REVISION RECORD
FOR THE STATE OF CALIFORNIA

ERRATA

January 1, 2026

2025 Title 24, Part 2.5, California Residential Code

General Information:

1. The date of this erratum is for identification purposes only. See the History Note Appendix on the backside or accompanying page.
2. This erratum is issued by the California Building Standards Commission to correct non-substantive printing errors or omissions in the 2025 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. An erratum to Title 24 is a non-regulatory correction because of a printing error or omission that does not differ substantively from the official adoption by the California Building Standards Commission. Accordingly, the corrected code text provided by this erratum may be applied on and after the stated effective date.
4. You may wish to retain the superseded material with this revision record so that the prior wording of any section can be easily ascertained.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 Buff-Colored Pages
1-1 and 1-2	1-1 and 1-2
2-5 and 2-6	2-5 and 2-6
3-1 through 3-4	3-1 through 3-4
3-23 and 3-24	3-23 and 3-24
3-35 through 3-38	3-35 through 3-38
3-41 and 3-42	3-41 and 3-42
3-45 and 3-46	3-45 and 3-46
3-83 and 3-84	3-83 and 3-84
6-5 and 6-6	6-5 and 6-6
7-9 and 7-10	7-9 and 7-10
7-15 and 7-16	7-15 and 7-16
8-45 and 8-46	8-45 and 8-46
44-13 and 44-14	44-13 and 44-14
APPENDIX BF-3 and APPENDIX BF-4	APPENDIX BF-3 and APPENDIX BF-4
APPENDIX CG-3 and APPENDIX CG-4	APPENDIX CG-3 and APPENDIX CG-4
APPENDIX CI-3 through APPENDIX CI-6	APPENDIX CI-3 through APPENDIX CI-6
HIST-1 and HIST-2	HIST-1 and HIST-2

Item No. 5525S251

T032189

CALIFORNIA RESIDENTIAL CODE – MATRIX ADOPTION TABLE
CHAPTER 1 – ADMINISTRATION

(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)																							
Adopt only those sections that are listed below	**X**		**X**	**X**																			
Chapter / Section																							
Division I California Administration																							
1.1 through 1.1.12			X	X																			
1.8 through 1.8.10.2				X																			
1.11 through 1.11.11			X																				
***Division II Scope* and Administration**																							
R101.2			X	X																			
R102.7			X																				
R104.3			X																				
R104.6			X																				
R104.7.2			X																				
R104.7.3			X																				
R104.9 - R104.9.1			X																				
R105.1			X																				
R105.2 Building: Items 1 - 10	X		X	X																			
Electrical:				†																			
Gas:				†																			
Mechanical:				†																			
Plumbing:				†																			
R105.2.1 - R105.2.2			X																				
R105.3 - R105.3.1			X																				
R105.4			X																				
R105.5.1	X		X																				
R105.6			X																				
R105.7			X																				
R106 - R106.5			X																				
R106.1				X																			
R106.1.1				X																			
R106.1.3				X																			
R106.1.4				X																			
R106.1.6				X																			
R106.2				X																			
R107 - R107.4			X																				
R109.1			X	X																			
R109.1.1				X																			
R109.1.1.1				X																			
R109.1.2			X	†																			
R109.1.3				X																			
R109.1.4			X	X																			
R109.1.4.1				X																			
R109.1.4.2				X																			

CALIFORNIA RESIDENTIAL CODE – MATRIX ADOPTION TABLE
CHAPTER 1 – ADMINISTRATION—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)																							
Adopt only those sections that are listed below	**X**		**X**	**X**																			
Chapter / Section																							
R109.1.5			X	X																			
R109.1.5.1			X	X																			
R109.1.5.2				X																			
R109.1.5.3				X																			
R109.1.6			X	X																			
R109.1.6.1				X																			
R109.1.6.2				X																			
R109.2 - R109.4			X																				
R110 - R110.4			X																				
R111 - R111.3			X																				
R113.1 - R113.2			X																				
R114.1 - R114.4			X																				

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

CHAPTER

2 DEFINITIONS

About this chapter:	Codes, by their very nature, are technical documents. Every word, term and punctuation mark can add to or change the meaning of a technical requirement. It is necessary to maintain a consensus on the specific meaning of each term contained in the code. Chapter 2 performs this function by stating clearly what specific terms mean for the purpose of the code.
ICC code development note:	Code change proposals to definitions in this chapter preceded by a bracketed letter are considered by the IRC—Building Code Development Committee [RB], the IRC—Mechanical/Plumbing Code Development Committee [MP] or the IECC—Residential Code Development Committee [RE] during the Group B (2025) Code Development Cycle.

SECTION R201—GENERAL

R201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

R201.2 Interchangeability. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

R201.3 Terms defined in other codes. Where terms are not defined in this code such terms shall have the meanings ascribed in *the California Building Standards Code, Title 24, California Code of Regulations.*

R201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

For applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

SECTION R202—DEFINITIONS

[RB] ACCESS (TO). That which enables a device, an appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, door or similar obstruction.

ACCESSORY DWELLING UNIT. [HCD 1 & HCD 2] *An attached or detached residential dwelling unit that provides complete independent living facilities for one or more persons and is located on a lot with a proposed or existing primary residence. Accessory dwelling units shall include permanent provisions for living, sleeping, eating, cooking and sanitation on the same parcel as the single-family or multifamily dwelling is or will be situated. (See Government Code Section 66313.)*

[RB] ACCESSORY STRUCTURE. A structure that is accessory to and incidental to that of the dwelling(s) or townhouse(s) and that is located on the same lot.

[RB] ADDITION. An extension or increase in floor area, number of stories or height of a building or structure.

[RB] ADHERED STONE OR MASONRY VENEER. Stone or masonry veneer secured and supported through the adhesion of an approved bonding material applied to an approved backing.

AGED HOME OR INSTITUTION. *A facility used for the housing of persons 65 years of age or older in need of care and supervision. (See definition of "care and supervision.")*

[MP] AIR, OUTDOOR. Ambient air that enters a building through a ventilation system, through intentional openings for natural ventilation or by infiltration.

[MP] AIR, TRANSFER. Air moved from one indoor space to another.

[MP] AIR ADMITTANCE VALVE. A one-way valve designed to allow air into the plumbing drainage system where a negative pressure develops in the piping. This device shall close by gravity and seal the terminal under conditions of zero differential pressure (no flow conditions) and under positive internal pressure.

[MP] AIR BREAK (DRAINAGE SYSTEM). An arrangement where a discharge pipe from a fixture, appliance or device drains indirectly into a receptor below the flood-level rim of the receptor and above the trap seal.

[MP] AIR CIRCULATION, FORCED. A means of providing space conditioning utilizing movement of air through ducts or plenums by mechanical means.

[MP] AIR GAP, DRAINAGE SYSTEM. The unobstructed vertical distance through free atmosphere between the outlet of a waste pipe and the flood-level rim of the fixture or receptor into which it is discharging.

[MP] AIR GAP, WATER-DISTRIBUTION SYSTEM. The unobstructed vertical distance through free atmosphere between the lowest opening from a water supply discharge to the flood-level rim of a plumbing fixture.

[MP] AIR-CONDITIONING SYSTEM. A system that consists of heat exchangers, blowers, filters, supply, exhaust and return-air systems, and shall include any apparatus installed in connection therewith.

[RB] AIR-IMPERMEABLE INSULATION. An insulation having an air permeance equal to or less than 0.02 L/s-m^2 at 75 Pa pressure differential as tested in accordance with ASTM E283 or E2178.

[RB] ALTERATION. Any construction, retrofit or renovation to an existing structure other than repair or addition that requires a permit. Also, a change in a building, electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.

[RB] ALTERNATING TREAD DEVICE. A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.

[RB] ANCHORED STONE OR MASONRY VENEER. Stone or masonry veneer secured with approved mechanical fasteners to an approved backing.

[MP] ANCHORS. See "Supports."

[MP] ANTISIPHON. A term applied to valves or mechanical devices that eliminate siphonage.

[MP] APPLIANCE. A device or apparatus that is manufactured and designed to utilize energy and for which this code provides specific requirements.

[RB] APPROVED. Acceptable to the building official.

APPROVED. (HCD 1) *Meeting the approval of the enforcing agency, except as otherwise provided by law, when used in connection with any system, material, type of construction, fixture or appliance as the result of investigations and tests conducted by the agency, or by reason of accepted principles or tests by national authorities or technical, health or scientific organizations or agencies.*

Notes:

1. *See Health and Safety Code Section 17920 for "Approved" as applied to residential construction and buildings or structures accessory thereto, as referenced in Section 1.8.2.1.1.*
2. *See Health and Safety Code Section 17921.1 for "Approved" as applied to the use of hotplates in residential construction referenced in Section 1.8.2.1.1.*
3. *See Health and Safety Code Section 19966 for "Approved" as applied to factory-built housing as referenced in Section 1.8.3.2.5.*
4. *See Health and Safety Code Section 18201 for "Approved" as applied to mobilehome parks as referenced in Section 1.8.3.2.2.*
5. *See Health and Safety Code Section 18862.1 for "Approved" as applied to special occupancy parks as referenced in Section 1.8.3.2.3.*

[RB] APPROVED AGENCY. An established and recognized organization that is regularly engaged in conducting tests, furnishing inspection services or furnishing product evaluation or certification where such organization has been approved. *(HCD 1) "Approved agency" shall mean "Listing agency" and "Testing agency."*

APPROVED LISTING AGENCY. *Any agency approved by the enforcing agency, unless otherwise provided by statute, which is in the business of listing and labeling and which makes available at least an annual published report of such listings in which specific information is included that the product has been tested to recognized standards and found to comply.*

[RB] APPROVED SOURCE. An independent person, firm or corporation, approved by the building official, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.

APPROVED TESTING AGENCY. *Any agency which is determined by the enforcing agency, except as otherwise provided by statute, to have adequate personnel and expertise to carry out the testing of systems, materials and construction fixtures or appliances.*

[RB] ASPECT RATIO. The ratio of longest to shortest perpendicular dimensions, or for wall sections, the ratio of height to length.

[RB] ATTIC. The unfinished space between the ceiling assembly and the roof assembly.

[RB] ATTIC, HABITABLE. A finished or unfinished habitable space within an attic.

[MP] BACKFLOW, DRAINAGE. A reversal of flow in the drainage system.

[MP] BACKFLOW, WATER DISTRIBUTION. The flow of water or other liquids into the potable water-supply piping from any sources other than its intended source. Backsiphonage is one type of backflow.

[MP] BACKFLOW PREVENTER. A backflow prevention assembly, a backflow prevention device or other means or method to prevent backflow into the potable water supply.

[MP] BACKFLOW PREVENTER, REDUCED-PRESSURE-ZONE TYPE. A backflow-prevention device consisting of two independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is an automatic relief means of venting to atmosphere internally loaded to a normally open position between two tightly closing shutoff valves and with means for testing for tightness of the checks and opening of relief means.

[MP] BACKPRESSURE. Pressure created by any means in the water distribution system that by being in excess of the pressure in the water supply mains causes a potential backflow condition.

[MP] BACKPRESSURE, LOW HEAD. A pressure less than or equal to 4.33 psi (29.88 kPa) or the pressure exerted by a 10-foot (3048 mm) column of water.

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

(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**																			
Adopt only those sections that are listed below			**X**																				
Chapter / Section																							
R300				X																			
R300.1				X																			
R300.2				X																			
R301.1			X																				
R301.1.1.1				X																			
R301.1.3			X																				
R301.1.3.1				X																			
R301.1.3.2				X																			
R301.1.3.3				X																			
R301.1.4			X																				
Table R301.5				X																			
R302			X																				
R302.1				X																			
Table R302.1(2)				X																			
R302.2.2				X																			
R302.2.6				X																			
R302.3.2				X																			
R302.6				X																			
R302.13				X																			
R303.1			X																				
R303.2.1			X																				
R303.3			X																				
R304.1				X																			
R304.1.3				X																			
R306.1.7				X																			
R306.1.9				†																			
R307			X																				
R308			X																				
R309			X	◆																			
R310			X																				

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																							
R311			X																				
R311.2.1				X																			
R311.2.2				X																			
R311.3				X																			
R311.5				X																			
R311.6				X																			
R311.7.2				X																			
R312			X																				
R312.2				X																			
R313			X																				
> R314			X																				
R315			X																				
R316			X																				
> R317			X																				
R317.4				X																			
R317.6				X																			
R317.8				X																			
R318			X																				
> R319			X																				
> R320			X																				
R321			X																				
R321.1.2				X																			
> R322.1				X																			
R322.2				X																			
R323			X																				
R323.3				X																			
> R324			X																				
R325			X																				
R325.1.1				X																			
R325.1.2				X																			

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																							
R325.2				X																			
R325.2.1				X																			
R325.3				X																			
R325.4.1				X																			
R325.8				X																			
R325.9				X																			
R327.1				X																			
R328				X																			
R329			X																				
R329.2				X																			
R330			X																				
R331			X																				
R332			X																				
R334				X																			
R334.1				X																			
R335			X																				
R336			X																				
R337 User Note			X	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.

