under-Deck Fire Test Response of Deck Materials*

ASTM E2707, *Standard Test Method for Determining Fire Penetration of Exterior Wall Assemblies Using a Direct Flame Impingement Exposure*

ASTM E2726/E2726M, *Standard Test Method for Evaluating the Fire-Test-Response of Deck Structures to Burning Brands*

ASTM E2768 *Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30-minute Tunnel Test)*

ASTM E2886/E2886M, *Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct Flame Impingement*

ASTM E2957, *Standard Test Method for Resistance to Wildfire Penetration of Eaves, Soffits and Other Projections*

NFPA 257, *Standard on Fire Test for Window and Glass Block Assemblies*

UL 263, *Standard for Fire Tests of Building Construction and Materials*

UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*

SECTION R337.4
IGNITION-RESISTANT CONSTRUCTION

R337.4.1 General. *The materials prescribed herein for ignition resistance shall conform to the requirements of Section R337.*

R337.4.2 Ignition-resistant materials. *Ignition-resistant materials shall comply with one of the following:*

1. *The requirements in Section R337.4.3 or*
2. *One of the alternative methods in Section R337.4.4.*

R337.4.3 Conditions of acceptance for ignition-resistant materials*. The material shall comply with the conditions of acceptance in Items 1 and 2 below or with the conditions of acceptance of ASTM E2768.*

1. *The material shall exhibit a listed flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.*
2. *Additionally, the ASTM E84 or UL 723 test shall be continued for an additional 20-minute period, and the material shall exhibit a flame front that does not progress more than $10^{1}/_{2}$ feet (3200 mm) beyond the centerline of the burner at any time during the test period.*

R337.4.3.1 Fire testing of wood structural panels. *Wood structural panels shall be tested with a ripped or cut longitudinal gap of $^{1}/_{8}$ inch (3.2 mm).*

R337.4.4 Alternative methods for determining ignition-resistant material. *Any one of the following shall be accepted as meeting the definition of ignition-resistant material:*

1. *Noncombustible material. Material that complies with the definition for noncombustible materials in Section R202.*
2. *Fire-retardant-treated wood. Fire-retardant-treated wood identified for exterior use that complies with the requirements of Section 2303.2 of the California Building Code.*
3. *Fire-retardant-treated wood shingles and shakes. Fire-retardant-treated wood shingles and shakes, as defined in Section 1505.6 of the California Building Code and listed by State Fire Marshal for use as "Class B" roof covering, shall be accepted as an Ignition-resistant wall covering material when installed over solid sheathing.*

SECTION R337.5
ROOFING

R337.5.1 General. *Roofs shall comply with the requirements of Sections R337 and R902. Roof assemblies in Fire Hazard Severity Zones shall be tested in accordance with ASTM E108 or UL790 and meet a Class A fire classification. For additional compliance see Section R902 for Class A roof assemblies. The roof assembly shall be installed in accordance with its listing and the manufacturer's installation instructions.*

The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any 1-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure shall be a fire-retardant roof covering that is at least Class A rating fire classification.

R337.5.2 Roof covering voids. *Where there is a void under the roof covering, it shall comply with R337.5.2.1 or R337.5.2.2.*

R337.5.2.1 Airspace under roof covering. *Where the roofing profile has an airspace under the roof covering, installed over a combustible deck, a 72 lb. (32.7kg) cap sheet complying with ASTM D3909 Standard Specification for "Asphalt Rolled Roofing (Glass Felt) Surfaced with Mineral Granules," shall be installed over the roof deck. Bird stops shall be used at the eaves when the profile fits, to prevent debris at the eave. Hip and ridge caps shall be mudded in to prevent intrusion of fire or embers.*

> ***Exception:*** *Cap sheet is not required when no less than 1 inch of mineral wool board or other noncombustible material is located between the roofing material and wood framing or deck.*

R337.5.2.2 Roof underlayment. *A Class A fire classification roof underlayment, tested in accordance with ASTM E108 or UL 790, shall be permitted to be used. If the sheathing consists of exterior fire-retardant-treated wood, the underlayment shall not be required to comply with a Class A classification. Bird stops shall be used at the eaves when the profile fits, to prevent debris at the eave. Hip and ridge caps shall be mudded in to prevent intrusion of fire or embers.*

R337.5.3 Roof valleys. *Where valley flashing is installed, the flashing shall be not less than 0.019-inch (0.48 mm) No. 26 gage galvanized sheet corrosion-resistant metal installed over not less than one layer of minimum 72-pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909, at least 36-inch-wide (914 mm) running the full length of the valley.*

R337.5.4 Roof gutters. *Roof gutters shall be provided with the means to prevent the accumulation of leaves and debris in the gutter.*

SECTION R337.6
VENTS

R337.6.1 General. *Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical plane, shall be in accordance with Section 1202 of the California Building Code and Sections R337.6.1 through R337.6.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings.*

R337.6.2 Requirements. *Ventilation openings shall be fully covered with Wildfire Flame and Ember Resistant vents approved and listed by the California State Fire Marshal, or WUI vents tested to ASTM E2886 and listed, by complying with all of the following requirements:*

1. *There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.*
2. *There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.*
3. *The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).*

R337.6.2.1 Off ridge and ridge vents. *Vents that are installed on a sloped roof, such as dormer vents, shall comply with all the following:*

1. *Vents shall be covered with a mesh where the dimensions of the mesh therein shall be a minimum of $^{1}/_{16}$ inch (1.6 mm) and shall not exceed $^{1}/_{8}$ inch (3.2 mm) in diameter.*
2. *The mesh material shall be noncombustible.*
3. *The mesh material shall be corrosion resistant.*

SECTION R337.7
EXTERIOR COVERING

R337.7.1 Scope. *The provisions of this section shall govern the materials and construction methods used to resist building ignition and/or safeguard against the intrusion of flames resulting from small ember and short-term direct flame contact exposure.*

R337.7.2 General. *The following exterior covering materials and/or assemblies shall comply with this section:*

1. *Exterior wall coverings.*
2. *Exterior wall assemblies.*
3. *Exterior exposed underside of roof eave overhangs.*
4. *Exterior exposed underside of roof eave soffits.*
5. *Exposed underside of exterior porch ceilings.*
6. *Exterior exposed underside of floor projections.*

7. *Exterior underfloor areas.*

Exceptions to Section R337.7.2:

1. *Exterior wall architectural trim, embellishments, fascias and gutters.*
2. *Roof or wall top cornice projections and similar assemblies.*
3. *Deck walking surfaces shall comply with Section R337.9 only.*

R337.7.3 Exterior wall coverings. *The exterior wall covering shall comply with one or more of the following requirements, except as permitted for exterior wall assemblies complying with Section R337.7.4:*

1. *Noncombustible material.*
2. *Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section R337.4.2.*
3. *Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the California Building Code.*

R337.7.3.1 Extent of exterior wall covering. *Exterior wall coverings shall extend from the top of the foundation to the roof, and terminate at 2 inch (50.8 mm) nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.*

R337.7.4 Exterior wall assemblies*. Exterior wall assemblies of buildings or structures shall be constructed using one or more of the following methods, unless they are covered by an exterior wall covering complying with Section R337.7.3:*

1. *Assembly of sawn lumber or glue-laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). Sawn or glue-laminated planks splined, tongue-and-grove, or set close together and well spiked.*
2. *Log wall construction assembly.*
3. *Assembly that has been tested in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in ASTM E2707 with the conditions of acceptance shown in Section R337.7.4.1.*
4. *Assembly that meets the performance criteria in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in SFM Standard 12-7A-1.*
5. *Assembly suitable for exterior fire exposure with a 1-hour fire-resistance rating, rated from the exterior side, as tested in accordance with ASTM E119 or UL 263.*
6. *Assembly suitable for exterior fire exposure containing one layer of $^{5}/_{8}$-inch (16 mm) Type X gypsum sheathing applied behind the exterior wall covering or cladding on the exterior side of the framing.*
7. *Assembly suitable for exterior fire exposure containing any of the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual as complying with a 1-hour fire-resistance rating, as tested in accordance with ASTM E119 or UL 263.*

R337.7.4.1 Conditions of acceptance when tested in accordance with ASTM E2707. *The ASTM E2707 test shall be conducted on a minimum of three test specimens, and the conditions of acceptance in Items 1 and 2 below shall be met. If any one of the three tests do not meet the conditions of acceptance, three additional tests shall be run. All the additional tests shall meet the conditions of acceptance.*

1. *Absence of flame penetration through the wall assembly at any time.*
2. *Absence of evidence of glowing combustion on the interior surface of the assembly at the end of the 70-minute test.*

R337.7.5 Open roof eaves. *The exposed roof deck on the underside of unenclosed roof eaves shall consist of one or more of the following:*

1. *Noncombustible material.*
2. *Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section 704A.2.*
3. *Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the California Building Code.*
4. *Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.*
5. *One layer of $^{5}/_{8}$-inch (16 mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the roof deck.*
6. *The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119 or UL 263, applied to the underside of the roof deck designed for exterior fire exposure, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.*

R337.7.6 Enclosed roof eaves and roof eave soffits. *The exposed underside of enclosed roof eaves having either a boxed-in roof eave soffit with a horizontal underside, or sloping rafter tails with an exterior covering applied to the underside of the rafter tails, shall be protected by one or more of the following:*

1. *Noncombustible material.*
2. *Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section R337.4.2.*
3. *Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and*

shall meet the requirements of Section 2303.2 of the California Building Code.