R301.6 Roof load. The roof shall be designed for the live load indicated in Table R301.6 or the ground snow load indicated in Table R301.2, whichever is greater.

TABLE R301.6—MINIMUM ROOF LIVE LOADS IN POUNDS-FORCE PER SQUARE FOOT OF HORIZONTAL PROJECTION

ROOF SLOPE	TRIBUTARY LOADED AREA IN SQUARE FEET FOR ANY STRUCTURAL MEMBER		
	0 to 200	201 to 600	Over 600
Flat or rise less than 4 inches per foot (1:3)	20	16	12
Rise 4 inches per foot (1:3) to less than 12 inches per foot (1:1)	16	14	12
Rise 12 inches per foot (1:1) and greater	12	12	12

For SI: 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kPa, 1 inch per foot = 83.3 mm/m.

R301.7 Deflection. The allowable deflection of any structural member under the live load listed in Sections R301.5 and R301.6 or wind loads determined by Section R301.2.1 shall not exceed the values in Table R301.7.

TABLE R301.7—ALLOWABLE DEFLECTION OF STRUCTURAL MEMBERS[b, c]

STRUCTURAL MEMBER	ALLOWABLE DEFLECTION
Rafters having slopes greater than 3:12 with finished ceiling not attached to rafters	*L*/180
Interior walls and partitions	*H*/180
Floors	*L*/360
Ceilings with brittle finishes (including plaster and stucco)	*L*/360
Ceilings with flexible finishes (including gypsum board)	*L*/240
All other structural members excluding guards and handrails	*L*/240
Exterior walls—wind loads[a] with plaster or stucco finish	*H*/360
Exterior walls—wind loads[a] with other brittle finishes	*H*/240
Exterior walls—wind loads[a] with flexible finishes	*H*/120[d]
Lintels supporting masonry veneer walls[e]	*L*/600

Note: *L* = span length, *H* = span height.

a. For the purpose of the determining deflection limits herein, the wind load shall be permitted to be taken as 0.7 times the component and cladding (ASD) loads obtained from Table R301.2.1(1).

b. For cantilever members, *L* shall be taken as twice the length of the cantilever.

c. For aluminum structural members or panels used in roofs or walls of sunroom additions or patio covers, not supporting edge of glass or sandwich panels, the total load deflection shall not exceed *L*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *L*/175 for each glass lite or *L*/60 for the entire length of the member, whichever is more stringent. For sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *L*/120.

d. Deflection for exterior walls with interior gypsum board finish shall be limited to an allowable deflection of *H*/180.

e. Refer to Section R703.8.2. The dead load of supported materials shall be included when calculating the deflection of these members.

R301.8 Nominal sizes. For the purposes of this code, dimensions of lumber specified shall be deemed to be nominal dimensions unless specifically designated as actual dimensions.

SECTION R302 —FIRE-RESISTANT CONSTRUCTION

R302.1 Exterior walls. Construction, projections, openings and penetrations of exterior walls of dwellings, townhouses and accessory buildings shall comply with Table R302.1(1) based on fire separation distance; or dwellings *and accessory buildings* equipped throughout with an automatic sprinkler system installed in accordance with Section *R309* shall comply with Table R302.1(2) based on fire separation distance.

For the purposes of determining fire separation distance, dwellings and townhouses on the same lot shall be assumed to have an imaginary line between them. Where a new dwelling or townhouse is to be erected on the same lot as an existing dwelling or townhouse, the location of the assumed imaginary line with relation to the existing dwelling or townhouse shall be such that the existing dwelling or townhouse meets requirements of this section.

Where a lot line exists between adjacent townhouse units, fire separation distance of exterior walls shall be measured to the lot line. Where a lot line does not exist between adjacent townhouse units, an imaginary line shall be assumed between the adjacent townhouse units and fire separation distance of exterior walls shall be measured to the imaginary line. Fire separation distance and requirements of Section R302.1 shall not apply to walls separating townhouse units that are required by Section R302.2.

Exceptions:

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.

2. Walls of individual dwelling units and their accessory buildings located on the same lot.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
4. Detached garages accessory to a dwelling unit located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.

TABLE R302.1(1)—EXTERIOR WALLS

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E119, UL 263 or Section 703.2.2 of the *California Building Code* with exposure from both sides	0 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not allowed	NA	< 2 feet
	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood[a, b]	≥ 2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Openings in walls	Not allowed	NA	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet

For SI: 1 foot = 304.8 mm.
NA = Not Applicable.
a. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave overhang if fireblocking is provided from the wall top plate to the underside of the roof sheathing.
b. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where vent openings that communicate with the attic are not installed in the overhang or gable wall.

TABLE R302.1(2)—EXTERIOR WALLS—DWELLINGS, TOWNHOUSES *AND ACCESSORY BUILDINGS WITH AUTOMATIC RESIDENTIAL FIRE SPRINKLER PROTECTION*

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E119, UL 263 or Section 703.2.2 of the *California Building Code* with exposure from the outside	0 feet
	Not fire-resistance rated	0 hours	3 feet[a]
Projections	Not allowed	NA	< 2 feet
	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood[b, c]	2 feet[a]
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not allowed	NA	< 3 feet
	Unlimited	0 hours	3 feet[a]
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet[a]

For SI: 1 foot = 304.8 mm.
NA = Not Applicable.
a. For residential subdivisions where all dwellings and townhouses are equipped throughout with an automatic sprinkler system installed in accordance with Section *R309*, the fire separation distance for exterior walls not fire-resistance rated and for fire-resistance-rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.
b. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave overhang if fireblocking is provided from the wall top plate to the underside of the roof sheathing.
c. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where vent openings that communicate with the attic are not installed in the overhang or gable wall.

R302.2 Townhouses. Walls separating townhouse units shall be constructed in accordance with Section R302.2.1 or R302.2.2 and shall comply with Sections R302.2.3 through R302.2.6.

R302.2.1 Double walls. Each townhouse unit shall be separated from other townhouse units by two 1-hour fire-resistance-rated wall assemblies tested in accordance with ASTM E119, UL 263 or Section 703.2.2 of the *California Building Code.*

R304.3.2 Fastenings for wood foundations. Fastenings, including nuts and washers, for wood foundations shall be as required in AWC PWF.

R304.3.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners, including nuts and washers, for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, staples and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, Class 55 minimum.

R304.3.4 Fasteners for fire-retardant-treated wood used in interior applications. Fasteners, including nuts and washers, for fire-retardant-treated wood used in interior locations shall be in accordance with the manufacturer's recommendations. In the absence of the manufacturer's recommendations, Section R304.3.3 shall apply.

R304.4 Plastic composites. Plastic composite exterior deck boards, stair treads, guards and handrails containing wood, cellulosic or other biodegradable materials shall comply with the requirements of Section R507.2.2.

SECTION R305—PROTECTION AGAINST SUBTERRANEAN TERMITES

R305.1 Subterranean termite control methods. In areas subject to damage from termites as indicated by Table R301.2, protection shall be by one, or a combination, of the following methods:

1. Chemical termiticide treatment in accordance with Section R305.2.
2. Termite-baiting system installed and maintained in accordance with the label.
3. Pressure-preservative-treated wood in accordance with the provisions of Section R304.1.
4. Naturally durable termite-resistant wood.
5. Physical barriers in accordance with Section R305.3 and used in locations as specified in Section R304.1.
6. Cold-formed steel framing in accordance with Sections R505.2.1 and R603.2.1.

R305.1.1 Quality mark. Lumber and plywood required to be pressure-preservative treated in accordance with Section R305.1 shall bear the quality mark of an approved inspection agency that maintains continuing supervision, testing and inspection over the quality of the product and that has been approved by an accreditation body that complies with the requirements of the American Lumber Standard Committee treated wood program.

R305.1.2 Field treatment. Field-cut ends, notches and drilled holes of pressure-preservative-treated wood shall be retreated in the field in accordance with AWPA M4.

R305.2 Chemical termiticide treatment. Chemical termiticide treatment shall include soil treatment or field-applied wood treatment. The concentration, rate of application and method of treatment of the chemical termiticide shall be in strict accordance with the termiticide label.

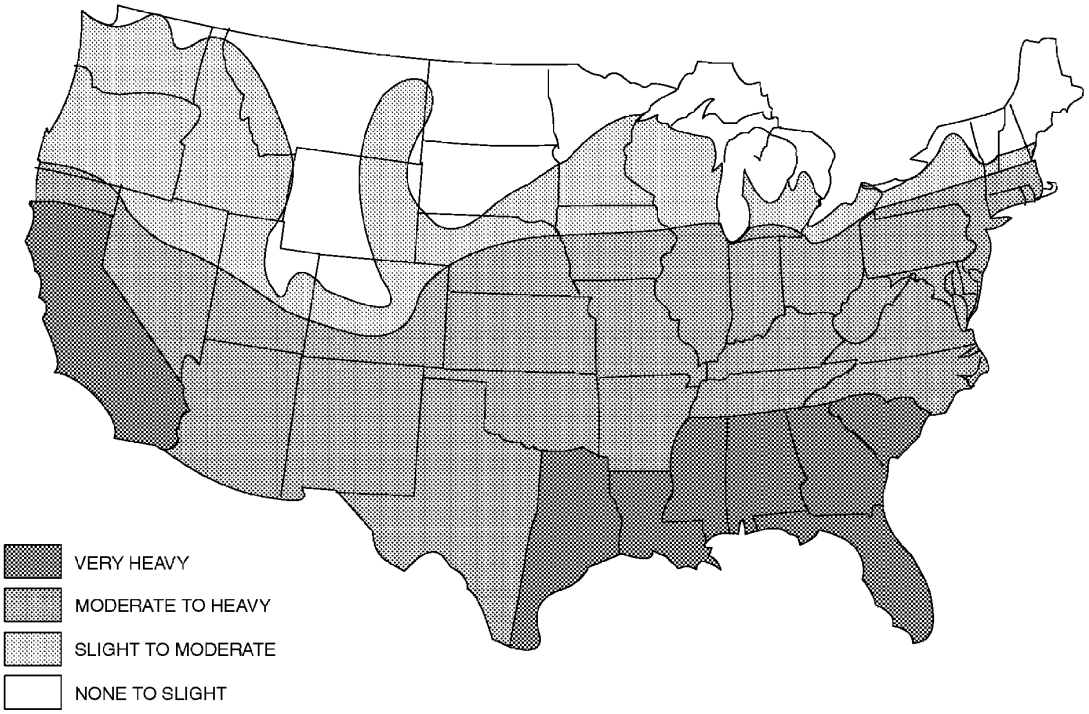
R305.3 Barriers. Approved physical barriers, such as metal or plastic sheeting or collars specifically designed for termite prevention, shall be installed in a manner to prevent termites from entering the structure. Shields placed on top of an exterior foundation wall shall be used only if in combination with another method of protection.

R305.4 Foam plastic protection. In areas where the probability of termite infestation is "very heavy" as indicated in Figure R305.4, extruded and expanded polystyrene, polyisocyanurate and other foam plastics shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade. The clearance between foam plastics installed above grade and exposed earth shall be not less than 6 inches (152 mm).

Exceptions:

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or pressure-preservative-treated wood.
2. Where in addition to the requirements of Section R305.1, an approved method of protecting the foam plastic and structure from subterranean termite damage is used.
3. On the interior side of basement walls.

FIGURE R305.4—TERMITE INFESTATION PROBABILITY MAP



Note: Lines defining areas are approximate only. Local conditions may be more or less severe than indicated by the region classification.