4. *Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.*
5. *One layer of $^{5}/_{8}$-inch (16 mm) Type X gypsum sheathing applied behind the exterior covering or cladding on the underside of the rafter tails or soffit.*
6. *The exterior portion of a 1-hour fire resistive exterior assembly applied to the underside of the rafter tails or soffit, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.*
7. *Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in Section R337.7.11 when tested in accordance with the test procedures set forth in ASTM E2957.*
8. *Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.*

R337.7.7 Exterior porch ceilings. *The exposed underside of exterior porch ceilings shall be protected by one or more of the following:*

1. *Noncombustible material.*
2. *Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section R337.4.2.*
3. *Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the California Building Code.*
4. *Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.*
5. *One layer of $^{5}/_{8}$-inch (16 mm) Type X gypsum sheathing applied behind the exterior covering on the underside of the ceiling.*
6. *The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119, applied to the underside of the ceiling assembly, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.*
7. *Porch ceiling assemblies with a horizontal underside that meet the performance criteria in Section R337.7.11 when tested in accordance with the test procedures set forth in ASTM E2957.*
8. *Porch ceiling assemblies with a horizontal underside that meet the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.*

R337.7.8 Floor projections. *The exposed underside of a cantilevered floor projection where a floor assembly extends over an exterior wall shall be protected by one or more of the following:*

1. *Noncombustible material.*
2. *Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section R337.4.2.*
3. *Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the California Building Code.*
4. *Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.*
5. *One layer of $^{5}/_{8}$-inch (16 mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the floor projection.*
6. *The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119 or UL 263, applied to the underside of the floor projection, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.*
7. *The underside of a floor assembly that meets the performance criteria in Section R337.7.11 when tested in accordance with the test procedures set forth in ASTM E2957.*
8. *The underside of a floor assembly that meets the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.*

R337.7.9 Underfloor protection. *The underfloor area of elevated or overhanging buildings shall be enclosed to grade in accordance with the requirements of this chapter or the underside of the exposed underfloor shall be protected by one or more of the following:*

1. *Noncombustible material.*
2. *Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section R337.4.2.*
3. *Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the California Building Code.*
4. *Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.*
5. *One layer of $^{5}/_{8}$-inch (16 mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the floor projection.*
6. *The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119 or UL 263, applied to the underside of the floor, including assemblies using the gyp-*

sum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.

7. *The underside of a floor assembly that meets the performance criteria in Section R337.7.11 when tested in accordance with the test procedures set forth in ASTM E2957.*
8. *The underside of a floor assembly that meets the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.*

Exception to Section R337.7.9: *Structural columns and beams do not require protection when they are constructed with sawn lumber or glue laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). Sawn or glue-laminated planks shall be splined, tongue-and-grove, or set close together and well spiked.*

R337.7.10 Underside of appendages. *When required by the enforcing agency the underside of overhanging appendages shall be enclosed to grade in accordance with the requirements of this chapter or the underside of the exposed underfloor shall be protected by one or more of the following:*

1. *Noncombustible material.*
2. *Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section R337.7.2.*
3. *Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the California Building Code.*
4. *Materials approved for not less than 1-hour fire-resistance-rated construction on the exterior side, as tested in accordance with ASTM E119 or UL 263.*
5. *One layer of $^{5}/_{8}$-inch (16 mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the appendage projection.*
6. *The exterior portion of a 1-hour fire-resistance-rated exterior assembly, as tested in accordance with ASTM E119 or UL 263, applied to the underside of the appendage, including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.*
7. *The underside of an appendage assembly that meets the performance criteria in Section R337.7.11 when tested in accordance with the test procedures set forth in ASTM E2957.*
8. *The underside of an appendage assembly that meets the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.*

Exception to Section R337.7.10: *Structural columns and beams do not require protection when they are constructed with sawn lumber or glue-laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). Sawn or glue-laminated planks shall be splined, tongue-and-grove, or set close together and well spiked.*

R337.7.11 Conditions of acceptance when tested in accordance with ASTM E2957. *The test shall be conducted on a minimum of three test specimens and the conditions of acceptance in 1 through 3 below shall be met. If any one of the three tests does not meet the conditions of acceptance, three additional tests shall be run. All of the additional tests shall meet the conditions of acceptance.*

1. *Absence of flame penetration of the eaves or horizontal projection assembly at any time.*
2. *Absence of structural failure of the eaves or horizontal projection subassembly at any time.*
3. *Absence of sustained combustion of any kind at the conclusion of the 40-minute test.*

SECTION R337.8
EXTERIOR WINDOWS, SKYLIGHTS AND DOORS

R337.8.1 General.

R337.8.2 Exterior glazing. *The following exterior glazing materials and/or assemblies shall comply with this section:*

1. *Exterior windows.*
2. *Exterior glazed doors.*
3. *Glazed openings within exterior doors.*
4. *Glazed openings within exterior garage doors.*
5. *Exterior structural glass veneer.*
6. *Skylights.*
7. *Vents.*

R337.8.2.1 Exterior windows, skylights and exterior glazed door assembly requirements. *Exterior windows, skylights and exterior glazed door assemblies shall comply with one of the following requirements:*

1. *Be constructed of multipane glazing with a minimum of one tempered pane meeting the requirements of Section R308 Safety Glazing, or*
2. *Be constructed of glass block units, or*
3. *Have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 257, or*
4. *Be tested to meet the performance requirements of SFM Standard 12-7A-2.*

R337.8.2.2 Operable skylights. *Operable skylights shall be protected by a noncombustible mesh screen where the dimensions of the openings in the screen shall not exceed $^{1}/_{8}$ inch (3.2 mm).*

R337.8.2.3 Structural glass veneer. *The wall assembly behind structural glass veneer shall comply with Section R337.7.3 Exterior walls.*

R337.8.3 Exterior doors. *Exterior doors shall comply with one of the following:*

1. *The exterior surface or cladding shall be of noncombustible material, or*

2. *The exterior surface or cladding shall be of ignition-resistant material, or*
3. *The exterior door shall be constructed of solid core wood that complies with the following requirements:*
    3.1. *Stiles and rails shall not be less than $1^3/_8$ inches thick.*
    3.2. *Panels shall not be less than $1^1/_4$ inches thick, except for the exterior perimeter of the panel that shall be permitted to taper to a tongue not less than $^3/_8$ inch thick.*
4. *The exterior door assembly shall have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 252.*
5. *The exterior surface or cladding shall be tested to meet the performance requirements of Section R337.7.3.1 when tested in accordance with ASTM E2707.*
6. *The exterior surface or cladding shall be tested to meet the performance requirements of SFM Standard 12-7A-1.*

R337.8.3.1 Exterior door glazing. *Glazing in exterior doors shall comply with Section R337.8.2.1.*

R337.8.4 Garage door perimeter gap. *Exterior garage doors shall resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the bottom, sides and tops of doors, from exceeding $^1/_8$ inch (3.2 mm). Gaps between doors and door openings shall be controlled by one of the following methods:*

1. *Weather stripping products made of materials that: (a) have been tested for tensile strength in accordance with ASTM D638 (Standard Test Method for Tensile Properties of Plastics) after exposure to ASTM G155 (Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials) for a period of 2,000 hours, where the maximum allowable difference in tensile strength values between exposed and nonexposed samples does not exceed 10 percent and (b) exhibit a V-2 or better flammability rating when tested to UL 94, Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.*
2. *Door overlaps onto jambs and headers.*
3. *Garage door jambs and headers covered with metal flashing.*

SECTION R337.9
DECKING

R337.9.1 General. *The walking surface material of decks, porches, balconies and stairs shall comply with the requirements of this section.*

R337.9.1.1 Flashing. *A minimum of a 6-inch (150 mm) metal flashing, applied vertically on the exterior of the wall, shall be installed at all deck-to-wall intersections.*

R337.9.2 Where required. *The walking surface material of decks, porches, balconies and stairs shall comply with the requirements of this section when any portion of such surface is within 10 feet (3048 mm) of the building.*

R337.9.3 Decking surfaces. *The walking surface material of decks, porches, balconies and stairs shall be constructed with one of the following materials:*

1. *Material that complies with the performance requirements of Section R337.9.4 when tested in accordance with both ASTM E2632 and ASTM E2726.*
2. *Ignition-resistant material that complies with the performance requirements of Section R337.9.4.*
3. *Material that complies with the performance requirements of both SFM Standard 12-7A-4 and Section R337.4.3.*
4. *Exterior fire-retardant-treated wood.*
5. *Noncombustible material.*
6. *Any material that complies with the performance requirements of SFM Standard 12-7A-4A when attached exterior wall covering is also composed of noncombustible or ignition-resistant material.*

    Exception: *Wall material shall be permitted to be of any material that otherwise complies with this chapter when the decking surface material complies with the performance requirements ASTM E84 with a Class B flame spread index.*
7. *Any material that complies with the performance requirements of Section R337.9.5 when tested in accordance with ASTM E2632 and when attached exterior wall covering is also composed of only noncombustible or ignition-resistant materials.*

    Exception*: Wall material shall be permitted to be of any material that otherwise complies with this chapter when the decking surface material complies with the performance requirements ASTM E84 with a Class B flame spread index.*

R337.9.4 Requirements for type of material in Section R337.9.3, Item 1. *The material shall be tested in accordance with both ASTM E2632 and ASTM E2726 and shall comply with the conditions of acceptance in Sections R337.9.4.1 and R337.9.4.2. The material shall also be tested in accordance with ASTM E84 or UL 723 and comply with the performance requirements of Section R337.4.3.*

R337.9.4.1 Conditions of acceptance for ASTM E2632. *The ASTM E2632 test shall be conducted on a minimum of three test specimens and the conditions of acceptance in Items 1 through 3 below shall be met. If any one of the three tests does not meet the conditions of acceptance, three additional tests shall be run. All of the additional tests shall meet the conditions of acceptance.*

1. *Peak heat release rate of less than or equal to 25 kW/ft^2 (269 kW/m^2).*
2. *Absence of sustained flaming or glowing combustion of any kind at the conclusion of the 40-minute observation period.*

3. *Absence of falling particles that are still burning when reaching the burner or floor.*

R337.9.4.2 Conditions of acceptance for ASTM E2726. *The ASTM E2726 test shall be conducted, using a "Class A" size roof test brand, on a minimum of three test specimens and the conditions of acceptance in Items 1 and 2 below shall be met. If any one of the three test specimens does not meet the conditions of acceptance, three additional tests shall be run. All of the additional tests shall meet the conditions of acceptance.*

1. *Absence of sustained flaming or glowing combustion of any kind at the conclusion of the 40-minute observation period.*
2. *Absence of falling particles that are still burning when reaching the burner or floor.*

R337.9.5 Requirements for type of material in Section R337.9.3, Item 7. *The material shall be tested in accordance with ASTM E2632 and shall comply with the following condition of acceptance. The ASTM E2632 test shall be conducted on a minimum of three test specimens and the peak heat release rate shall be less than or equal to 25 kW/ft ^{2} (269 kW/m^2). If any one of the three tests does not meet the conditions of acceptance, three additional tests shall be run. All the additional tests shall meet the condition of acceptance.*

SECTION R337.10
ACCESSORY BUILDINGS AND MISCELLANEOUS STRUCTURES

R337.10.1 General. *Group U occupancy accessory buildings and miscellaneous structures that have the potential to pose a significant exterior fire exposure hazard during wildfires shall be constructed to conform to the ignition-resistance requirements of this section.*

R337.10.2 Applicability. *Unless otherwise addressed by the exceptions of Section R337.1.3, the provisions of this section shall apply to buildings accessory to an applicable building on the same lot. This section shall also apply to attached and detached miscellaneous structures that require a building permit, including but not limited to; trellises, arbors, patio covers, gazebos and similar structures.*

Exceptions:

1. *Decks shall comply with the requirements of Section R337.9.*
2. *Awnings and canopies shall comply with the requirements of Section 3105 of the California Building Code.*

R337.10.3 Where required. *Miscellaneous structures that require a permit, and accessory buildings of any size, when separated from an applicable building on the same lot by a distance of less than 3 feet (914 mm), shall comply with Section R337.10.3.1. Accessory buildings that are greater than 120 square feet (11 m^2), when separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m) shall comply with Section R337.10.3.2.*

When required by the enforcing agency, miscellaneous structures that require a permit, and accessory buildings that are 120 square feet (11 m^2) or less, when separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m), shall comply with either Section R337.10.3.4 or Section R337.10.3.3, respectively.