SECTION R306—FLOOD-RESISTANT CONSTRUCTION

R306.1 General. Buildings and structures constructed in whole or in part in flood hazard areas established in Table R301.2, and substantial improvement and repair of substantial damage of buildings and structures located in whole or in part in flood hazard areas, shall be designed and constructed in accordance with the provisions contained in this section. Buildings and structures that are located in more than one flood hazard area, including A Zones, Coastal A Zones and V Zones, shall comply with the provisions associated with the most restrictive flood hazard area. Buildings and structures located in whole or in part in identified floodways shall be designed and constructed in accordance with ASCE 24.

R306.1.1 Alternative provisions. As an alternative to the requirements in Section R306, ASCE 24 is permitted subject to the limitations of this code and the limitations therein.

R306.1.2 Structural systems. Structural systems of buildings and structures shall be designed, connected and anchored to resist flotation, collapse or permanent lateral movement due to structural loads and stresses from flooding equal to the design flood elevation.

R306.1.3 Flood-resistant construction. Buildings and structures erected in areas prone to flooding shall be constructed by methods and practices that minimize flood damage.

R306.1.4 Establishing the design flood elevation. The design flood elevation shall be used to define flood hazard areas. At a minimum, the design flood elevation shall be the higher of the following:

1. The base flood elevation at the depth of peak elevation of flooding, including wave height, that has a 1-percent (100-year flood) or greater chance of being equaled or exceeded in any given year.
2. The elevation of the design flood associated with the area designated on a flood hazard map adopted by the community, or otherwise legally designated.

R306.1.4.1 Determination of design flood elevations. If design flood elevations are not specified, the building official is authorized to require the applicant to comply with either of the following:

1. Obtain and reasonably use data available from a federal, state or other source.
2. Determine the design flood elevation in accordance with accepted hydrologic and hydraulic engineering practices used to define special flood hazard areas. Determinations shall be undertaken by a registered design professional who shall document that the technical methods used reflect currently accepted engineering practice. Studies, analyses and computations shall be submitted in sufficient detail to allow thorough review and approval.

R306.1.4.2 Determination of impacts. In riverine flood hazard areas where design flood elevations are specified but floodways have not been designated, the applicant shall demonstrate that the effect of the proposed buildings and structures on design flood elevations, including fill, when combined with other existing and anticipated flood hazard area encroachments, will not increase the design flood elevation more than 1 foot (305 mm) at any point within the jurisdiction.

R306.1.5 Lowest floor. The lowest floor shall be the lowest floor of the lowest enclosed area, including basement, and excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the building or structure in violation of this section.

R306.1.6 Protection of mechanical, plumbing and electrical systems. Electrical systems, equipment and components; heating, ventilating, air-conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall be located at or above the elevation required in Section R306.2 or R306.3. If replaced as part of a substantial improvement, electrical systems, equipment and components; heating, ventilating, air-conditioning and plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall meet the requirements of this section. Systems, fixtures, and equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads.

Exception: Locating electrical systems, equipment and components; heating, ventilating, air-conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment is permitted below the elevation required in Section R306.2 or R306.3 provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the required elevation in accordance with ASCE 24. Electrical wiring systems are permitted to be located below the required elevation provided that they conform to the provisions of the *California Electrical Code* for wet locations.

R306.1.7 Protection of water supply and sanitary sewage systems. *Water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the water supply and distribution systems. Sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into sanitary drainage systems and discharges from sanitary drainage systems into floodwaters.*

R306.1.8 Flood-resistant materials. Building materials and installation methods used for flooring and interior and exterior walls and wall coverings below the elevation required in Section R306.2 or R306.3 shall be flood damage-resistant materials that conform to the provisions of FEMA TB-2.

R306.1.9 Manufactured homes. *(Not adopted in CA)*

R306.1.10 As-built elevation documentation. A registered design professional shall prepare and seal documentation of the elevations specified in Section R306.2 or R306.3.

R306.2 Flood hazard areas (including A Zones). Areas that have been determined to be prone to flooding and that are not subject to high-velocity wave action shall be designated as flood hazard areas. Flood hazard areas that have been delineated as subject to wave heights between $1^1/_2$ feet (457 mm) and 3 feet (914 mm) or otherwise designated by the jurisdiction shall be designated as Coastal A Zones and are subject to the requirements of Section R306.3. Buildings and structures constructed in whole or in part in flood hazard areas shall be designed and constructed in accordance with Sections R306.2.1 through R306.2.4.

R306.2.1 Elevation requirements.

1. Buildings and structures in flood hazard areas, not including flood hazard areas designated as Coastal A Zones, shall have the lowest floors elevated to or above the base flood elevation plus 1 foot (305 mm), or the design flood elevation, whichever is higher.
2. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated to a height above the highest adjacent grade of not less than the depth number specified in feet (mm) on the FIRM plus 1 foot (305 mm), or not less than 3 feet (915 mm) if a depth number is not specified.
3. Basement floors that are below grade on all sides shall be elevated to or above base flood elevation plus 1 foot (305 mm), or the design flood elevation, whichever is higher.
4. Attached garages and carports shall comply with one of the following:
    4.1. The floors shall be elevated to or above the elevations required in Item 1 or Item 2, as applicable.
    4.2. The floors shall be at or above grade on not less than one side. Where an attached garage or carport is enclosed by walls, the walls shall have flood openings that comply with Section R306.2.2 and the attached garage or carport shall be used only for parking, building access or storage.
5. Detached accessory structures and detached garages shall comply with one of the following:
    5.1. The floors shall be elevated to or above the elevations required in Item 1 or Item 2, as applicable.
    5.2. Floors below the elevations required in Item 1 or 2, as applicable, must be:
        5.2.1. Used only for parking or storage.
        5.2.2. One story and not larger than 600 square feet (55.74 m^2).
        5.2.3. Anchored to resist flotation, collapse or lateral movement resulting from design flood loads.
        5.2.4. Equipped with flood openings that comply with Section R306.2.2.
        5.2.5. Constructed of flood-damage-resistant materials that comply with Section R306.1.8.
        5.2.6. Have mechanical, plumbing and electrical systems, if applicable, that comply with Section R306.1.6.

Exception: Enclosed areas below the elevation required in this section, including basements with floors that are not below grade on all sides, shall meet the requirements of Section R306.2.2.

R306.2.2 Enclosed area below required elevation. Enclosed areas, including crawl spaces, that are below the elevation required in Section R306.2.1 shall:

1. Be used solely for parking of vehicles, building access or storage.
2. Be provided with flood openings that meet the following criteria and are installed in accordance with Section R306.2.2.1:
   2.1. The total net area of nonengineered openings shall be not less than 1 square inch (645 mm^2) for each square foot (0.093 m^2) of enclosed area where the enclosed area is measured on the exterior of the enclosure walls, or the openings shall be designed as engineered openings and the construction documents shall include a statement by a registered design professional that the design of the openings will provide for equalization of hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwaters as specified in Section 2.7.2.2 of ASCE 24.
   2.2. Openings shall be not less than 3 inches (76 mm) in any direction in the plane of the wall.
   2.3. The presence of louvers, blades, screens and faceplates or other covers and devices shall allow the automatic flow of floodwater into and out of the enclosed areas and shall be accounted for in the determination of the net open area.

Exceptions: The following shall not be required to comply with this section:

1. Elevator shafts.
2. Utility chases that protect utility lines from freezing, provided that the utility chases are the minimum size necessary to protect the utility lines and do not provide access for a person to enter the space.

R306.2.2.1 Installation of openings. The walls of enclosed areas shall have openings installed such that:

1. There shall be not less than two openings on different sides of each enclosed area; if a building has more than one enclosed area, each area shall have openings.
2. The bottom of each opening shall be not more than 1 foot (305 mm) above the higher of the final interior grade or floor and the finished exterior grade immediately under each opening.
3. Openings shall be permitted to be installed in doors and windows; doors and windows without installed openings do not meet the requirements of this section.

R306.2.3 Foundation design and construction. Foundation walls for buildings and structures erected in flood hazard areas shall meet the requirements of Chapter 4.

Exception: Unless designed in accordance with Section R404:

1. The unsupported height of 6-inch (152 mm) plain masonry walls shall be not more than 3 feet (914 mm).
2. The unsupported height of 8-inch (203 mm) plain masonry walls shall be not more than 4 feet (1219 mm).
3. The unsupported height of 8-inch (203 mm) reinforced masonry walls shall be not more than 8 feet (2438 mm).

For the purpose of this exception, unsupported height is the distance from the finished grade of the under-floor space to the top of the wall.

R306.2.4 Tanks. Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood. Above-ground tanks shall be installed at or above the elevation required in Section R306.2.1 or shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood.

R306.3 Coastal high-hazard areas (including V Zones and Coastal A Zones, where designated). Areas that have been determined to be subject to wave heights in excess of 3 feet (914 mm) or subject to high-velocity wave action or wave-induced erosion shall be designated as coastal high-hazard areas. Flood hazard areas that have been designated as subject to wave heights between $1^1/_2$ feet (457 mm) and 3 feet (914 mm) or otherwise designated by the jurisdiction shall be designated as Coastal A Zones. Buildings and structures constructed in whole or in part in coastal high-hazard areas and Coastal A Zones, where designated, shall be designed and constructed in accordance with Sections R306.3.1 through R306.3.10.

R306.3.1 Location and site preparation.

1. New buildings and buildings that are determined to be substantially improved pursuant to Section R104.3.1 shall be located landward of the reach of mean high tide.
2. For any alteration of sand dunes and mangrove stands, the building official shall require submission of an engineering analysis that demonstrates that the proposed alteration will not increase the potential for flood damage.

R306.3.2 Elevation requirements.

1. Buildings and structures erected within coastal high-hazard areas and Coastal A Zones, shall be elevated so that the bottom of the lowest horizontal structural members supporting the lowest floor, with the exception of piling, pile caps, columns, grade beams and bracing, is elevated to or above the base flood elevation plus 1 foot (305 mm) or the design flood elevation, whichever is higher. Where stem wall foundations are permitted in Coastal A Zones in accordance with Section R306.3.3, the bottom of the lowest horizontal structural member supporting the lowest floor is the top of the foundation wall, or top of the portion of the foundation wall, supporting the slab.
2. Basement floors that are below grade on all sides are prohibited.
3. Attached garages used only for parking, building access or storage, and carports shall comply with Item 1 or shall be at or above grade on not less than one side and, if enclosed with walls, such walls shall comply with Item 7.

required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.

SECTION R309—AUTOMATIC SPRINKLER SYSTEMS

R309.1 Townhouse automatic sprinkler systems. An automatic sprinkler system shall be installed in townhouses.

Exception: An automatic sprinkler system shall not be required where additions or alterations are made to existing townhouses that do not have an automatic sprinkler system installed.

R309.1.1 Design and installation. Automatic sprinkler systems for townhouses shall be designed and installed in accordance with Section *R309* or NFPA 13D.

R309.2 One- and two-family dwellings automatic sprinkler systems. An automatic sprinkler system shall be installed in one- and two-family dwellings.

Exceptions:

1. An automatic sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with a sprinkler system.
2. *Accessory Dwelling Unit, provided that all of the following are met:*
   - *2.1. The unit meets the definition of an Accessory Dwelling Unit as defined in the Government Code Section 66313.*
   - *2.2. The existing primary residence does not have automatic fire sprinklers.*
   - *2.3. The accessory detached dwelling unit does not exceed 1,200 square feet in size.*
   - *2.4. The unit is on the same lot as the primary residence.*

R309.2.1 Design and installation. Automatic sprinkler systems shall be designed and installed in accordance with Section *R309* or NFPA 13D.

***R309.3* Dwelling unit automatic sprinkler systems.**

***R309.3.1* General.** The design and installation of automatic sprinkler systems shall be in accordance with NFPA 13D or Section *R309.3*, which shall be considered to be equivalent to NFPA 13D. Partial automatic sprinkler systems shall be permitted to be installed only in buildings not required to be equipped with an automatic sprinkler system. Section *R309.3* shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose automatic sprinkler system shall provide domestic water to both fire sprinklers and plumbing fixtures. A stand-alone automatic sprinkler system shall be separate and independent from the water distribution system.