No requirements shall apply to accessory buildings or miscellaneous structures when located 50 feet (15 m) or more from an applicable building on the same lot.

R337.10.3.1 Structures and accessory buildings within 3 feet (914 mm). *Miscellaneous structures that require a permit, and accessory buildings attached to or separated from an applicable building on the same lot by a distance of less than 3 feet (914 mm) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section R337.4.2.*

R337.10.3.2 Accessory buildings greater than 120 square feet (11 m^2), located 3 feet (914 mm) or more but less than 50 feet (15 m). *Accessory buildings that are greater than 120 square feet (11 m^2) in size and separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section R337.4.2.*

R337.10.3.3 Accessory buildings 120 square feet (11 m^2) or less, located 3 feet (914 mm) or more but less than 50 feet (15 m). *When required by the enforcing agency, accessory buildings 120 square feet (11 m^2) or less and separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section R337.4.2.*

R337.10.3.4 Miscellaneous structures located 3 feet (914 mm) or more but less than 50 feet (15 m). *When required by the enforcing agency, miscellaneous structures that require a permit and are separated from an applicable building on the same lot by a distance of 3 feet (914 mm) or more but less than 50 feet (15 m) shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section R337.4.3.*

R337.10.4 Roof construction. *Roofs of accessory buildings required to be constructed entirely of noncombustible materials or of ignition-resistant materials shall comply with the requirements of Section 337 and Chapter 9. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions. Roof assemblies in Fire Hazard Severity Zones shall comply with a Class A rating when tested in accordance with ASTM E108 or UL 790.*

SECTION R337.11
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*

SECTION R338
ELECTRIC VEHICLE

R338.1 Electric vehicle. *An automotive-type vehicle for highway use, such as passenger automobiles, buses, trucks, vans and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array or other source of electric current. For the purpose of this chapter, electric motorcycles and similar type vehicles and off-road self-propelled electric vehicles such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats and the like, are not included.*

R338.2 Charging. *In any building or interior area used for charging electric vehicles, electrical equipment shall be installed in accordance with the California Electrical Code.*

R338.3 Ventilation. *Mechanical exhaust ventilation, when required by the California Electrical Code shall be provided at a rate as required by Article 625 or as required by Section 1203 of the California Building Code whichever is greater. The ventilation system shall include both the supply and exhaust equipment and shall be permanently installed and located to intake supply air from the outdoors, and vent the*

exhaust directly to, the outdoors without conducting the exhaust air through other spaces within the building.

Exception: *Positive pressure ventilation systems shall only be allowed in buildings or areas that have been designed and approved for that application.*

R338.4 Electrical interface. *The electrical supply circuit to electrically powered mechanical ventilation equipment shall be interlocked with the recharging equipment used to supply the vehicle(s) being charged, and shall remain energized during the entire charging cycle. Electric vehicle recharging equipment shall be marked or labeled in accordance with the California Electrical Code.*

Exceptions:

1. *Exhaust ventilation shall not be required in areas with an approved engineered ventilation system, which maintains a hydrogen gas concentration at less than 25 percent of the lower flammability limit.*
2. *Mechanical exhaust ventilation for hydrogen shall not be required where the charging equipment utilized is installed and listed for indoor charging of electric vehicles without ventilation.*

SECTION R340
POLLUTANT CONTROL

R340.1 Finish material pollutant control. *Finish materials including adhesives, sealants, caulks, paints and coatings, aerosol paints and coatings, carpet systems, carpet cushion, carpet adhesive, resilient flooring systems and composite wood products shall meet the volatile organic compound (VOC) emission limits in accordance with the California Green Building Standards Code, Chapter 4, Division 4.5.*

R703.8.3 Lintels. Masonry veneer shall not support any vertical load other than the dead load of the veneer above. Veneer above openings shall be supported on lintels of noncombustible materials. The lintels shall have a length of bearing not less than 4 inches (102 mm). Steel lintels shall be shop coated with a rust-inhibitive paint, except for lintels made of corrosion-resistant steel or steel treated with coatings to provide corrosion resistance. Construction of openings shall comply with either Section R703.8.3.1 or 703.8.3.2.

R703.8.3.1 Allowable span. The allowable span shall not exceed the values set forth in Table R703.8.3.1.

R703.8.3.2 Maximum span. The allowable span shall not exceed 18 feet 3 inches (5562 mm) and shall be constructed to comply with Figure R703.8.3.2 and the following:

1. Provide a minimum length of 18 inches (457 mm) of masonry veneer on each side of opening as shown in Figure R703.8.3.2.
2. Provide a minimum 5-inch by $3^1/_2$-inch by $^5/_{16}$-inch (127 mm by 89 mm by 7.9 mm) steel angle above the opening and shore for a minimum of 7 days after installation.
3. Provide double-wire joint reinforcement extending 12 inches (305 mm) beyond each side of the opening. Lap splices of joint reinforcement not less than 12 inches (305 mm). Comply with one of the following:
    3.1. Double-wire joint reinforcement shall be $^3/_{16}$-inch (4.8 mm) diameter and shall be placed in the first two bed joints above the opening.
    3.2. Double-wire joint reinforcement shall be 9 gauge (0.144 inch or 3.66 mm diameter) and shall be placed in the first three bed joints above the opening.
4. Provide the height of masonry veneer above opening, in accordance with Table R703.8.3.2.

R703.8.4 Anchorage. Masonry veneer shall be anchored to the supporting wall studs with corrosion-resistant metal ties embedded in mortar or grout and extending into the veneer a minimum of $1^1/_2$ inches (38 mm), with not less than $^5/_8$-inch (15.9 mm) mortar or grout cover to outside face. Masonry veneer shall conform to Table R703.8.4(1). Where the masonry veneer tie attachment is fastened to wood structural panel not less than 7/16 performance category through insulating sheathing not greater than 2 inches (51 mm) in thickness, see Table R703.8.4(2). Where Table R703.8.4(2) is used, attachment to the studs behind the sheathing is not required.

TABLE R703.8.3.2
HEIGHT OF MASONRY VENEER ABOVE OPENING

MINIMUM HEIGHT OF MASONRY VENEER ABOVE OPENING (inches)	MAXIMUM HEIGHT OF MASONRY VENEER ABOVE OPENING (feet)
13	< 5
24	5 to < 12
60	12 to height above support allowed by Section R703.8

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

R703.8.4.1 Size and spacing. Veneer ties, if strand wire, shall be not less in thickness than No. 9 U.S. gage [(0.148 inch) (4 mm)] wire and shall have a hook embedded in the mortar joint, or if sheet metal, shall be not less than No. 22 U.S. gage by [(0.0299 inch) (0.76 mm)] $^7/_8$ inch (22 mm) corrugated. Each tie shall support not more than 2.67 square feet (0.25 m^2) of wall area and shall be spaced not more than 32 inches (813 mm) on center horizontally and 24 inches (635 mm) on center vertically.

Exception: In Seismic Design Category D_0, D_1 or D_2 or townhouses in Seismic Design Category C or in wind areas of more than 30 pounds per square foot pressure (1.44 kPa), each tie shall support not more than 2 square feet (0.2 m^2) of wall area.

R703.8.4.1.1 Veneer ties around wall openings. Additional metal ties shall be provided around wall openings greater than 16 inches (406 mm) in either dimension. Metal ties around the perimeter of openings shall be spaced not more than 3 feet (9144 mm) on center and placed within 12 inches (305 mm) of the wall opening.

TABLE R703.8.3.1
ALLOWABLE SPANS FOR LINTELS SUPPORTING MASONRY VENEER[a, b, c, d]

SIZE OF STEEL ANGLE[a, c, d] (inches)	NO STORY ABOVE	ONE STORY ABOVE	TWO STORIES ABOVE	NO. OF $^1/_2$-INCH OR EQUIVALENT REINFORCING BARS IN REINFORCED LINTEL[b, d]
$3 \times 3 \times {}^1/_4$	6′-0″	4′-6″	3′-0″	1
$4 \times 3 \times {}^1/_4$	8′-0″	6′-0″	4′-6″	1
$5 \times 3^1/_2 \times {}^5/_{16}$	10′-0″	8′-0″	6′-0″	2
$6 \times 3^1/_2 \times {}^5/_{16}$	14′-0″	9′-6″	7′-0″	2
2-6 $\times 3^1/_2 \times {}^5/_{16}$	20′-0″	12′-0″	9′-6″	4

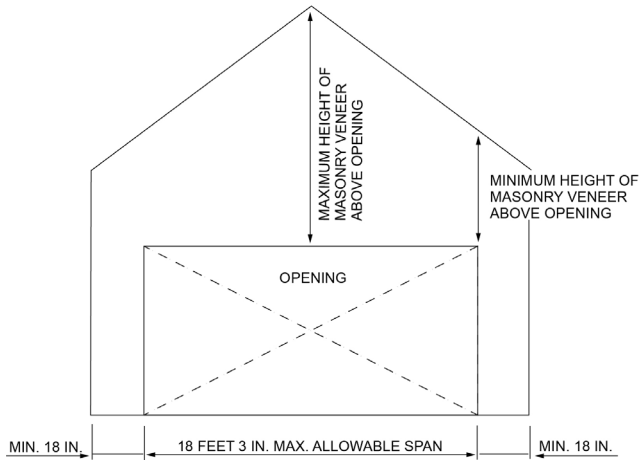
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Long leg of the angle shall be placed in a vertical position.

b. Depth of reinforced lintels shall be not less than 8 inches and all cells of hollow masonry lintels shall be grouted solid. Reinforcing bars shall extend not less than 8 inches into the support.

c. Steel members indicated are adequate typical examples; other steel members meeting structural design requirements shall be permitted to be used.

d. Either steel angle or reinforced lintel shall span opening.



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R703.8.3.2
MASONRY VENEER OPENING

R703.8.4.2 Grout fill. As an alternative to the airspace required by Table R703.8.4(1), grout shall be permitted to fill the airspace. Where the airspace is filled with grout, a water-resistive barrier is required over studs or sheathing. Where the airspace is filled, replacing the sheathing and water-resistive barrier with a wire mesh and approved water-resistive barrier or an approved water-resistive barrier-backed reinforcement attached directly to the studs is permitted.

R703.8.5 Flashing. Flashing shall be located beneath the first course of masonry above finished ground level above the foundation wall or slab and at other points of support, including structural floors, shelf angles and lintels where masonry veneers are designed in accordance with Section R703.8. See Section R703.4 for additional requirements.

R703.8.6 Weepholes. Weepholes shall be provided in the outside wythe of masonry walls at a maximum spacing of 33 inches (838 mm) on center. Weepholes shall be not less than $^{3}/_{16}$ inch (5 mm) in diameter. Weepholes shall be located immediately above the flashing.

R703.9 Exterior insulation and finish system (EIFS)/EIFS with drainage. Exterior insulation and finish systems (EIFS) shall comply with this chapter and Section R703.9.1. EIFS with drainage shall comply with this chapter and Section R703.9.2.

R703.9.1 Exterior insulation and finish systems (EIFS). EIFS shall comply with the following:

1. ASTM E2568.
2. EIFS shall be limited to applications over substrates of concrete or masonry wall assemblies.
3. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.4.
4. EIFS shall be installed in accordance with the manufacturer's instructions.
5. EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.
6. Decorative trim shall not be face-nailed through the EIFS.

TABLE R703.8.4(1)
TIE ATTACHMENT AND AIRSPACE REQUIREMENTS

BACKING AND TIE	MINIMUM TIE	MINIMUM TIE FASTENER[a]	AIRSPACE[b]	
Wood stud backing with corrugated sheet metal	22 U.S. gage (0.0299 in.) × $^{7}/_{8}$ in. wide	8d common nail[c] ($2^{1}/_{2}$ in. × 0.131 in.)	Nominal 1 in. between sheathing and veneer	
Wood stud backing with adjustable metal strand wire	W1.7 (No. 9 U.S. gage; 0.148 in. dia.) with hook embedded in mortar joint[d]	8d common nail[c] ($2^{1}/_{2}$ in. × 0.131 in.)	Minimum nominal 1 in. between sheathing and veneer	Maximum $4^{5}/_{8}$ in. between backing and veneer
Wood stud backing with adjustable metal strand wire	W2.8 (0.187 in. dia.) with hook embedded in mortar joint[e, f]	8d common nail[c] ($2^{1}/_{2}$ in. × 0.131 in.)	Greater than $4^{5}/_{8}$ in. between backing and veneer	Maximum $6^{5}/_{8}$ in. between backing and veneer
Cold-formed steel stud backing with adjustable metal strand wire	W1.7 (No. 9 U.S. gage; 0.148 in. dia.) with hook embedded in mortar joint[d]	No. 10 screw extending through the steel framing a minimum of three exposed threads	Minimum nominal 1 in. between sheathing and veneer	Maximum $4^{5}/_{8}$ in. between backing and veneer
Cold-formed steel stud backing with adjustable metal strand wire	W2.8 (0.187 in. dia.) with hook embedded in mortar joint[e, f]	No. 10 screw extending through the steel framing a minimum of three exposed threads	Greater than $4^{5}/_{8}$ in. between backing and veneer	Maximum $6^{5}/_{8}$ in. between backing and veneer

For SI: 1 inch = 25.4 mm.

a. All fasteners shall have rust-inhibitive coating suitable for the installation in which they are being used, or be manufactured from material not susceptible to corrosion.

b. An airspace that provides drainage shall be permitted to contain mortar from construction.

c. In Seismic Design Category D_0, D_1 or D_2, the minimum tie fastener shall be an 8d ring-shank nail ($2^{1}/_{2}$ in. × 0.131 in.).

d. Adjustable tie pintles shall include not fewer than 1 pintle leg of wire size W2.8 (MW18) with a maximum offset of $1^{1}/_{4}$ inches.

e. Adjustable tie pintles shall include not fewer than 2 pintle legs with a maximum offset of $1^{1}/_{4}$ inches. Distance between inside face of brick and end of pintle shall be a maximum of 2 inches.

f. Adjustable tie backing attachment components shall consist of one of the following: eyes with minimum wire W2.8 (MW18), barrel with minimum $^{1}/_{4}$-inch outside diameter, or plate with minimum thickness of 0.074 inch and minimum width of $1^{1}/_{4}$ inches.

TABLE R802.11—continued
RAFTER OR TRUSS UPLIFT CONNECTION FORCES FROM WIND (ASD) (POUNDS PER CONNECTION)[a, b, c, d, e, f, g, h]

RAFTER OR TRUSS SPACING	ROOF SPAN (feet)	EXPOSURE C									
		Ultimate Design Wind Speed V_{ULT} (mph)									
		110		115		120		130		140	
		Roof Pitch		Roof Pitch		Roof Pitch		Roof Pitch		Roof Pitch	
		< 5:12	≥ 5:12	< 5:12	≥ 5:12	< 5:12	≥ 5:12	< 5:12	≥ 5:12	< 5:12	≥ 5:12
24″ o.c.	12	190	176	220	204	252	236	322	302	396	372
	18	242	222	282	262	326	302	416	390	514	484
	24	296	272	346	320	400	370	512	478	634	596
	28	332	304	390	358	450	416	578	538	716	670
	32	368	336	432	398	498	462	642	598	796	746
	36	404	370	474	438	548	508	706	658	876	822
	42	458	420	538	496	624	578	804	750	998	936
	48	512	468	604	556	698	646	900	840	1,120	1,048

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound = 0.454 kg, 1 pound per square foot = 47.9 N/m^2, 1 pound per linear foot = 14.6 N/m.

a. The uplift connection forces are based on a maximum 33-foot mean roof height and Wind Exposure Category B or C. For Exposure D, the uplift connection force shall be selected from the Exposure C portion of the table using the next highest tabulated ultimate design wind speed. The adjustment coefficients in Table R301.2.1(2) shall not be used to multiply the tabulated forces for Exposures C and D or for other mean roof heights.

b. The uplift connection forces include an allowance for roof and ceiling assembly dead load of 15 psf.

c. The tabulated uplift connection forces are limited to a maximum roof overhang of 24 inches.

d. The tabulated uplift connection forces shall be permitted to be multiplied by 0.75 for connections not located within 8 feet of building corners.

e. For buildings with hip roofs with 5:12 and greater pitch, the tabulated uplift connection forces shall be permitted to be multiplied by 0.70. This reduction shall not be combined with any other reduction in tabulated forces.

f. For wall-to-wall and wall-to-foundation connections, the uplift connection force shall be permitted to be reduced by 60 pounds per linear foot for each full wall above.

g. Linear interpolation between tabulated roof spans and wind speeds shall be permitted.

h. The tabulated forces for a 12-inch on-center spacing shall be permitted to be used to determine the uplift load in pounds per linear foot.

SECTION R803
ROOF SHEATHING

R803.1 Lumber sheathing. Allowable spans for lumber used as roof sheathing shall conform to Table R803.1. Spaced lumber sheathing for wood shingle and shake roofing shall conform to the requirements of Sections R905.7 and R905.8. Spaced lumber sheathing is not allowed in Seismic Design Category D_2.

TABLE R803.1
MINIMUM THICKNESS OF LUMBER ROOF SHEATHING

RAFTER OR BEAM SPACING (inches)	MINIMUM NET THICKNESS (inches)
24	$^5/_8$
48[a]	$1^1/_2$ T & G
60[b]	
72[c]	

For SI: 1 inch = 25.4 mm.
a. Minimum $270F_b$, 340,000E.
b. Minimum $420F_b$, 660,000E.
c. Minimum $600F_b$, 1,150,000E.

R803.2 Wood structural panel sheathing.

R803.2.1 Identification and grade. Wood structural panels shall conform to DOC PS 1, DOC PS 2, CSA O325 or CSA O437, and shall be identified for grade, bond classification and performance category by a grade mark or certificate of inspection issued by an approved agency. Wood structural panels shall comply with the grades specified in Table R503.2.1.1(1).

R803.2.1.1 Exposure durability. Wood structural panels, when designed to be permanently exposed in outdoor applications, shall be of an exterior exposure durability. Wood structural panel roof sheathing exposed to the underside shall be permitted to be of interior type bonded with exterior glue, identified as Exposure 1.

R803.2.1.2 Fire-retardant-treated plywood. The allowable unit stresses for fire-retardant-treated plywood, including fastener values, shall be developed from an approved method of investigation that considers the effects of anticipated temperature and humidity to which the fire-retardant-treated plywood will be subjected, the type of treatment and redrying process. The fire-retardant-treated plywood shall be graded by an approved agency.

R803.2.2 Allowable spans. The maximum allowable spans for wood structural panel roof sheathing shall not exceed the values set forth in Table R503.2.1.1(1) or APA E30.

R803.2.3 Installation. Wood structural panel used as roof sheathing shall be installed with joints staggered or not staggered in accordance with Table R602.3(1), APA E30 for wood roof framing or with Table R804.3 for cold-formed steel roof framing. Wood structural panel roof sheathing in accordance with Table R503.2.1.1(1) shall not cantilever more than 9 inches (229 mm) beyond the gable endwall unless supported by gable overhang framing.

SECTION R804
COLD-FORMED STEEL ROOF FRAMING

R804.1 General. Elements shall be straight and free of any defects that would significantly affect their structural performance. Cold-formed steel roof framing members shall be in accordance with the requirements of this section.

R804.1.1 Applicability limits. The provisions of this section shall control the construction of cold-formed steel roof framing for buildings not greater than 60 feet (18 288 mm) perpendicular to the joist, rafter or truss span, not greater than 40 feet (12 192 mm) in width parallel to the joist span or truss, less than or equal to three stories above grade plane and with roof slopes not less than 3:12 (25-percent slope) or greater than 12:12 (100-percent slope). Cold-formed steel roof framing constructed in accordance with the provisions of this section shall be limited to sites where the ultimate design wind speed is less than 140 miles per hour (63 m/s), Exposure Category B or C, and the ground snow load is less than or equal to 70 pounds per square foot (3350 Pa).

R804.1.1.1 Alternate applications. Cold-formed steel roof and ceiling framing for buildings exceeding the applicability limits of Section R804.1.1 is permitted to be designed and constructed in accordance with AISI S230, subject to the limits therein.