R309.3.1.1 Backflow protection. *A backflow preventer shall not be required to separate a sprinkler system from the water distribution system, provided that:*

1. *The system complies with NFPA 13D or Section R309;*
2. *Piping materials are suitable for potable water in accordance with the California Plumbing Code; and*
3. *The system does not contain antifreeze or have a fire department connection.*

***R309.3.1.2* Required sprinkler locations.** Sprinklers shall be installed to protect all areas of a dwelling unit.

Exceptions:

1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In attics, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m^2) in area, with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board.
3. Bathrooms not more than 55 square feet (5.1 m^2) in area.
4. Garages; carports; exterior porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

***R309.3.2* Sprinklers.** Sprinklers shall be new listed residential sprinklers and shall be installed in accordance with the sprinkler manufacturer's instructions.

***R309.3.2.1* Temperature rating and separation from heat sources.** Except as provided for in Section *R309.3.2*, sprinklers shall have a temperature rating of not less than 135°F (57°C) and not more than 225°F (107°C). Sprinklers shall be separated from heat sources as required by the sprinkler manufacturer's installation instructions.

***R309.3.2.2* Intermediate temperature sprinklers.** Sprinklers shall have an intermediate temperature rating not less than 175°F (79°C) and not more than 225°F (107°C) where installed in the following locations:

1. Directly under skylights, where the sprinkler is exposed to direct sunlight.
2. In attics.
3. In concealed spaces located directly beneath a roof.
4. Within the distance to a heat source as specified in Table *R309.3.2.2*.

TABLE *R309.3.2.2*—LOCATIONS WHERE INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED	
HEAT SOURCE	**RANGE OF DISTANCE FROM HEAT SOURCE WITHIN WHICH INTERMEDIATE TEMPERATURE SPRINKLERS ARE REQUIRED[a, b] (inches)**
Coal and wood burning stove	12 to 42
Fireplace, front of recessed fireplace	36 to 60
Fireplace, side of open or recessed fireplace	12 to 36
Front of wall-mounted warm-air register	18 to 36
Heating duct, not insulated	9 to 18
Hot water pipe, not insulated	6 to 12
Kitchen range top	9 to 18
Luminaire up to 250 watts	3 to 6
Luminaire 250 watts up to 499 watts	6 to 12
Oven	9 to 18
Side of ceiling or wall warm-air register	12 to 24
Vent connector or chimney connector	9 to 18
Water heater, furnace or boiler	3 to 6

For SI: 1 inch = 25.4 mm.
a. Sprinklers shall not be located at distances less than the minimum table distance unless the sprinkler listing allows a lesser distance.
b. Distances shall be measured in a straight line from the nearest edge of the heat source to the nearest edge of the sprinkler.

***R309.3.2.3* Freezing areas.** Piping shall be protected from freezing as required by *the California Plumbing Code* or by using one of the following:

1. A dry-pipe automatic sprinkler system that is listed for residential occupancy applications.
2. Dry-sidewall or dry-pendent sprinklers extending from a nonfreezing area into a freezing area.
3. *Where fire sprinkler piping cannot be adequately protected against freezing, the system shall be designed and installed in accordance with NFPA 13D.*

***R309.3.2.4* Sprinkler coverage.** Sprinkler coverage requirements and sprinkler obstruction requirements shall be in accordance with Sections *R309.3.2.4.1* and *R309.3.2.4.2.*

***R309.3.2.4.1* Coverage area limit.** The area of coverage of a single sprinkler shall not exceed 400 square feet (37 m^2) and shall be based on the sprinkler *listing* and the sprinkler manufacturer's installation instructions.

***R309.3.2.4.2* Obstructions to coverage.** Sprinkler discharge shall not be blocked by obstructions unless additional sprinklers are installed to protect the obstructed area. Additional sprinklers shall not be required where the sprinkler separation from obstructions complies with either the minimum distance indicated in Figure *R309.3.2.4.2* or the minimum distances specified in the sprinkler manufacturer's instructions where the manufacturer's instructions permit a lesser distance.

5. For the purpose of this section, it shall be permissible to reduce the design flow rate for a room by subdividing the space into two or more rooms, where each room is evaluated separately with respect to the required design flow rate. Each room shall be bounded by walls and a ceiling. Openings in walls shall have a lintel not less than 8 inches (203 mm) in depth and each lintel shall form a solid barrier between the ceiling and the top of the opening.

***R309.3.5* Water supply.** The water supply shall provide not less than the required design flow rate for sprinklers in accordance with Section *R309.3.4.2* at a pressure not less than that used to comply with Section *R309.3.6. Where a water supply serves both domestic and fire sprinkler systems, 5 gpm (19 L/min) shall be added to the sprinkler system demand at the point where the systems are connected, to determine the size of common piping and the size of the total water supply requirements where no provision is made to prevent flow into the domestic water system upon operation of a sprinkler. For multipurpose piping systems, the 5 gpm (19 L/min) demand shall be added at the domestic connection nearest the design area. This demand may be split between two domestic connections at 2.5 gpm (10 L/min) each.*

***R309.3.5.1* Water supply from individual sources.** Where a dwelling unit water supply is from a tank system, a private well system or a combination of these, the available water supply shall be based on the minimum pressure control setting for the pump.

***R309.3.5.2* Required capacity.** The water supply shall have the capacity to provide the required design flow rate for sprinklers for a period of time as follows:

1. Seven minutes for dwelling units one story in height and less than 2,000 square feet (186 m^2) in area. *For the purpose of determining the area of the dwelling unit, the area of attached garages and attached open carports, porches, balconies and patios shall not be included.*
2. Ten minutes for dwelling units two or more stories in height or equal to or greater than 2,000 square feet (186 m^2) in area. *For the purpose of determining the area of the dwelling unit, the area of attached garages and attached open carports, porches, balconies and patios shall not be included.*

R309.3.5.2.1 Where a well system, a water supply tank system or a combination thereof is used, *the configuration for the system shall be one of the following:*

1. The water supply shall serve both domestic and fire sprinkler systems. Any combination of well capacity and tank storage shall be permitted to meet the capacity requirement.

2. A stand-alone tank is permitted if the following conditions are met:

2.1. The pump shall be connected to a 220-volt circuit breaker shared with a common household appliance (e.g., range, oven, dryer),

2.2. The pump shall be a stainless steel 240-volt pump,

2.3. A valve shall be provided to exercise the pump. The discharge of the exercise valve shall be piped to the tank, and

2.4. A sign shall be provided stating "Valve must be opened monthly for 5 minutes."

2.5. A means for automatically refilling the tank level so that the tank capacity will meet the required water supply duration in minutes shall be provided.

***R309.3.5.3* Connections to automatic fire sprinkler systems.** The potable water supply to automatic fire sprinkler shall be protected against backflow by a double check backflow prevention assembly, a double check fire protection backflow prevention assembly, a reduced pressure principle backflow prevention assembly or a reduced pressure principle fire protection backflow prevention assembly.

Exception: Where permitted by Section *R309.3.1.1*, backflow protection for the water supply system shall not be required.

***R309.3.5.3.1* Additives or nonpotable source.** Where systems contain chemical additives or antifreeze, or where systems are connected to a nonpotable secondary water supply, the potable water supply shall be protected against backflow by a reduced pressure principle backflow prevention assembly or a reduced pressure principle fire protection backflow prevention assembly. Where chemical additives or antifreeze is added to only a portion of an automatic sprinkler or standpipe system, the reduced pressure principle fire protection backflow preventer shall be permitted to be located so as to isolate that portion of the system.

***R309.3.6* Pipe sizing.** The piping to sprinklers shall be sized for the flow required by Section *R309.3.4.2.* The flow required to supply the plumbing fixtures shall not be required to be added to the sprinkler design flow.

***R309.3.6.1* Method of sizing pipe.** Piping supplying sprinklers shall be sized using the prescriptive method in Section *R309.3.6.2* or by hydraulic calculation in accordance with NFPA 13D. The minimum pipe size from the water supply source to any sprinkler shall be $^3/_4$ inch (19 mm) nominal. Threaded adapter fittings at the point where sprinklers are attached to the piping shall be not less than $^1/_2$ inch (13 mm) nominal.

***R309.3.6.2* Prescriptive pipe sizing method.** Pipe shall be sized by determining the available pressure to offset friction loss in piping and identifying a piping material, diameter and length using the equation in Section *R309.3.6.2.1* and the procedure in Section *R309.3.6.2.2*.

TABLE *R309.3.6.2*(1)—WATER SERVICE PRESSURE LOSS (PL_{svc}) [a, b]

FLOW RATE[c] (gpm)	$^3/_4$-INCH WATER SERVICE PRESSURE LOSS (psi)				1-INCH WATER SERVICE PRESSURE LOSS (psi)				$1^1/_4$-INCH WATER SERVICE PRESSURE LOSS (psi)			
	Length of water service pipe (feet)				Length of water service pipe (feet)				Length of water service pipe (feet)			
	40 or less	41 to 75	76 to 100	101 to 150	40 or less	41 to 75	76 to 100	101 to 150	40 or less	41 to 75	76 to 100	101 to 150
8	5.1	8.7	11.8	17.4	1.5	2.5	3.4	5.1	0.6	1.0	1.3	1.9
10	7.7	13.1	17.8	26.3	2.3	3.8	5.2	7.7	0.8	1.4	2.0	2.9
12	10.8	18.4	24.9	NP	3.2	5.4	7.3	10.7	1.2	2.0	2.7	4.0
14	14.4	24.5	NP	NP	4.2	7.1	9.6	14.3	1.6	2.7	3.6	5.4
16	18.4	NP	NP	NP	5.4	9.1	12.4	18.3	2.0	3.4	4.7	6.9
18	22.9	NP	NP	NP	6.7	11.4	15.4	22.7	2.5	4.3	5.8	8.6
20	27.8	NP	NP	NP	8.1	13.8	18.7	27.6	3.1	5.2	7.0	10.4
22	NP	NP	NP	NP	9.7	16.5	22.3	NP	3.7	6.2	8.4	12.4
24	NP	NP	NP	NP	11.4	19.3	26.2	NP	4.3	7.3	9.9	14.6
26	NP	NP	NP	NP	13.2	22.4	NP	NP	5.0	8.5	11.4	16.9
28	NP	NP	NP	NP	15.1	25.7	NP	NP	5.7	9.7	13.1	19.4
30	NP	NP	NP	NP	17.2	NP	NP	NP	6.5	11.0	14.9	22.0
32	NP	NP	NP	NP	19.4	NP	NP	NP	7.3	12.4	16.8	24.8
34	NP	NP	NP	NP	21.7	NP	NP	NP	8.2	13.9	18.8	NP
36	NP	NP	NP	NP	24.1	NP	NP	NP	9.1	15.4	20.9	NP

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 0.063 L/s, 1 pound per square inch = 6.895 kPa.

NP = Not Permitted. Pressure loss exceeds reasonable limits.

a. Values are applicable for underground piping materials listed in *the California Plumbing Code* and are based on an SDR of 11 and a Hazen Williams C Factor of 150.

b. Values include the following length allowances for fittings: 25-percent length increase for actual lengths up to 100 feet and 15-percent length increase for actual lengths over 100 feet.

c. Flow rate from Section *R309.3.4.2*. Add 5 gpm to the flow rate required by Section *R309.3.4.2* where the water service pipe supplies more than one dwelling.

TABLE *R309.3.6.2*(2)—MINIMUM WATER METER PRESSURE LOSS (PL_m)[a]

FLOW RATE (gallons per minute, gpm)[b]	$^5/_8$-INCH METER PRESSURE LOSS (pounds per square inch, psi)	$^3/_4$-INCH METER PRESSURE LESS (pounds per square inch, psi)	1-INCH METER PRESSURE LOSS (pounds per square inch, psi)
8	3	3	1
10	3	3	1
12	4	3	1
14	6	5	1
16	7	6	1
18	9	7	2
20	11	9	2
23	14	11	3
26	18	14	3
31	26	22	4
39	38	35	6
52	NP	NP	10

For SI: 1 inch = 25.4 mm, 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 0.063 L/s.

NP = Not permitted unless the actual water meter pressure loss is known.

a. Table *R309.3.6.2(2)* establishes conservative values for water meter pressure loss or installations where the water meter loss is unknown. Where the actual water meter pressure loss is published and available from the meter manufacturer, PL_m shall be the published pressure loss for the selected meter.

b. Flow rate from Section *R309.3.4.2.* Add 5 gpm to the flow rate required by Section *R309.3.4.2* where the water service pipe supplies more than one dwelling.

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

User note: *Provisions for materials and construction methods for exterior wildfire exposure are now located in Part 7, California Wildland-Urban Interface Code. See Section R102.7, Wildland-Urban Interface.*

The provisions of Part 7, California Wildland-Urban Interface Code shall apply to buildings and structures built in the wildland-urban interface (WUI).

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 339—RESERVED

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.*

TABLE R602.3(1)—FASTENING SCHEDULE—continued			
ITEM	**DESCRIPTION OF BUILDING ELEMENTS**	**NUMBER AND TYPE OF FASTENER[a, b, c]**	**SPACING AND LOCATION**
13	Top plate to top plate	16d common ($3^1/_2$″ × 0.162″)	16″ o.c. face nail
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	12″ o.c. face nail
14	Double top plate splice	8-16d common ($3^1/_2$″ × 0.162″); or 12-16d box ($3^1/_2$″ × 0.135″); or 12-10d box (3″ × 0.128″); or 12-3″ × 0.131″ nails	Face nail on each side of end joint (minimum 24″ lap splice length each side of end joint)
15	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common ($3^1/_2$″ × 0.162″)	16″ o.c. face nail
		16d box ($3^1/_2$″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
16	Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel)	3-16d box ($3^1/_2$″ × 0.135″); or 2-16d common ($3^1/_2$″ × 0.162″); or 4-3″ × 0.131″ nails	16″ o.c. face nail
17	Top or bottom plate to stud	4-8d box ($2^1/_2$″ × 0.113″); or 3-16d box ($3^1/_2$″ × 0.135″); or 4-8d common ($2^1/_2$″ × 0.131″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box ($3^1/_2$″ × 0.135″); or 2-16d common ($3^1/_2$″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	End nail
18	Top plates, laps at corners and intersections	3-10d box (3″ × 0.128″); or 2-16d common ($3^1/_2$″ × 0.162″); or 3-3″ × 0.131″ nails	Face nail
19	1″ brace to each stud and plate	3-8d box ($2^1/_2$″ × 0.113″); or 2-8d common ($2^1/_2$″ × 0.131″); or 2-(3″ × 0.131″); or 2-10d box (3″ × 0.128″)	Face nail
20	1″ × 6″ sheathing to each bearing	3-8d box ($2^1/_2$″ × 0.113″); or 2-8d common ($2^1/_2$″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., $1^3/_4$″ long	Face nail
21	1″ × 8″ and wider sheathing to each bearing	3-8d box ($2^1/_2$″ × 0.113″); or 3-8d common ($2^1/_2$″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3 staples, 1″ crown, 16 ga., $1^3/_4$″ long	Face nail
		Wider than 1″ × 8″ 4-8d box ($2^1/_2$″ × 0.113″); or 3-8d common ($2^1/_2$″ × 0.131″); or 3-10d box (3″ × 0.128″); or 4 staples, 1″ crown, 16 ga., $1^3/_4$″ long	
Floor			
22	Joist to sill, top plate or girder	4-8d box ($2^1/_2$″ × 0.113″); or 3-8d common ($2^1/_2$″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Toe nail
23	Rim joist, band joist or blocking to sill or top plate (roof applications also)	8d box ($2^1/_2$″ × 0.113″)	4″ o.c. toe nail
		8d common ($2^1/_2$″ × 0.131″); or 10d box (3″ × 0.128″); or 3″ × 0.131″ nails	6″ o.c. toe nail
Floor			
24	1″ × 6″ subfloor or less to each joist	3-8d box ($2^1/_2$″ × 0.113″); or 2-8d common ($2^1/_2$″ × 0.131″); or 3-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., $1^3/_4$″ long	Face nail
25	2″ subfloor to joist or girder	3-16d box ($3^1/_2$″ × 0.135″); or 2-16d common ($3^1/_2$″ × 0.162″)	Blind and face nail

TABLE R602.3(1)—FASTENING SCHEDULE—continued

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION
26	2″ planks (plank & beam—floor & roof)	3-16d box ($3^1/_2$″ × 0.135″); or 2-16d common ($3^1/_2$″ × 0.162″)	At each bearing, face nail
27	Band or rim joist to joist	3-16d common ($3^1/_2$″ × 0.162″); or 4-10 box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ × 14 ga. staples, $^7/_{16}$″ crown	End nail
28	Built-up girders and beams, 2-inch lumber layers	20d common (4″ × 0.192″); or	Nail each layer as follows: 32″ o.c. at top and bottom and staggered.
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	24″ o.c. face nail at top and bottom staggered on opposite sides
		And: 2-20d common (4″ × 0.192″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Face nail at ends and at each splice
29	Ledger strip supporting joists or rafters	4-16d box ($3^1/_2$″ × 0.135″); or 3-16d common ($3^1/_2$″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	At each joist or rafter, face nail
30	Bridging or blocking to joist, rafter or truss	2-10d box (3″ × 0.128″); or 2-8d common ($2^1/_2$″ × 0.131″); or 2-3″ × 0.131″ nails	Each end, toe nail

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING OF FASTENERS	
			Edges[h] (inches)	Intermediate supports[c, e] (inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing [see Table R602.3(3) for wood structural panel exterior wall sheathing to wall framing]				
31	$^3/_8$″ – $^1/_2$″	6d common or deformed (2″ × 0.113″ × 0.266″ head); or $2^3/_8$″ × 0.113″ × 0.266″ head nail (subfloor, wall)	6	12
		8d common ($2^1/_2$″ × 0.131″ × 0.281″ head) nail (roof); or RSRS-01 ($2^3/_8$″ × 0.113″ × 0.281″ head) nail (roof)[b]	6[f]	6[f]
32	$^{19}/_{32}$″ – $^3/_4$″	8d common ($2^1/_2$″ × 0.131″) nail (subfloor, wall)	6	12
		8d common ($2^1/_2$″ × 0.131″ × 0.281″ head) nail (roof); or RSRS-01; ($2^3/_8$″ × 0.113″ × 0.281″ head) nail (roof)[b]	6[f]	6[f]
		Deformed $2^3/_8$″ × 0.113 × 0.266″ head (wall or subfloor)	6	12
33	$^7/_8$″ – $1^1/_4$″	10d common (3″ × 0.148″) nail; or ($2^1/_2$″ × 0.131 × 0.281″ head) deformed nail	6	12
Other wall sheathing[g]				
34	$^1/_2$″ structural cellulosic fiberboard sheathing	$1^1/_2$″ × 0.120″ galvanized roofing nail, $^7/_{16}$″ head diameter; or $1^1/_4$″ long 16 ga. staple with $^7/_{16}$″ or 1″ crown	3	6
35	$^{25}/_{32}$″ structural cellulosic fiberboard sheathing	$1^3/_4$″ × 0.120″ galvanized roofing nail, $^7/_{16}$″ head diameter; or $1^1/_4$″ long 16 ga. staple with $^7/_{16}$″ or 1″ crown	3	6
36	$^1/_2$″ gypsum sheathing[d]	$1^1/_2$″ × 0.120″ galvanized roofing nail, $^7/_{16}$″ head diameter; or 16 ga. staple galvanized, $1^1/_2$″ long, $^7/_{16}$″ or 1″ crown; or $1^1/_4$″ screws, Type W or S	7	7

TABLE R702.7(4)—CONTINUOUS INSULATION WITH CLASS I OR II RESPONSIVE VAPOR RETARDER	
CLIMATE ZONE	**PERMITTED CONDITIONS[a]**
3	Continuous insulation with *R*-value ≥ 2.
4, 5 and 6	Continuous insulation with *R*-value ≥ 3 over 2 × 4 wall. Continuous insulation with *R*-value ≥ 5 over 2 × 6 wall.
7	Continuous insulation with *R*-value ≥ 5 over 2 × 4 wall. Continuous insulation with *R*-value ≥ 7.5 over 2 × 6 wall.
8	Continuous insulation with *R*-value ≥ 7.5 over 2 × 4 wall. Continuous insulation with *R*-value ≥ 10 over 2 × 6 wall.

a. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class II vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of Chapter 11.

TABLE R702.7(5)—CONTINUOUS INSULATION ON WALLS WITHOUT A CLASS I, II OR III INTERIOR VAPOR RETARDER[a]	
CLIMATE ZONE	**PERMITTED CONDITIONS[b, c]**
4	Continuous insulation with *R*-value ≥ 4.5
5	Continuous insulation with *R*-value ≥ 6.5
6	Continuous insulation with *R*-value ≥ 8.5
7	Continuous insulation with *R*-value ≥ 11.5
8	Continuous insulation with *R*-value ≥ 14

a. The total insulating value of materials to the interior side of the exterior continuous insulation, including any cavity insulation, shall not exceed R-5. Where the R-value of materials to the interior side of the exterior continuous insulation exceeds R-5, an approved design shall be required.

b. A water vapor control material layer having a permeance not greater than 1 perm in accordance with ASTM E96 Procedure A (dry cup) shall be placed on the exterior side of the wall and to the interior side of the exterior continuous insulation. The exterior continuous insulation shall be permitted to serve as the vapor control layer where, at its installed thickness or with a facer on its interior face, the exterior continuous insulation is a Class I or II vapor retarder.

c. The requirements in this table apply only to insulation used to control moisture in order to allow walls without a Class I, II or III interior vapor retarder. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of the *California Energy Code*.

R702.7.1 Spray foam plastic insulation for moisture control with Class II and III vapor retarders. For purposes of compliance with Tables R702.7(3) and R702.7(4), spray foam with a maximum permeance of 1.5 perms at the installed thickness applied to the interior side of wood structural panels, fiberboard, insulating sheathing or gypsum shall be deemed to meet the continuous insulation moisture control requirement in accordance with one of the following conditions:

1. The spray foam *R*-value is equal to or greater than the specified continuous insulation *R*-value.
2. The combined *R*-value of the spray foam and continuous insulation is equal to or greater than the specified continuous insulation *R*-value.

R702.7.2 Vapor retarder installation. Vapor retarders shall be installed in accordance with the manufacturer's instructions, accepted installation methods or an approved design. Where a vapor retarder also functions as a component of a continuous air barrier, the vapor retarder shall be installed as an air barrier in accordance with *the California Energy Code.*

R702.7.3 California Energy Code and International Energy Conservation Code Climate Zones. *The IECC climate zones used by this section differ from those used by the California Energy Code to determine applicability of energy efficiency measures. Comparison of IECC and California Energy Code climate zones is shown in Table R702.7.3.*

TABLE R702.7.3—IECC VS. CALIFORNIA ENERGY CODE CLIMATE ZONE COMPARISON		
IECC[a]	***CALIFORNIA ENERGY CODE***	***DESCRIPTION[b]***
6	*16*	*Includes Alpine, Mono Counties*
5	*11, 12, 16*	*Includes Siskiyou, Modoc, Lassen, Plumas, Sierra, Nevada Counties*
4 (marine)	*1, 2, 16*	*Includes Del Norte and Humboldt Counties*
4	*2, 12, 13, 16*	*Includes Inyo, Trinity, Lake, El Dorado, Amador,Calaveras, Tuolumne, Mariposa Counties*
3	*8, 9, 10,11,12, 13, 14, 15, 16*	*Includes Shasta, Tehama, Butte, Glenn, Colusa, Yuba, Contra Costa, Sutter, Yolo, Sacramento, Placer, San Joaquin, Solano, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, Kern, Ventura, Los Angeles, Orange, San Bernardino, Riverside Counties*
3 (marine)	*1, 2, 3, 4, 5, 6, 7, 9, 12, 16*	*Includes Mendocino, Sonoma, Marin, San Francisco, San Mateo, Alameda, Santa Cruz, Monterey, San Benito, San Luis Obispo, Santa Barbara, Ventura, San Diego Counties*
2	*14, 16*	*Includes Imperial County*

a. IECC Climate Zones 1, 7 and 8 do not occur in California, nor do any IECC moist climate zones.

b. IECC boundaries are defined by county political boundary lines. California Energy Code boundaries are based on metes and bounds specifications aligned with climate-affecting geographic features, which often do not coincide with county lines.

SECTION R703—EXTERIOR WALL COVERING

R703.1 General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.4.

Exception: Log walls designed and constructed in accordance with the provisions of ICC 400.