R804.1.2 In-line framing. Cold-formed steel roof framing constructed in accordance with Section R804 shall be located in line with the tolerances specified in AISI S240, Section B1.2.3.

R804.2 Structural framing. Load-bearing, cold-formed steel roof framing members shall be in accordance with this section.

R804.2.1 Material. Load-bearing, cold-formed steel framing members shall be cold formed to shape from structural quality sheet steel complying with the requirements of AISI S240, Section A3.

R804.2.2 Corrosion protection. Load-bearing, cold-formed steel framing shall have a protective coating complying with AISI S240, Section A4.

R804.2.3 Dimension, thickness and material grade. Load-bearing, cold-formed steel roof framing members shall comply with AISI S230, Section A4.3 and material grade requirements as specified in AISI S230, Section A4.4.

R804.2.4 Identification. Load-bearing, cold-formed steel framing members shall meet the product identification requirements of AISI S240, Section A5.5.

CHAPTER 9
ROOF ASSEMBLIES

User note:

About this chapter: *Chapter 9 addresses the design and construction of roof assemblies. A roof assembly includes the roof deck, substrate or thermal barrier, insulation, vapor retarder and roof covering. This chapter provides the requirement for wind resistance of roof coverings. The types of roof covering materials and installation addressed by Chapter 9 are: asphalt shingles, clay and concrete tile, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shakes and shingles, built-up roofs, metal roof panels, modified bitumen roofing, thermoset and thermoplastic single-ply roofing, sprayed polyurethane foam roofing, liquid applied coatings and photovoltaic shingles. Chapter 9 also provides requirements for roof drainage, flashing, above-deck thermal insulation, rooftop-mounted photovoltaic systems and recovering or replacing an existing roof covering.*

SECTION R901
GENERAL

R901.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies.

SECTION R902
FIRE CLASSIFICATION

R902.1 Roof covering materials. Roofs shall be covered with materials as set forth in Sections R904 and R905. *A minimum Class A, B or C roofing shall be installed in areas designated by this section* or where the edge of the roof is less than 3 feet (914 mm) from a lot line. Class A, B and C roofing required by this section to be listed shall be tested in accordance with ASTM E108 or UL 790.

Exceptions:

1. Class A roof assemblies include those with coverings of brick, masonry *or an* exposed concrete roof deck.
2. Class A roof assemblies include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile, or slate installed on noncombustible decks *or ferrous, copper or metal sheets installed without a roof deck on noncombustible framing.*
3. Class A roof assemblies include minimum 16 ounces per square foot (4.882 kg/m^2) copper sheets installed over combustible decks.
4. Class A roof assemblies include slate installed over *ASTM D226, Type II* underlayment over combustible decks.

R902.1.1 Roofing requirements within Fire Hazard Severity Zones or in Wildland-Urban Interface (WUI) area. *Roofing requirements for structures located within Fire Hazard Severity Zones or in a Wildland-Urban Interface (WUI) area shall also comply with Section R337.5.*

R902.1.2 Roof coverings in all other areas other than Fire Hazard Severity Zones or a Wildland-Urban Interface (WUI) area. *The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class C fire classification.*

R902.2 Fire-retardant-treated shingles and shakes. Fire-retardant-treated wood shakes and shingles *are wood shakes and shingles complying with UBC Standard 15-3 or 15-4 which are impregnated by the full-cell vacuum-pressure process with fire-retardant chemicals, and which have been qualified by UBC Standard 15-2 or ASTM E108 or UL 790 for use on Class A, B or C roofs. Fire-retardant-treated wood shakes and shingles shall comply with ICC-ES EG107 and with the weathering requirements contained in Health and Safety Code Section 13132.7 (j). Each bundle shall bear labels from an ICBO accredited quality control agency identifying their roof-covering classification and indicating their compliance with ICC-ES EG107 and with the weathering requirements contained in Health and Safety Code Section 13132.7 (j).*

Health and Safety Code Section 13132.7 (j) No wood roof covering materials shall be sold or applied in this state unless both of the following conditions are met:

(1) The materials have been approved and listed by the State Fire Marshal as complying with the requirements of this section.

(2) The materials have passed at least five years of the 10-year natural weathering test. The 10-year natural weathering test required by this subdivision shall be conducted in accordance with Standard 15-2 of the 1994 edition of the Uniform Building Code at a testing facility recognized by the State Fire Marshal.

R902.3 Building-integrated photovoltaic product. Building-integrated photovoltaic (BIPV) products installed as the roof covering shall be tested, listed and labeled for fire classification in accordance with UL 7103 *[SFM] Section R902.1 through R902.1.3.* Class A, B or C BIPV products shall be installed where the edge of the roof is less than 3 feet (914 mm) from a lot line.

R902.4 Rooftop-mounted photovoltaic *(PV)* panel systems. Rooftop-mounted photovoltaic *(PV)* panel systems

installed on or above the roof covering shall be tested, listed and identified with a fire classification in accordance with UL 2703. *Listed systems shall be installed in accordance with the manufacturer's installation instructions and their listing.* Class A, B or C photovoltaic panel systems and modules shall be installed in jurisdictions designated by law as requiring their use or where the edge of the roof is less than 3 feet (914 mm) from a lot line.

SECTION R903
WEATHER PROTECTION

R903.1 General. Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof assemblies shall be designed and installed in accordance with this code and the approved manufacturer's instructions such that the roof assembly shall serve to protect the building or structure.

R903.2 Flashing. Flashings shall be installed in a manner that prevents moisture from entering the wall and roof through joints in copings, through moisture permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

R903.2.1 Locations. Flashings shall be installed at wall and roof intersections, wherever there is a change in roof slope or direction and around roof openings. A flashing shall be installed to divert the water away from where the eave of a sloped roof intersects a vertical sidewall. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (0.5 mm) (No. 26 galvanized sheet).

R903.2.2 Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration more than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Exception: Unit skylights installed in accordance with Section R308.6 and flashed in accordance with the manufacturer's instructions shall be permitted to be installed without a cricket or saddle.

R903.3 Coping. Parapet walls shall be properly coped with noncombustible, weatherproof materials of a width not less than the thickness of the parapet wall.

R903.4 Roof drainage. Unless roofs are sloped to drain over roof edges, roof drains shall be installed at each low point of the roof.

R903.4.1 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary emergency overflow roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. Overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches (51 mm) above the low point of the roof, or overflow scuppers having three times the size of the roof drains and having a minimum opening height of 4 inches (102 mm) shall be installed in the adjacent parapet walls with the inlet flow located 2 inches (51 mm) above the low point of the roof served. The installation and sizing of overflow drains, leaders and conductors shall comply with the *California Plumbing Code*.

SECTION R904
MATERIALS

R904.1 Scope. The requirements set forth in this section shall apply to the application of roof covering materials specified herein. Roof assemblies shall be applied in accordance with this chapter and the manufacturer's installation instructions. Installation of roof assemblies shall comply with the applicable provisions of Section R905.

R904.2 Compatibility of materials. Roof assemblies shall be of materials that are compatible with each other and with the building or structure to which the materials are applied.

R904.3 Material specifications and physical characteristics. Roof covering materials shall conform to the applicable standards listed in this chapter.

R904.4 Product identification. Roof covering materials shall be delivered in packages bearing the manufacturer's identifying marks and approved testing agency labels required. Bulk shipments of materials shall be accompanied by the same information issued in the form of a certificate or on a bill of lading by the manufacturer.

SECTION R905
REQUIREMENTS FOR ROOF COVERINGS

R905.1 Roof covering application. Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions. Unless otherwise specified in this section, roof coverings shall be installed to resist the component and cladding loads specified in Table R301.2.1(1), adjusted for height and exposure in accordance with Table R301.2.1(2).

R905.1.1 Underlayment. Underlayment for asphalt shingles, clay and concrete tile, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, wood shakes, metal roof panels and photovoltaic shingles shall conform to the applicable standards listed in this chapter. Underlayment materials required to comply with ASTM D226, D1970, D4869 and D6757 shall bear a label indicating compliance to the standard designation and, if applicable, type classification indicated in Table R905.1.1(1). Underlayment shall be applied in accordance with Table R905.1.1(2). Under-

CALIFORNIA RESIDENTIAL CODE – MATRIX ADOPTION TABLE
CHAPTER 44 – 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
				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**	**X**																			
Adopt only those sections that are listed below																							
Chapter / Section																							
AAMA				X																			
ACCA				X																			
ANSI			X	X																			
ASME				X																			
ASTM			X	X																			
ASTM E108-2020a			X																				
CSA				X																			
DASMA				X																			
ICC			X	X																			
IFC-18				X																			
ISO				X																			
NFPA			X	X																			
NFPA 68-*13*			X																				
SFM			X																				
UBC			X																				
UL				X																			
UL 790 Edition 9 2022			X																				
UL 1974-17			X																				
UL 9540-*20*			X																				
UL 9540 Edition 4 2019			X																				
WDMA				X																			

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

Part IX—Referenced Standards

CHAPTER 44

REFERENCED STANDARDS

Notwithstanding California laws and regulations, these referenced standards shall be applicable only to those California Residential Code sections that are adopted.

User notes:

About this chapter: *The one- and two-family dwelling code contains numerous references to standards promulgated by other organizations that are used to provide requirements for materials, products and methods of construction. Chapter 44 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 R102.4.