R703.1.1 Water resistance. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior cladding as required by Section R703.2 and a means of draining to the exterior water that penetrates the exterior cladding.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed in accordance with Section R703.4 or R703.8.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections R703.2 and R703.4, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E331 under the following conditions:
   2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
   2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
   2.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299 Pa).
   2.4. Exterior wall envelope assemblies shall be subjected to the minimum test exposure for a minimum of 2 hours.

The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings penetration or intersections of terminations with dissimilar materials.

R703.1.2 Wind resistance. Wall coverings, backing materials and their attachments shall be capable of resisting wind loads in accordance with Tables R301.2.1(1) and R301.2.1(2). Wind-pressure resistance of the siding, exterior soffit and backing materials shall be determined by ASTM E330 or other applicable standard test methods. Where wind-pressure resistance is determined by design analysis, data from approved design standards and analysis conforming to generally accepted engineering practice shall be used to evaluate the siding, exterior soffit and backing material and its fastening. All applicable failure modes including bending rupture of siding, fastener withdrawal and fastener head pull-through shall be considered in the testing or design analysis. Where the wall covering, exterior soffit and backing material resist wind load as an assembly, use of the design capacity of the assembly shall be permitted.

R703.2 Water-resistive barrier. Not fewer than one layer of water-resistive barrier shall be applied over studs or sheathing of all exterior walls with flashing as indicated in Section R703.4, in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer and behind deck ledgers. The water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1. Where the water-resistive barrier also functions as a component of a continuous air barrier, the water-resistive barrier shall be installed as an air barrier in accordance with *the California Energy Code*. Water-resistive barrier materials shall comply with one of the following:

1. No. 15 felt complying with ASTM D226, Type 1.
2. ASTM E2556, Type 1 or 2.
3. Foam plastic insulating sheathing water-resistive barrier systems complying with Section R703.1.1 and installed in accordance with the manufacturer's installation instructions.
4. ASTM E331 in accordance with Section R703.1.1.
5. Other approved materials in accordance with the manufacturer's installation instructions.

No.15 asphalt felt and water-resistive barriers complying with ASTM E2556 shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and where joints occur, shall be lapped not less than 6 inches (152 mm).

Exception: A water-resistive barrier shall not be required in unconditioned detached tool sheds, storage sheds, playhouses, and other similar accessory structures provided all of the following requirements are met:

1. Exterior wall covering is limited to siding that is attached direct to studs.
2. Exterior walls are uninsulated.
3. Interior side of exterior walls has no wall covering or wall finishes.

R703.3 Wall covering nominal thickness and attachments. The nominal thickness and attachment of exterior wall coverings shall be in accordance with Table R703.3(1), the wall covering material requirements of this section, and the wall covering manufacturer's installation instructions. Cladding attachment over foam sheathing shall comply with the additional requirements and limitations of Sections R703.15 through R703.17. Nominal material thicknesses in Table R703.3(1) are based on a maximum stud spacing of 16 inches (406 mm) on center. Where specified by the siding manufacturer's instructions and supported by a test report or other documentation, attachment to studs with greater spacing is permitted. Fasteners for exterior wall coverings attached to wood framing shall be in accordance with Section R703.3.3 and Table R703.3(1). Exterior wall coverings shall be attached to cold-formed steel light frame construction in accordance with the cladding manufacturer's installation instructions, the requirements of Table R703.3(1) using screw fasteners substituted for the nails specified in accordance with Table R703.3(2), or an approved design.

304 or Type 316 staples with crown widths $^{7}/_{16}$ inch (11 mm) minimum, $^{3}/_{4}$ inch (19 mm) maximum, shall be used and the crown of the staple shall be placed parallel with the butt of the shake or the shingle. In single-course application, the fasteners shall be concealed by the course above and shall be driven approximately 1 inch (25 mm) above the butt line of the succeeding course and $^{3}/_{4}$ inch (19 mm) from the edge. In double-course applications, the exposed shake or shingle shall be face-nailed with two fasteners, driven approximately 2 inches (51 mm) above the butt line and $^{3}/_{4}$ inch (19 mm) from each edge. Fasteners installed within 15 miles (24 km) of saltwater coastal areas shall be stainless steel Type 316. Fasteners for fire-retardant-treated shakes or shingles in accordance with Section R902 or pressure-impregnated-preservative-treated shakes or shingles in accordance with AWPA U1 shall be stainless steel Type 316. The fasteners shall penetrate the sheathing or furring strips by not less than $^{1}/_{2}$ inch (13 mm) and shall not be overdriven. Fasteners for untreated (natural) and treated products shall comply with ASTM F1667.

TABLE R703.6.3(1)—SINGLE-COURSE SIDEWALL FASTENERS

PRODUCT TYPE	NAIL TYPE, MINIMUM LENGTH AND SHANK DIAMETER (inches)
R & R and sanded shingles	
16″ and 18″ shingles	3d box $1\,^{1}/_{4} \times 0.076$
24″ shingles	4d box $1^{1}/_{2} \times 0.076$
Grooved shingles	
16″ and 18″ shingles	3d box $1^{1}/_{4} \times 0.076$
24″ shingles	4d box $1^{1}/_{2} \times 0.076$
Split and sawn shakes	
18″ straight-split shakes	5d box $1^{3}/_{4} \times 0.080$
18″ and 24″ handsplit shakes	6d box 2 × 0.099
24″ tapersplit shakes	5d box $1^{3}/_{4} \times 0.080$
18″ and 24″ tapersawn shakes	6d box 2 × 0.099
For SI: 1 inch = 25.4 mm.	

TABLE R703.6.3(2)—DOUBLE-COURSE SIDEWALL FASTENERS

PRODUCT TYPE	NAIL TYPE, MINIMUM LENGTH AND SHANK DIAMETER (inches)
R & R and sanded shingles	
16″, 8″ and 24″ shingles	5d box $1^{3}/_{4} \times 0.08$ or 5d casing nails $1^{3}/_{4} \times 0.080$
Grooved shingles	
16″, 18″ and 24″shingles	5d box $1^{3}/_{4} \times 0.080$
Split and sawn shakes	
18″ straight-split shakes	7d box $2^{1}/_{4} \times 0.099$ or 8d box $2^{1}/_{2} \times 0.113$
18″ and 24″ handsplit shakes	7d box $2^{1}/_{4} \times 0.099$ or 8d box $2^{1}/_{2} \times 0.113$
24″ tapersplit shakes	7d box $2^{1}/_{4} \times 0.099$ or 8d box $2^{1}/_{2} \times 0.113$
18″ and 24″ tapersawn shakes	7d box $2^{1}/_{4} \times 0.099$ or 8d box $2^{1}/_{2} \times 0.113$
For SI: 1 inch = 25.4 mm.	

R703.6.4 Bottom courses. The bottom courses shall be doubled.

R703.7 Exterior plaster (stucco). Installation of exterior plaster shall be in compliance with ASTM C926, ASTM C1063 and the provisions of this code.

R703.7.1 Lath. Lath and lath attachments shall be of corrosion-resistant materials in accordance with ASTM C1063. Expanded metal, welded wire, or woven wire lath shall be attached to wood framing members or furring. Where the exterior plaster is serving as wall bracing in accordance with Table R602.10.4, the lath shall be attached directly to framing. The lath shall be attached with $1^{1}/_{2}$-inch-long (38 mm), 0.120-inch-diameter (3 mm), 11-gage nails having a $^{7}/_{16}$-inch (11.1 mm) head, or $^{7}/_{8}$-inch-long (22.2 mm), 16-gage staples, spaced not more than 7 inches (178 mm) on center along framing members or furring and not more than 24 inches (610 mm) on center between framing members or furring, or as otherwise approved. Additional fastening between wood framing members shall not be prohibited. Lath attachments to cold-formed steel framing or to masonry, stone, or concrete substrates shall be in accordance with ASTM C1063. Where lath is installed directly over foam sheathing, lath connections shall also be in accordance with Section R703.15, R703.16 or R703.17. Where lath is attached to furring installed over foam sheathing, the furring connections shall be in accordance with Section R703.15, R703.16 or R703.17.

Exception: Lath is not required over masonry, cast-in-place concrete, precast concrete or stone substrates prepared in accordance with ASTM C1063.

703.7.1.1 Furring. Where provided, furring shall consist of wood furring strips not less than 1 inch by 2 inches (25 mm by 51 mm), minimum $^{3}/_{4}$-inch (19 mm) metal channels, or self-furring lath, and shall be installed in accordance with ASTM C1063. Furring shall

be spaced not greater than 24 inches (600 mm) on center and, where installed over wood or cold-formed steel framing, shall be fastened into framing members.

R703.7.2 Plaster. Plastering with cement plaster shall be in accordance with ASTM C926. Cement materials shall be in accordance with one of the following:

1. Masonry cement conforming to ASTM C91, Type M, S or N.
2. Portland cement conforming to ASTM C150, Type I, II or III.
3. Blended hydraulic cement conforming to ASTM C595, Type IP, IS (< 70), IL, or IT (S < 70).
4. Hydraulic cement conforming to ASTM C1157, Type GU, HE, MS, HS or MH.
5. Plastic (stucco) cement conforming to ASTM C1328.

Plaster shall be not less than three coats where applied over metal lath or wire lath and shall be not less than two coats where applied over masonry, concrete, pressure-preservative-treated wood or decay-resistant wood as specified in Section R304.1 or gypsum backing. If the plaster surface is completely covered by veneer or other facing material or is completely concealed, plaster application need be only two coats, provided the total thickness is as set forth in Table R702.1(1).

On wood-frame construction with an on-grade floor slab system, exterior plaster shall be applied to cover, but not extend below, lath, paper and screed.

The proportion of aggregate to cementitious materials shall be as set forth in Table R702.1(3).

R703.7.2.1 Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of $3^1/_2$ inches (89 mm), shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C926. The weep screed shall be placed not less than 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

R703.7.3 Water-resistive barriers. Water-resistive barriers shall be installed as required in Section R703.2 and shall comply with Section R703.7.3.1 or R703.7.3.2.

Exception: Sections R703.7.3.1 and R703.7.3.2 shall not apply to construction where accumulation, condensation or freezing of moisture will not damage the materials.

>| | **R703.7.3.1 Dry climates.** In *other than IECC 3 (marine) and 4 (marine)* climate zones indicated in *Table R702.7.3,* water-resistive barriers shall comply with one of the following:

1. The water-resistive barrier shall be two layers of 10-minute Grade D paper or have a water resistance equal to or greater than two layers of a water-resistive barrier complying with ASTM E2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane. Flashing installed in accordance with Section R703.4 and intended to drain to the water-resistive barrier shall be directed between the layers.
2. The water-resistive barrier shall be 60-minute Grade D paper or have a water resistance equal to or greater than one layer of a water-resistive barrier complying with ASTM E2556, Type II. The water-resistive barrier shall be separated from the stucco by a layer of foam plastic insulating sheathing, other non-water-absorbing layer, a drainage space or means of drainage complying with Section R703.7.3.2. Flashing installed in accordance with Section 703.4 and intended to drain to the water-resistive barrier shall be directed to the exterior side of the water-resistive barrier.

>| | **R703.7.3.2 Moist or marine climates.** In *IECC 3 (marine) and 4 (marine)* climate zones indicated in *Table R702.7.3*, water-resistive barriers shall comply with one of the following:

1. In addition to complying with Section R703.7.3.1, a space or drainage material not less than $^3/_{16}$ inch (5 mm) in depth shall be added to the exterior side of the water-resistive barrier.
2. In addition to complying with Section R703.7.3.1, Item 2, drainage on the exterior of the water-resistive barrier shall have a drainage efficiency of not less than 90 percent, as measured in accordance with ASTM E2273 or Annex A2 of ASTM E2925.

R703.7.4 Application. Each coat shall be kept in a moist condition for at least 48 hours prior to application of the next coat.

Exception: Applications installed in accordance with ASTM C926.

R703.7.5 Curing. The finish coat for two-coat cement plaster shall not be applied sooner than seven days after application of the first coat. For three-coat cement plaster, the second coat shall not be applied sooner than 48 hours after application of the first coat. The finish coat for three-coat cement plaster shall not be applied sooner than seven days after application of the second coat.

R703.8 Anchored stone and masonry veneer, general. Anchored stone and masonry veneer shall be installed in accordance with this chapter, Table R703.3(1) and Figures R703.8(1) and R703.8(2). These veneers installed over a backing of wood or cold-formed steel shall be limited to the first story above grade plane and shall not exceed 5 inches (127 mm) in thickness. See Section R602.10 for wall bracing requirements for masonry veneer for wood-framed construction and Section R603.9.5 for wall bracing requirements for masonry veneer for cold-formed steel construction.

Exceptions:

1. For buildings in Seismic Design Categories A, B and C, exterior stone or masonry veneer, as specified in Table R703.8(1), with a backing of wood or steel framing shall be permitted to the height specified in Table R703.8(1) above a noncombustible foundation.

accordance with Item 5.1.1 and shall be in accordance with the R-values in Table R806.5 for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.

5.1.4. Alternatively, sufficient rigid board or sheet insulation shall be installed directly above the structural roof sheathing to maintain the monthly average temperature of the underside of the structural roof sheathing above 45°F (7°C). For calculation purposes, an interior air temperature of 68°F (20°C) is assumed and the exterior air temperature is assumed to be the monthly average outside air temperature of the three coldest months.

5.2. In Climate Zones 1, 2 and 3, air-permeable insulation installed in unvented attics shall meet the following requirements:

5.2.1. An approved vapor diffusion port shall be installed not more than 12 inches (305 mm) from the highest point of the roof, measured vertically from the highest point of the roof to the lower edge of the port.

5.2.2. The port area shall be greater than or equal to 1:600 of the ceiling area. Where there are multiple ports in the attic, the sum of the port areas shall be greater than or equal to the area requirement.

5.2.3. The vapor-permeable membrane in the vapor diffusion port shall have a vapor permeance rating of greater than or equal to 20 perms when tested in accordance with Procedure A of ASTM E96.

5.2.4. The vapor diffusion port shall serve as an air barrier between the attic and the exterior of the building.

5.2.5. The vapor diffusion port shall protect the attic against the entrance of rain and snow.

5.2.6. Framing members and blocking shall not block the free flow of water vapor to the port. Not less than a 2-inch (51 mm) space shall be provided between any blocking and the roof sheathing. Air-permeable insulation shall be permitted within that space.

5.2.7. The roof slope shall be greater than or equal to 3:12 (vertical/horizontal).

5.2.8. Where only air-permeable insulation is used, it shall be installed directly below the structural roof sheathing, on top of the attic floor, or on top of the ceiling.

5.2.9. Air-impermeable insulation, where used in conjunction with air-permeable insulation, shall be directly above or below the structural roof sheathing and is not required to meet the R-value in Table R806.5. Where directly below the structural roof sheathing, there shall be no space between the air-impermeable insulation and air-permeable insulation.

5.2.10. Where air-permeable insulation is used and is installed directly below the roof structural sheathing, air shall be supplied at a flow rate greater than or equal to 50 CFM (23.6 L/s) per 1,000 square feet (93 m^2) of ceiling. The air shall be supplied from ductwork providing supply air to the occupiable space when the conditioning system is operating. Alternatively, the air shall be supplied by a supply fan when the conditioning system is operating.

Exceptions:

1. Where both air-impermeable and air-permeable insulation are used, and the *R*-value in Table 806.5 is met, air supply to the attic is not required.
2. Where only air-permeable insulation is used and is installed on top of the attic floor, or on top of the ceiling, air supply to the attic is not required.

5.3. Where preformed insulation board is used as the air-impermeable insulation layer, it shall be sealed at the perimeter of each individual sheet interior surface to form a continuous layer.

TABLE R806.5—INSULATION FOR CONDENSATION CONTROL

CLIMATE ZONE	MINIMUM RIGID BOARD OR AIR-IMPERMEABLE INSULATION *R*-VALUE[a, b]
2B and 3B tile roof only	0 (none required)
1, 2A, 2B, 3A, 3B, 3C	R-5
4C	R-10
4A, 4B	R-15
5	R-20
6	R-25
7	R-30
8	R-35

a. Contributes to but does not supersede the requirements in *the California Energy Code*.

b. Alternatively, sufficient continuous insulation shall be installed directly above the structural roof sheathing to maintain the monthly average temperature of the underside of the structural roof sheathing above 45°F (7°C). For calculation purposes, an interior air temperature of 68°F (20°C) is assumed and the exterior air temperature is assumed to be the monthly average outside air temperature of the three coldest months.

SECTION R807—ATTIC ACCESS

R807.1 Attic access. Buildings with attics shall have an access opening to attic areas that have a vertical height of 30 inches (762 mm) or greater over an area of not less than 30 square feet (2.8 m^2). The vertical height shall be measured from the top of the ceiling framing members to the underside of the roof framing members.

The rough-framed opening shall be not less than 22 inches by 30 inches (559 mm by 762 mm) and shall be located in a hallway or other location with ready access. Where located in a wall, the opening shall be not less than 22 inches wide by 30 inches high (559 mm wide by 762 mm high). Where the access is located in a ceiling, unobstructed headroom in the attic space above the access shall be not less than 30 inches (762 mm) along one side or more measured vertically from the bottom of ceiling framing members. See the *California Mechanical Code* for access requirements where mechanical equipment is located in attics.

E1602—2003(2017): 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
R506.3.3

E1886—19: Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and 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—20: Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
R301.2.1.2, R609.6.1, R609.6.2

E2178—21a: Standard Test Method for Determining Air Leakage Rate and Calculation of 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(2019): 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

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

E2707—2015: tandard 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: tandard 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.*

E2925—19a: Standard Specification for Manufactured Polymeric Drainage and Ventilation Materials Used to Provide a Rainscreen Function
R703.7.3.2

E2957—2015: Standard Test Method for Resistance to Wildfire Penetration of Eaves, Soffits and Other Projections
R337.7.5, R337.7.6, R337.7.8, R337.7.10

**ASTM E2957, Amended Sections as follows:*

Add new Section 12.5 as follows:

12.5 Conditions of Acceptance: *Should one of the three replicates fail to meet the Conditions of Acceptance, three additional tests may be run. All of the additional tests must 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.

F844—19: Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use
Table R507.2.3

F1554—20: Specification for Anchor Bolts, Steel, 36, 55 and 105-ksi Yield Strength
R608.5.2.2

F1667—21a: Specification for Driven Fasteners: Nails, Spikes, and Staples
Table R507.2.3, Table R602.3(1), R703.3.3, R703.6.3, Table R703.15.1, Table R703.15.2, R905.2.5

F2090—21: Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms
R319.1.1, R321.2.1, R321.2.2

F2374: Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices

AWC

American Wood Council 222 Catoctin Circle SE, Suite 201 Leesburg, VA 20175

ANSI/AWC NDS—2024: National Design Specification (NDS) for Wood Construction—with 2024 NDS Supplement
R404.2.2, R502.2, Table R503.1, R507.2.1, R602.3, R608.9.2, R608.9.3, Table R703.15.1, Table R703.15.2, R802.2

ANSI/AWC PWF—2021: Permanent Wood Foundation Design Specification
R304.3.2, R401.1, R404.2.3

ANSI/AWC WFCM—2024: Wood Frame Construction Manual for One- and Two-Family Dwellings
R301.1.1, R301.2.1.1, R602.10.8.2, Figure R608.9(9), R608.9.2, R608.9.3, R608.10

AWC STJR—2024: Span Tables for Joists and Rafters
R502.3, R802.4.1, R802.5.1

AWPA

American Wood Protection Association P.O. Box 361784 Birmingham, AL 35236-1784

C1—03: All Timber Products—Preservative Treatment by Pressure Processes
R902.2

M4—21: Standard for the Handling, Storage, Field Fabrication, and Field Treatment of Preservative-treated Wood Products:
R304.1.1, R305.1.2

U1—23: USE CATEGORY SYSTEM: User Specification for Treated Wood Except Commodity Specification H
R304.1, R402.1.2, R504.3, R703.6.3, R905.7.6, Table R905.8.5, R905.8.7

CEN

European Committee for Standardization (EN) Rue de la Science 23 Brussels, Belgium B - 1040

EN 15250—2007: Slow Heat Release Appliances Fired by Solid Fuel Requirements and Test Methods
R1002.2

CPA

Composite Panel Association 19465 Deerfield Avenue, Suite 306 Leesburg, VA 20176

ANSI A135.4—2012(R2020): Basic Hardboard
Table R602.3(2)

ANSI A135.5—2012(R2020): Prefinished Hardboard Paneling
R702.5

ANSI A135.6—2012(R2020): Engineered Wood Siding
R703.5

ANSI A135.7—2012(R2020): Engineered Wood Trim
R703.5

ANSI A208.1—2016: Particleboard
R503.3.1, R602.1.9, R605.1

CPSC

Consumer Product Safety Commission 4330 East-West Highway Bethesda, MD 20814

16 CFR, Part 1201 (2002): Safety Standard for Architectural Glazing Material
R324.1.1, R324.3.1, Table R324.3.1(1)

16 CFR, Part 1209 (2002): Interim Safety Standard for Cellulose Insulation
R302.10.3

16 CFR, Part 1404 (2002): Cellulose Insulation
R302.10.3

APPENDIX

BF

PATIO COVERS

The provisions contained in this appendix are not mandatory unless specifically *adopted by a state agency or* referenced in the adopting ordinance.

About this appendix: Appendix BF relaxes certain provisions contained in the body of the code as related to patio covers, including those regarding: permitted uses; exterior wall insect screens; glazing and translucent or transparent plastic; light, ventilation and emergency egress; height; structural design loads; and footings. This appendix also includes provisions that are specifically applicable to hurricane-prone regions.

SECTION BF101—GENERAL

BF101.1 Scope. Patio covers shall conform to the requirements of Sections BF101 through BF106.

BF101.2 Permitted uses. Patio covers detached from or attached to dwelling units shall be used only for recreational, outdoor living purposes, and not as carports, garages, storage rooms or habitable rooms.

SECTION BF102—DEFINITION

BF102.1 General. The following word and term shall, for the purposes of this appendix, have the meaning shown herein.

PATIO COVER. A structure with open or glazed walls that is used for recreational, outdoor living purposes associated with a dwelling unit.

SECTION BF103—EXTERIOR WALLS AND OPENINGS

BF103.1 Enclosure walls. Enclosure walls shall be permitted to be of any configuration, provided that the open or glazed area of the longer wall and one additional wall is not less than 65 percent of the area below 6 feet 8 inches (2032 mm) of each wall, measured from the floor. Openings shall be enclosed with any of the following:

1. Insect screening.
2. Approved translucent or transparent plastic not more than 0.125 inch (3.2 mm) in thickness.
3. Glass conforming to the provisions of Section R324.
4. Any combination of the foregoing.

BF103.2 Light, ventilation and emergency egress. Exterior openings required for light and ventilation into a patio structure conforming to Section BF101 shall be unenclosed where such openings serve as emergency egress or rescue openings from sleeping rooms. Where such exterior openings serve as an exit from the dwelling unit, the patio structure, unless unenclosed, shall be provided with exits conforming to the provisions of Section R318.

SECTION BF104—HEIGHT

BF104.1 Height. Patio covers are limited to one-story structures not exceeding 12 feet (3657 mm) in height.

SECTION BF105—STRUCTURAL PROVISIONS

BF105.1 Design loads. Patio covers shall be designed and constructed to sustain, within the stress limits of this code, all dead loads plus a vertical live load of not less than 10 pounds per square foot (0.48 kN/m^2), except that snow loads shall be used where such snow loads exceed this minimum. Such covers shall be designed to resist the minimum wind loads set forth in Section R301.2.1.

BF105.2 Footings. In areas with a frostline depth of zero as specified in Table R301.2, for patio covers supported on a slab-on-grade without footings, the slab shall conform to the provisions of Section R506, shall be not less than 3.5 inches (89 mm) thick and the columns shall not support live and dead loads in excess of 750 pounds (3.34 kN) per column.

SECTION BF106—SPECIAL PROVISIONS FOR ALUMINUM SCREEN ENCLOSURES IN HURRICANE-PRONE REGIONS

BF106.1 General. Screen enclosures in hurricane-prone regions shall be in accordance with the provisions of this section.

BF106.1.1 Habitable spaces. Screen enclosures shall not be considered habitable spaces.

BF106.1.2 Minimum ceiling height. Screen enclosures shall have a ceiling height of not less than 7 feet (2134 mm).

BF106.2 Definition. The following word and term shall, for the purposes of this appendix, have the meaning shown herein.