AAMA

American Architectural Manufacturers Association
1900 E. Golf Road, Suite 1250
Schaumburg, IL 60173

450—20: Voluntary Performance Rating Method for Mulled Fenestration Assemblies
R609.8

506—16: Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products
R609.6.1

711—20: Voluntary Specification for Self-adhering Flashing Used for Installation of Exterior Wall Fenestration Products
R703.4

712—14: Voluntary Specification for Mechanically Attached Flexible Flashing
R703.4

714—19: Voluntary Specification for Liquid Applied Flashing Used to Create a Water-resistive Seal around Exterior Wall Openings in Buildings
R703.4

AAMA/NSA 2100—19: Specifications for Sunrooms
R301.2.1.1.1

AAMA/WDMA/CSA 101/I.S.2/A440—17: North American Fenestration Standards/Specifications for Windows, Doors and Skylights
R308.6.9, R609.3

ACCA

Air Conditioning Contractors of America
1330 Braddock Place, Suite 350
Alexandria, VA 22314

ANSI/ACCA 1 Manual D—2016: Residential Duct Systems
Table R301.2

ACI

American Concrete Institute
38800 Country Club Drive
Farmington Hills, MI 48331

318—19: Building Code Requirements for Structural Concrete
R402.2, Table R404.1.2(2), Table R404.1.2(5), Table R404.1.2(6), Table R404.1.2(7), Table R404.1.2(8), R404.1.3, R404.1.3.1, R404.1.3.3, R404.1.3.4, R404.1.4.2, R404.5.1, R608.1, R608.1.1, R608.1.2, R608.2, R608.5.1, R608.6.1, R608.8.2, R608.9.2, R608.9.3

332—20: Residential Code Requirements for Structural Concrete
R402.2, R403.1, R404.1.3, R404.1.3.4, R404.1.4.2, R506.1

AISI

American Iron and Steel Institute
25 Massachusetts Avenue, NW Suite 800
Washington, DC 20001

AISI S100—16 (2020) w/S2—20: North American Specification for the Design of Cold-Formed Steel Structural Members, 2016 Edition (Reaffirmed 2020), with Supplement 2, 2020 Edition
R608.9.2, R608.9.3

AISI S220—20: North American Standard for Cold-Formed Steel Nonstructural Framing, 2020
R702.3.3

AISI S230—19: Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings, 2019
R301.1.1, R301.2.1.1, R301.2.2.7, R301.2.2.8, R603.6, R603.9.4.1, R603.9.4.2, Figure 608.9(11), R608.9.2, R608.9.3, R608.10

AISI S240—20: North American Standard for Cold-Formed Steel Structural Framing, 2020
R505.1.3, R603.6, R702.3.3, R804.3.6

AMCA

Air Movement and Control Association International
30 West University Drive
Arlington Heights, IL 60004

ANSI/AMCA 210-ANSI/ASHRAE 51—16: Laboratory Methods of Testing Fans for Aerodynamic Performance Rating
Table M1504.2, M1505.3

ANCE

Association of Standardization and Certification
Av. Lázaro Cárdenas No. 869
Fraccion 3
Col. Nva. Industrial Vallejo
Deleg. Gustavo A. Madero
Mexico, D.F.

NMX-J-521/2-40-ANCE—2014/CAN/CSA-22.2 No. 60335-2-40—12/UL 60335-2-40: Safety of Household and Similar Electric Appliances, Part 2-40: Particular Requirements for Heat Pumps, Air-Conditioners and Dehumidifiers
M1403.1, M1412.1, M1413.1

ANSI

American National Standards Institute
25 West 43rd Street, 4th Floor
New York, NY 10036

A108.1A—17: Installation of Ceramic Tile in the Wet-set Method, with Portland Cement Mortar
R702.4.1

A108.1B—2017: Installation of Ceramic Tile, Quarry Tile on a Cured Portland Cement Mortar Setting Bed with Dry-set or Latex Portland Mortar
R702.4.1

A108.4—09: Installation of Ceramic Tile with Organic Adhesives or Water-Cleanable Tile-setting Epoxy Adhesive
R702.4.1

A108.5—20: Installation of Ceramic Tile with Dry-set Portland Cement Mortar or Latex Portland Cement Mortar
R702.4.1

A108.6—99 (reaffirmed 2019): Installation of Ceramic Tile with Chemical-resistant, Water-cleanable Tile-setting and -grouting Epoxy
R702.4.1

A108.11—10: Interior Installation of Cementitious Backer Units
R702.4.1

A118.1—18: American National Standard Specifications for Dry-set Portland Cement Mortar
R702.4.1

A118.3—*13*: American National Standard Specifications for Chemical-resistant, Water-cleanable Tile-setting and -grouting Epoxy, and Water-cleanable Tile-setting Epoxy Adhesive
R702.4.1

ASTM—continued

C843—2017: Specification for Application of Gypsum Veneer Plaster
R702.2.1

C844—2015: Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster
R702.2.1

C847—2018: Specification for Metal Lath
R702.2.1, R702.2.2

C887—13: Specification for Packaged, Dry, Combined Materials for Surface Bonding Mortar
R406.1, R606.2.9

C897—15: Specification for Aggregate for Job-mixed Portland Cement-based Plasters
R702.2.2

C920—2018: Standard Specification for Elastomeric Joint Sealants
R406.4.1

C926—2018B: Specification for Application of Portland Cement-based Plaster
R702.2.2, R702.2.2.1, R703.7, R703.7.2, R703.7.2.1, R703.7.4

C933—2018: Specification for Welded Wire Lath
R702.2.1, R702.2.2

C946—2018: Standard Practice for Construction of Dry-Stacked, Surface-Bonded Walls
R606.2.9

C954—2018: Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in (0.84 mm) or to 0.112 in. (2.84 mm) in Thickness
R505.2.5, R603.2.5, R702.3.5.1, R804.2.5

C957/C957M—2017: Specification for High-solids Content, Cold Liquid-applied Elastomeric Waterproofing Membrane for Use with Integral Wearing Surface
R905.15.2

C1002—2018: Specification for Steel Self-piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
R702.3.1, R702.3.5.1

C1029—15: Specification for Spray-applied Rigid Cellular Polyurethane Thermal Insulation
R905.14.2

C1032—2018: Specification for Woven Wire Plaster Base
R702.2.1, R702.2.2

C1047—14a: Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
R702.2.1, R702.2.2, R702.3.1

C1063—2018B: Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-based Plaster
R702.2.2, R703.7, R703.7.1

C1088—2018: Standard Specification for Thin Veneer Brick Units Made from Clay or Shale
R606.2.2

C1107/C1107M—2017: Standard Specification for Packaged Dry, Hydraulic-cement Grout (Nonshrink)
R402.3.1

C1116/C116M—10(2015): Standard Specification for Fiber-reinforced Concrete and Shotcrete
R402.3.1

C1157—11/C1157M—2017: Standard Performance Specification for Hydraulic Cement
R608.5.1.1, R703.7.2

C1167—2011(2017): Specification for Clay Roof Tiles
R905.3.4

C1177/C1177M—2017: Specification for Glass Mat Gypsum Substrate for Use as Sheathing
R702.3.1, Table 906.2

C1178/C1178M—2018: Specification for Glass Mat Water-resistant Gypsum Backing Panel
R702.3.1, R702.3.7, Table R702.4.2

C1186—2008(2016): Specification for Flat Fiber Cement Sheets
R703.10.1, R703.10.2

ASTM—continued

C1261—2013(2017)E1: Specification for Firebox Brick for Residential Fireplaces
R1001.5, R1001.8

C1278/C1278M—2017: Specification for Fiber-reinforced Gypsum Panels
R702.3.1, R702.3.7, Table R702.4.2, Table R906.2

C1280—13a: Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing
R602.3(1)

C1283—2015: Practice for Installing Clay Flue Lining
R1003.9.1, R1003.12

C1288—2017: Standard Specification for Discrete Nonasbestos Fiber-cement Interior Substrate Sheets
Table R503.2.1.1(1), Table R503.2.1.1(2), Table 602.3(2), Table R702.4.2

C1289—2018: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
R316.8, Table R703.15.1, Table R703.15.2, Table R703.16.1, Table R703.16.2, Table R906.2

C1325—2018: Standard Specification for Nonasbestos Fiber-mat Reinforced Cement Interior Substrate Sheets Backer Units
Table R702.4.2

C1328/C1328M—12: Specification for Plastic (Stucco) Cement
R702.2.2, R703.7.2

C1364—2017: Standard Specification for Architectural Cast Stone
R606.2.5

C1396/C1396M—2017: Specification for Gypsum Board
Table R602.3(1), R702.2.1, R702.2.2, R702.3.1, R702.3.7

C1405—2016: Standard Specification for Glazed Brick (Single Fired, Brick Units)
R606.2.2

C1492—2003(2016): Specification for Concrete Roof Tile
R905.3.5

C1513—2018: Standard Specification for Steel Tapping Screws for Cold-formed Steel Framing Connections
R505.2.5, R603.2.5, R702.3.5.1, Table R703.3(2), Table R703.16.1, Table R703.16.2, R804.2.5

C1634—2017: Standard Specification for Concrete Facing Brick
R606.2.1

C1658/C1658M—2018: Standard Specification for Glass Mat Gypsum Panels
R702.3.1

C1670/1670M—2018: Standard Specification for Adhered Manufactured Stone Masonry Veneer Units
R606.2.6

C1691—2011(2017): Standard Specification for Unreinforced Autoclaved Aerated Concrete (AAC) Masonry Units
R606.2.3

C1693—2011(2017): Standard Specification for Autoclaved Aerated Concrete (AAC)
R606.2.3

C1766—2015: Standard Specification for Factory-Laminated Gypsum Panel Products
R702.3.1

D41/D41M—2011(2016): Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing
Table R905.9.2, Table R905.11.2

D43/D43M—2000(20118): Specification for Coal Tar Primer Used in Roofing, Dampproofing and Waterproofing
Table R905.9.2

D226/D226M—2017: Specification for Asphalt-saturated (Organic Felt) Used in Roofing and Waterproofing
R703.2, R905.1.1, Table R905.1.1(1), R905.8.4, Table R905.9.2

D227/D227M—2003(2018): Specification for Coal Tar Saturated (Organic Felt) Used in Roofing and Waterproofing
Table R905.9.2

ASTM—continued

D312/D312M—2016M: Specification for Asphalt Used in Roofing
Table R905.9.2

D422—63(2007)E2: Test Method for Particle-size Analysis of Soils
R403.1.8.1

D449/D449M—03(2014)E1: Specification for Asphalt Used in Dampproofing and Waterproofing
R406.2

D450/D450M—2017(2018): Specification for Coal-tar Pitch Used in Roofing, Dampproofing and Waterproofing
Table R905.9.2

D1227—13: Specification for Emulsified Asphalt Used as a Protective Coating for Roofing
Table R905.9.2, Table R905.11.2, R905.15.2

D1863/D1863M—2005(2018): Specification for Mineral Aggregate Used in Built-up Roofs
Table R905.9.2

D1970/D1970M—2017A: Specification for Self-adhering Polymer Modified Bitumen Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
R905.1.1, R905.2.8.2, R905.11.2.1

D2178/D2178M—15A: Specification for Asphalt Glass Felt Used in Roofing and Waterproofing
Table R905.9.2

D2626/D2626M—04 (2012)e1: Specification for Asphalt-saturated and Coated Organic Felt Base Sheet Used in Roofing
Table R905.1.1(1), Table R905.9.2

D2822/D2822M—2005(2011): Specification for Asphalt Roof Cement, Asbestos Containing
Table R905.9.2

D2823/D2823M—05(2011)e1: Specification for Asphalt Roof Coatings, Asbestos Containing
Table R905.9.2

D2824/D2824M—2018: Specification for Aluminum-pigmented Asphalt Roof Coatings, Nonfibered, Asbestos Fibered and Fibered without Asbestos
Table R905.9.2, Table R905.11.2

D2898—2010(2017): Test Methods for Accelerated Weathering of Fire-retardant-treated Wood for Fire Testing
R802.1.5.4, R802.1.5.8

D3019/D3019—2017: Specification for Lap Cement Used with Asphalt Roll Roofing, Nonfibered, Asbestos Fibered and Nonasbestos Fibered
Table R905.9.2, Table R905.11.2

D3161/D3161M—2016A: Test Method for Wind-Resistance of Steep Slope Roofing Products (Fan Induced Method)
R905.2.4.1, Table R905.2.4.1, R905.16.6

D3201/D3201M—2013: Test Method for Hygroscopic Properties of Fire-retardant Wood and Wood-base Products
R802.1.5.9

D3462/D3462M—2016: Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
R905.2.4

D3468/D3468M—99(2013)E1: Specification for Liquid-applied Neoprene and Chlorosulfanated Polyethylene Used in Roofing and Waterproofing
R905.15.2

D3679—2017: Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding
R703.11

D3737—2018E1: Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)
R502.1.3, R602.1.3, R802.1.2

D3747—79(2007): Specification for Emulsified Asphalt Adhesive for Adhering Roof Insulation
Table R905.9.2, Table R905.11.2

D3909/D3909M—14: Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules
R905.2.8.2, R905.5.4, Table R905.9.2

D4022/D4022M—2007(2012)e1: Specification for Coal Tar Roof Cement, Asbestos Containing
Table R905.9.2

D4318—2017E1: Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils
R403.1.8.1

ASTM—continued

D4434/D4434M—2015: Specification for Poly (Vinyl Chloride) Sheet Roofing
R905.13.2

D4479/D4479M—2007(2018): Specification for Asphalt Roof Coatings—asbestos-free
Table R905.9.2

D4586/D4586M—2007(2018): Specification for Asphalt Roof Cement—asbestos-free
Table R905.9.2

D4601/D4601M—04(2012)e1: Specification for Asphalt-coated Glass Fiber Base Sheet Used in Roofing
Table R905.9.2, R905.11.2.1

D4637/D4637M—2015: Specification for EPDM Sheet Used in Single-ply Roof Membrane
R905.12.2

D4829—11: Test Method for Expansion Index of Soils
R403.1.8.1

D4869/D4869M—2016A: Specification for Asphalt-saturated (Organic Felt) Underlayment Used in Steep Slope Roofing
R905.1.1, Table R905.1.1(1)

D4897/D4897M—2016: Specification for Asphalt Coated Glass-fiber Venting Base Sheet Used in Roofing
Table R905.9.2

D4990—1997a(2013): Specification for Coal Tar Glass Felt Used in Roofing and Waterproofing
Table R905.9.2

D5019—07a: Specification for Reinforced Nonvulcanized Polymeric Sheet Used in Roofing Membrane
R905.12.2

D5055—2016: Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-joists
R502.1.2, R802.1.8

D5456—2018: Standard Specification for Evaluation of Structural Composite Lumber Products
R502.1.5, R602.1.5, R802.1.4

D5516—2018: Test Method for Evaluating the Flexural Properties of Fire-retardant-treated Softwood Plywood Exposed to the Elevated Temperatures
R802.1.5.6

D5643/D5643M—2006(2018): Specification for Coal Tar Roof Cement Asbestos-free
Table R905.9.2

D5664—2017: Test Methods for Evaluating the Effects of Fire-retardant Treatments and Elevated Temperatures on Strength Properties of Fire-retardant-treated Lumber
R802.1.5.7

D5665/D5665M—99a(2014)E1: Specification for Thermoplastic Fabrics Used in Cold-applied Roofing and Waterproofing
Table R905.9.2

D5726—98(2013): Specification for Thermoplastic Fabrics Used in Hot-applied Roofing and Waterproofing
Table R905.9.2

D6083/D6083M—2018: Specification for Liquid-applied Acrylic Coating Used in Roofing
Table R905.9.2, Table R905.11.2, Table R905.14.3, R905.15.2

D6162/D6162M—2016: Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements
Table R905.11.2

D6163/D6163M—2016: Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements
Table R905.11.2

D6164/D6164M—2016: Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements
Table R905.11.2

D6222/D6222M—2016: Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements
Table R905.11.2

D6223/D6223M—2016: Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcement
Table R905.11.2

ASTM—continued

D6298—2016: Specification for Fiberglass-reinforced Styrene Butadiene Styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface
Table R905.11.2

D6305—08(2015)E1: Practice for Calculating Bending Strength Design Adjustment Factors for Fire-retardant-treated Plywood Roof Sheathing
R802.1.5.6

D6380/D6380—2003(2018): Standard Specification for Asphalt Roll Roofing (Organic Felt)
Table R905.1.1(1), R905.2.8.2, R905.5.4

D6464—2003A(2017): Standard Specification for Expandable Foam Adhesives for Fastening Gypsum Wallboard to Wood Framing
R702.3.1.1

D6694/D6694M—2015: Standard Specification for Liquid-applied Silicone Coating Used in Spray Polyurethane Foam Roofing Systems
Table R905.14.3, R905.15.2

D6754/D6754M—2015: Standard Specification for Ketone-ethylene-ester-based Sheet Roofing
R905.13.2

D6757/D6757M—2018: Specification for Underlayment Felt Containing Inorganic Fibers Used with Steep Slope Roofing
R905.1.1, Table R905.1.1(1)

D6841—2016: Standard Practice for Calculating Design Value Treatment Adjustment Factors for Fire-retardant-treated Lumber
R802.1.5.7

D6878/D6878M—2017: Standard Specification for Thermoplastic-polyolefin-based Sheet Roofing
R905.13.2

D6947/D6947M—2016: Standard Specification for Liquid Applied Moisture Cured Polyurethane Coating Used in Spray Polyurethane Foam Roofing System
Table R905.14.3, R905.15.2

D7032—2017: Standard Specification for Establishing Performance Ratings for Wood-plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)
R507.2.2, R507.2.2.1, 507.2.2.3, 507.2.2.4

D7158—D7158M—2019: Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method)
R905.2.4.1, Table R905.2.4.1

D7254—2017: Standard Specification for Polypropylene (PP) siding
Table R703.3(1), R703.14

D7425/D7425M—13: Standard Specification for Spray Polyurethane Foam Used for Roofing Application
R905.14.2

D7672—2014E1: Standard Specification for Evaluating Structural Capacities of Rim Board Products and Assemblies
R502.1.7, R602.1.7, R802.1.7

D7793—2017: Standard Specification for Insulated Vinyl Siding
Table R703.3(1), R703.13

E84—2018B: Standard Test Method for Surface Burning Characteristics of Building Materials
R202, R302.9.3, R302.9.4, R302.10.1, R302.10.2, R316.3, R316.5.9, R316.5.11, R507.2.2.2, R703.14.3, R802.1.5

E96/E96M—2016: Test Method for Water Vapor Transmission of Materials
R202, Table R806.5

E108—*2020a*: Test Methods for Fire Tests of Roof Coverings
R302.2.4, R902.1

E119—2018B: Test Methods for Fire Tests of Building Construction and Materials
Table R302.1(1), Table R302.1(2), R302.2.1, R302.2.2, R302.3, R302.4.1, R302.11.1, R606.2.2

E136—2019: Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C
R202, R302.11

E330/E330M—14: Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference
R609.4, R609.5, R609.6.2, R703.1.2

ASTM—continued

E331—2000(2016): Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference
R703.1.1

E814—2013A(2017): Standard Test Method for Fire Tests of Penetration Firestop Systems
R302.4.1.2

E970—2017: Standard Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source
R302.10.5

E1554/E1554 M—13(2018): Standard Test Methods for Determining Air Leakage of Air Distribution Systems by Fan Pressurization
N1103.3.5

E1602—2003(20117): Guide for Construction of Solid Fuel Burning Masonry Heaters
R1002.2

E1745—17: Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
R506.2.3

E1886—2013A: Test Method for Performance Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
R301.2.1.2, R609.6.1, R609.6.2, Table R703.11.2

E1996—2017: Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
R301.2.1.2, R301.2.1.2.1, R609.6.1, R609.6.2

E2178—2013: Standard Test Method for Air Permeance of Building Materials
R202

E2273—2018: Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies
R703.9.2

E2556/E2556M—2010(2016): Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment
R703.2

E2568—2017A: Standard Specification for PB Exterior Insulation and Finish Systems
R703.9.1, R703.9.2

E2570/E2570M—07(2014)E1: Standard Test Methods for Evaluating Water-resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage
R703.9.2

E2632/E2632M—2013e1: Standard Test Method for Evaluating the Under-Deck Fire Test Response of Deck Materials:
R337.9.3, R337.9.4, R337.9.4.1, R337.9.5

E2634—2018: Standard Specification for Flat Wall Insulating Concrete Form (ICF) Systems
R404.1.3.3.6.1, R608.4.4

E2707—2015: Standard Test Method for Determining Fire Penetration of Exterior Wall Assemblies Using a Direct Flame Impingement Exposure
R337.7.3, R337.7.3.1, R337.8.3

E2726/E2726M—2012a: Standard Test Method for Evaluating the Fire-Test-Response of Deck Structures to Burning Brands
R337.9.3, R337.9.4, R337.9.4.2

E2886/E2886M—2014: Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct Flame Impingent
R337.6.2, R337.6.3

**ASTM E2886, Amended Sections as follows:*

Revise Sections 10.1.8.3, 10.1.8.4 and 10.1.8.5 as follows:

10.1.8.3 *Report the temperatures of the unexposed temperatures on the unexposed side of the vent during the entire optional Insulation Test of the Flame Intrusion.*

10.1.8.4 *The maximum temperature reached during the test by any one of the unexposed surface thermocouples during the entire optional Insulation Test of the Flame Intrusion Test.*

10.1.8.5 *The maximum average temperature reached during the test by all of the unexposed surface thermocouples during the entire optional Insulation Test of the Flame Intrusion Test.*

SFM

State of California
Department of Forestry and Fire Protection
Office of the State Fire Marshal
P.O. Box 944246
Sacramento, CA 944246-2460

SFM 12-3: Releasing Systems for Security Bars in Dwellings
R310

SFM 12-7A-1: Exterior Wall Siding and Sheathing
R327.5.3, R327.6.3.1, R327.6.3.2.3

SFM 12-7A-2: Exterior Window
R327.5.3, R327.6.3.2.2

SFM 12-7A-3: Horizontal Protection Underside
R327.5.3, R327.6.2.3

SFM 12-7A-4: Decking
R327.5.3, R327.6.4.1.1

SFM 12-7A-4A: Decking Alternate Method A
R327.3.7, R327.9.3.4

(The Office of the State Fire Marshal standards referred to above are found in the California Code of Regulations, Title 24, Part 12.)

TMS

The Masonry Society
105 South Sunset Street, Suite Q
Longmont, CO 80501

402—2016: Building Code Requirements for Masonry Structures
R404.1.2, R606.1, R606.1.1, R606.12.1, R606.12.2.3.1, R606.12.3.1, R703.12

403—2017: Direct Design Handbook for Masonry Structures
R606.1, R606.1.1, R606.12.1, R606.12.3.1

404—2016: Standard for the Design of Architectural Cast Stone
R606.1

602—2016: Specification for Masonry Structures
R606.2.10, R606.2.13, R703.12

TPI

Truss Plate Institute
2670 Crain Highway, Suite 203
Waldorf, MD 20601

TPI 1—2014: National Design Standard for Metal Plate Connected Wood Truss Construction
R502.11.1, R802.10.2

UBC

International Code Council, Inc.
500 New Jersey Avenue, NW 6th Floor
Washington, DC 20001

UBC Standard 15-2: Test Standard for Determining the Fire Retardancy of Roof-covering Materials
R902

UBC Standard 15-3: Wood Shakes
R902

UBC Standard 15-4: Wood Shingles
R902

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062

55A—2004: Materials for Built-up Roof Coverings
R905.9.2

103—2010: Factory-built Chimneys for Residential Type and Building Heating Appliances—with revisions through March 2017
R202, R1005.3

UL—continued

127—2011: Factory-built Fireplaces—with revisions through July 2016
R1001.11, R1004.1, R1004.4, R1004.5, R1005.4

217—2015: Smoke Alarms—with revisions through November 2016
R314.1.1, R315.1.1

263—2011: Fire Test of Building Construction and Materials—with revisions through March 2018
Table R302.1(2), R302.2, R302.2.1, R302.2.2, R302.4.1, R302.11.1, R606.2.2

268—2016: Smoke Detectors for Fire Alarm Systems—with revisions through July 2016
R314.7.1, R314.7.4, R315.7.4

325—2017: Door, Drapery, Gate, Louver and Window Operations and Systems
R309.4

580—2006: Test for Uplift Resistance of Roof Assemblies—with Revisions through October 2013
R905.4.4.1

641—2010: Type L, Low-temperature Venting Systems—with revisions through April 2018
R202, R1003.11.5

723—2018: Standard for Test for Surface Burning Characteristics of Building Materials
R202, R302.9.3, R302.9.4, R302.10.1, R302.10.2, R316.3, R316.5.9, R316.5.11, R507.2.2.2, R703.14.3, R802.1.5

790 *Edition 9—2022*: Standard Test Methods for Fire Tests of Roof Coverings—with revisions through October 2018
R302.2.4, R902.1

907—94: Fireplace Accessories—with revisions through November 2014
R1001.13

959—2010: Medium Heat Appliance Factory-built Chimneys—with revisions through June 2014
R1005.6

1040—1996: Fire Test of Insulated Wall Construction—with revisions through April 2017
R316.6

1256—02: Fire Test of Roof Deck Construction—with revisions through August 2018
R906.1

1479—2015: Fire Tests of Through-Penetration Firestops
R302.4.1.2

1482—2011: Solid-Fuel-type Room Heaters—with revisions through August 2015
R1002.2, R1002.5

1618—2015: Wall Protectors, Floor Protectors, and Hearth Extensions—with revisions through January 2018
R1004.2

1703—2002: Flat-plate Photovoltaic Modules and Panels—with revisions through September 2018
R324.3.1, R902.4, R905.16.4

1715—97: Fire Test of Interior Finish Material—with revisions through April 2017
R316.6

1741—2010: Inverters, Converters, Controllers and Interconnection System Equipment with Distributed Energy Resources—with revisions through February 2018
R324.3.1, R328.6

1777—07: Chimney Liners—with revisions through April 2014
R1003.11.1, R1003.18

1897—15: Uplift Tests for Roof Covering Systems
R905.4.4.1

1974—17: Evaluation for Re-purposing Batteries
R202, R327, R327.1, R327.2, R327.3, R327.3.1, R327.4, R327.5, R327.6, R327.7, R327.8, R327.9, R327.10

2034—2017: Standard for Single- and Multiple-station Carbon Monoxide Alarms—with revisions through September 2018
R314.1.1, R315.1.1

2075—2013: Gas and Vapor Detectors and Sensors—with revisions through December 2017
R314.7.4, R315.7.1, R315.7.4

2200—2012: Stationary Engine Generator Assemblies—with revisions through October 2015
R329.1

D

E

F

N

O

P

R

S

HISTORY NOTE APPENDIX

2022 California Residential Code
California Code of Regulations, Title 24, Part 2.5

HISTORY:

For prior code history, see the History Note Appendix to the *California Residential Code*, 2019 Triennial Edition, effective January 1, 2020.

1. (BSC 06/21, CEC 03/21, HCD 06/21, SFM 05/21)—Adoption by reference of the 2021 *International Residential Code* with necessary amendments to become the 2022 *California Residential Code*, and repeal of the 2018 edition of the *International Residential Code*; effective on January 1, 2023.
2. Erratum to correct editorial errors throughout Chapters 1, 2, 3, 8, 9, 10, and Appendices AQ and AY, effective January 1, 2023.
3. 2022 Intervening Cycle update (SFM 03/22)—Adoption of amendments to the 2022 *California Residential Code*, effective on July 1, 2024.

ICC INTERNATIONAL CODE COUNCIL®

Building Confidence, Building Community.

Code Resources from ICC

Tools to help you learn, interpret and apply the 2022 California Codes

Significant Changes to the 2022 California Codes®

Practical resources that offer a comprehensive analysis of the critical changes since the previous edition

Authored by code experts, these useful tools are "must-have" guides to the many important changes in the 2022 California Codes. Key changes are identified then followed by in-depth, expert discussion of how the change affects real world application. A full-color photo, table or illustration is included for each change to further clarify application.

Significant Changes to the California Building Code, 2022 Edition	Search #5521S22
Significant Changes to the California Residential Code, 2022 Edition	Search #5526S22
Significant Changes to the California Fire Code, 2022 Edition	Search #5592S22

2021 Code and Commentary

The complete I-Code followed by corresponding commentary after each section

Each title includes the complete code text, including tables and figures, followed by in-depth insight after each code section. Gain a better understanding of the intent of the code and learn to apply or enforce it effectively.

2021 IBC Code and Commentary	Search #3010S21
2021 IRC Code and Commentary	Search #3110S21
2021 IFC Code and Commentary	Search #3410S21
2021 IEBC Code and Commentary	Search #3560S21

2021 I-Code Essentials

A straightforward, focused approach to code fundamentals using non-code language

A user-friendly, concise approach that facilitates understanding of the essential code provisions. These invaluable companion guides contain detailed full-color illustrations to enhance comprehension, references to corresponding code sections, and a glossary of code and construction terms that clarify their meaning in the context of the code.

Building Code Essentials: Based on the 2021 IBC	Search #4031S21
Residential Code Essentials: Based on the 2021 IRC	Search #4131S21
Fire Code Essentials: Based on the 2021 IFC	Search #4431S21
Existing Building Code Essentials: Based on the 2021 IEBC	Search #4552S21

2021 I-Code Study Companions

The ideal learning tool for exam prep or everyday application

These comprehensive study guides provide practical learning assignments helpful for independent study or instructor-led programs in the workplace, college courses, or vocational training programs. Each book is organized into study sessions with clear learning objectives, key points for review, code text and commentary applicable to the specific topic, and hundreds of illustrations. A helpful practice quiz at the end of each session allows you to measure your progress along the way.

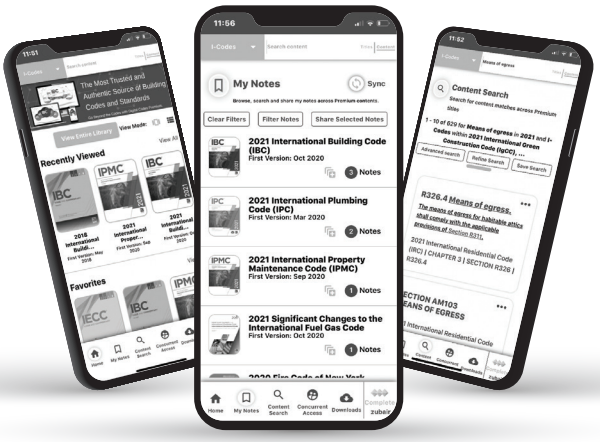
2021 International Building Code Study Companion	Search #4017S21
2021 International Residential Code Study Companion	Search #4117S21
2021 International Fire Code Study Companion	Search #4407S21
2021 Permit Technician Study Companion	Search #4027S21
2021 Special Inspection Study Companion	Search #4032S21

Browse the latest code tools at shop.iccsafe.org

22-21986

DIGITAL CODES PREMIUM

codes.iccsafe.org



Go Digital and Enhance Your Code Experience

ICC's Digital Codes is the most trusted and authentic source of model codes and standards, which conveniently provides access to the latest code text from across the United States.

Unlock Exclusive Tools and Features with Premium Complete

Search over 1,400 of the latest codes and standards from your desktop or mobile device.

Saved Search allows users to save search criteria for later use without re-entering.

Organize Notes and thoughts by adding personal notes, files or videos into relevant code sections.

Copy, Paste and Print
Copy, paste, PDF or print any code section.

Share Access by configuring your license to share access and content simultaneously with others (code titles, section links, bookmarks and notes).

Highlight and Annotate any code book content to keep you organized.

Advanced Search narrows down your search results with multiple filters to identify codes sections more accurately.

Bookmark and tag any section or subsection of interest.

Stay Connected on the Go with our New Premium Mobile App

- View content offline
- Download up to 15 Codes titles
- Utilize Premium tools and features

AVAILABLE ON App Store

AVAILABLE ON Google Play

Monthly and Yearly Premium Subscriptions are available for:
International Codes® | State Codes | Standards | Commentaries

Start your FREE 14-Day Premium trial at codes.iccsafe.org/trial
Learn how to use this powerful tool at codes.iccsafe.org

22-22109