SCREEN ENCLOSURE. A building or part thereof, in whole or in part self-supporting, and having walls of insect screening, and a roof of insect screening, plastic, aluminum or similar lightweight material.

BF106.3 Screen enclosures. Screen enclosures shall comply with Sections BF106.3.1 and BF106.3.2.

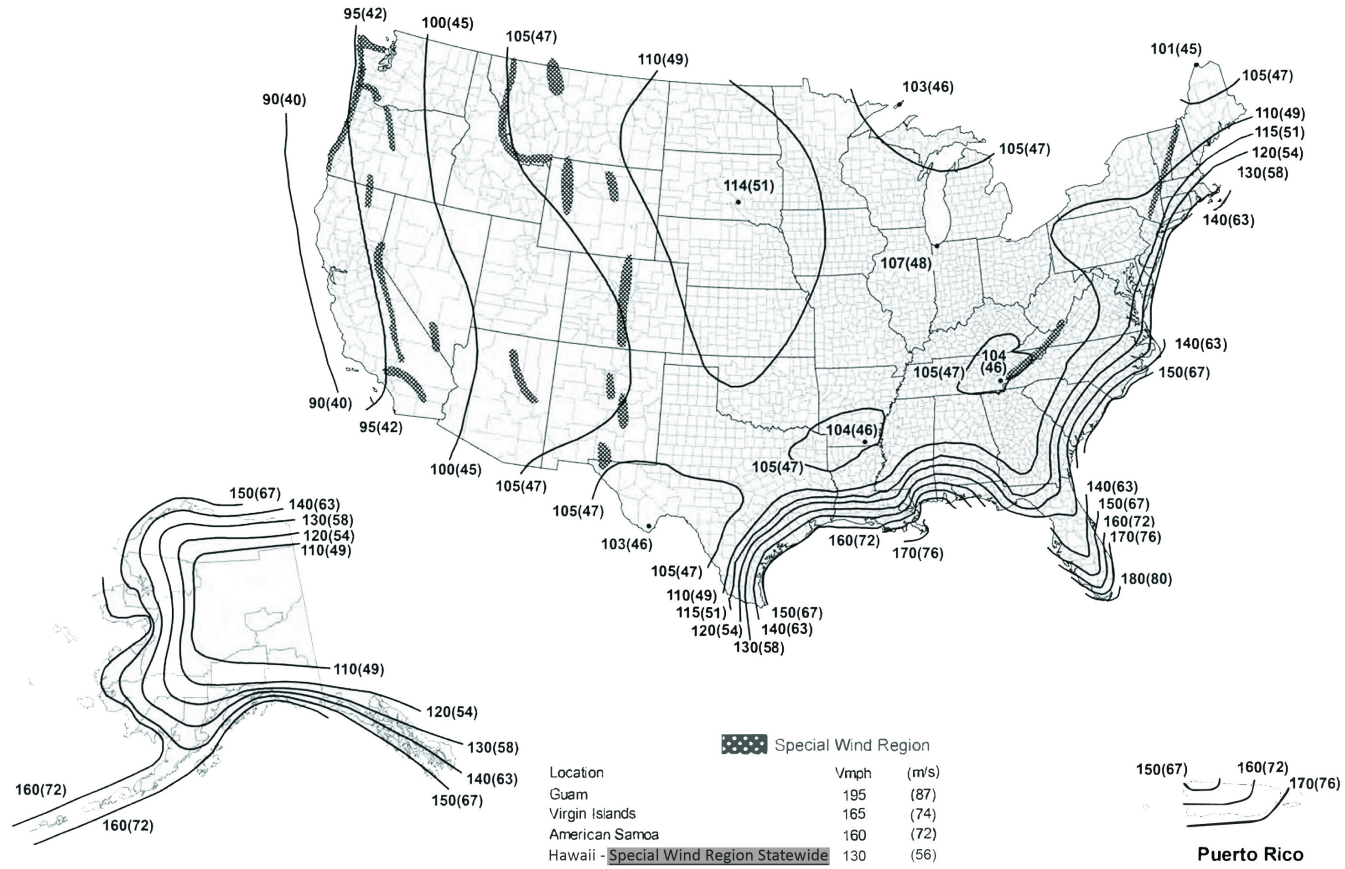
BF106.3.1 Thickness. Actual wall thickness of extruded aluminum members shall be not less than 0.040 inch (1.02 mm).

BF106.3.2 Density. Screen density shall be not more than 20 threads per inch by 20 threads per inch mesh.

BF106.4 Design. The structural design of screen enclosures shall comply with Sections BF106.4.1 through BF106.4.3.

BF106.4.1 Wind load. Structural members supporting screen enclosures shall be designed to support the minimum wind loads given in Tables BF106.4.1(1) and BF106.4.1(2) for the ultimate design wind speed, V_{ult}, determined from Figure BF106.4.1. Where any value is less than 10 pounds per square foot (psf) (0.479 kN/m^2) use 10 pounds per square foot (0.479 kN/m^2).

FIGURE BF106.4.1—ULTIMATE DESIGN WIND SPEEDS FOR PATIO COVERS AND SCREEN ENCLOSURES



For SI: 1 foot = 304.8 mm, 1 mph = 0.447 m/s. Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 feet above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7-percent probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 years).

TABLE BF106.4.1(1)—DESIGN WIND PRESSURES FOR SCREEN ENCLOSURE FRAMING[a, b, e, f, g, h]

LOAD CASE	WALL	ULTIMATE DESIGN WIND SPEED, V_{ult} (mph)											
		90	95	100	105	110	120	130	140	150	160	170	180
		Exposure Category B Design Pressure (psf)											
A[c]	Windward and leeward walls (flow thru) and windward wall (nonflow thru) L/W = 0-1	5	6	6	7	8	9	11	13	14	16	18	21
A[c]	Windward and leeward walls (flow thru) and windward wall (nonflow thru) L/W = 2	6	7	7	8	9	11	12	14	16	19	21	24
B[d]	Windward: Nongable roof	7	8	9	10	11	13	15	18	21	23	26	30
B[d]	Windward: Gable roof	10	10	11	13	14	16	19	22	26	29	33	37
	ROOF												
All[e]	Roof-screen	2	2	2	3	3	3	4	4	5	6	7	7
All[e]	Roof-solid	6	6	7	8	8	10	12	13	15	18	20	22

APPENDIX

CG

NONSEWERED SANITATION SYSTEMS

The provisions contained in this appendix are not mandatory unless specifically *adopted by a state agency or* referenced in the adopting ordinance.

User notes:

About this appendix: This appendix addresses the considerations that need to be taken into account by building officials regarding the placement and installation of nonsewered sanitation systems in buildings. This appendix would permit the installation of a of these systems and provide an exception to the general requirement in the *California Plumbing Code* and this code that sanitation devices be connected to the building drainage system.

CG101—GENERAL

CG101.1 Applicability. The provisions of this chapter shall apply to the installation of nonsewered sanitation systems.

CG101.2 System requirements. Nonsewered sanitation systems shall comply with ANSI/CAN/IAPMO/ISO 30500.

CG102—DEFINITIONS

CG102.1 General. For purposes of this chapter, the following definitions shall apply:

CONDITIONED SPACE. An area, room or space normally occupied and being heated or cooled for human habitation by any equipment.

NONSEWERED SANITATION SYSTEM. A prefabricated integrated sewage treatment unit that is not connected to a public sewer or private sewage disposal system.

CG103—INSTALLATION

CG103.1 General. The installation of nonsewered sanitation systems shall be in accordance with the manufacturer's installation instructions and with Sections CG103.2 through CG103.7.

CG103.2 Operating conditions. A nonsewered sanitation system in either a conditioned or unconditioned space shall be installed where the ambient temperature, ambient humidity and altitude (*atmospheric pressure*) are in accordance with the manufacturer's installation instructions or product listing.

CG103.3 Clearances for servicing and maintenance. A nonsewered sanitation system shall be located to permit access and sufficient clearance for service and maintenance. Unless otherwise specified by the manufacturer's installation instructions, not less than 30 inches (762 mm) in depth, width and height of working space shall be provided at any access panel.

CG103.4 Backflow prevention. A domestic water supply connection to a nonsewered sanitation system shall be protected in accordance with Section P2902.

CG103.5 Effluent storage. Any container or vessel for the storage of effluent discharged from a nonsewered sanitation system and not integral to such system shall be installed in accordance with Section P2910.9.

CG103.6 Systems employing combustion. A nonsewered sanitation system employing combustion shall comply with the *California Mechanical Code*.

CG103.7 Connection to plumbing system not required. A nonsewered sanitation system is not required to be connected to the sanitary drainage system of the *building* or premises.

CG104—MANUAL REQUIRED

CG104.1 Operation and maintenance manual. Nonsewered sanitation systems shall have an operation and maintenance manual provided by the manufacturer.

CG105—SYSTEM OUTPUT

CG105.1 General. The use or disposal of all substances exiting the nonsewered sanitation system shall be determined by the authority having jurisdiction.

CG106—REFERENCED STANDARDS

CG106.1 General. See Table CG106.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, the standard title and the section or sections of this appendix that reference the standard.

TABLE CG106.1—REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
ANSI/CAN/IAPMO/ISO 30500—2019	*Non-sewered sanitation systems — Prefabricated integrated treatment units — General safety and performance requirements for design and testing*	CG101.2

APPENDIX

CI SWIMMING POOL SAFETY ACT

(Note: See Chapter 31, Section 3109 of the California Building Code, Title 24, Part 2.)
The provisions contained in this appendix are mandatory to reflect the
Swimming Pool Safety Act found in Health and Safety Code Sections 115920 through 115929.

CI100 California swimming pool safety act (statewide).

The following text in this section contains the statutory language in the Swimming Pool Safety Act (HS Code, Sections 115920 through 115929) that is required to be duplicated and published in California Code of Regulations, Title 24. As such, the section numbers reflect those within the Health and Safety Code.

NOTE: These regulations are subject to local government modification. You should verify the applicable local government requirements at the time of application for a building permit.

Authority: *Health and Safety Code Section 18942(b)*
Reference: *Health and Safety Code Section 18942(b); Chapter 925, Statutes of 1996*

115920. *This act shall be known and may be cited as the Swimming Pool Safety Act.*

(Added by Stats. 1996, Ch. 925, Sec. 3.5. Effective January 1, 1997.)

115921. *As used in this article, the following terms have the following meanings:*

(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas and nonportable wading pools.

(b) "Public swimming pool" means a swimming pool operated for the use of the general public with or without charge, or for the use of the members and guests of a private club. Public swimming pool does not include a swimming pool located on the grounds of a private single-family home.

(c) "Enclosure" means a fence, wall or other barrier that isolates a swimming pool from access to the home.

(d) "ANSI/APSP performance standard" means a standard that is accredited by the American National Standards Institute (ANSI) and published by the Association of Pool and Spa Professionals (APSP).

(e) "Suction outlet" means a fitting or fixture typically located at the bottom or on the sides of a swimming pool that conducts water to a recirculating pump.

[Amended by Stats. 2024, Ch 769 (SB 552) Effective January 1, 2025.]

115922.

(a) Except as provided in Section 115925, subject to subdivision (b), and consistent with Section 1596.814, when a building permit is issued for the construction of a new swimming pool or spa or the remodeling of an existing swimming pool or spa at a private single-family home, the respective swimming pool or spa shall be equipped with at least two of the following seven drowning prevention safety features:

(1) An enclosure that meets the requirements of Section 115923 and isolates the swimming pool or spa from the private single-family home.

(2) Removable mesh fencing that meets the ASTM International F2286 standard in conjunction with a gate that is self-closing and self-latching and can accommodate a key lockable device.

(3) A manually operated or power-operated safety pool cover that is accompanied by a label verifying that the cover meets the specifications of the ASTM International F1346-23 standard.

(4) Exit alarms on the private single-family home's doors and windows that provide direct access to the swimming pool or spa without any intervening enclosure. Whenever any door or window is opened or left ajar, exit alarms shall make either an audible, continuous alarm sound or a repeating verbal warning, such as a notification that "the door to the pool is open." An exit alarm may be battery operated or connected to the electrical wiring of the building.

(5) A self-closing, self-latching device with a release mechanism placed no lower than 54 inches above the floor on the private single-family home's doors providing direct access to the swimming pool or spa.

(6) An alarm in good repair and operable as designed that, when placed in a swimming pool or spa, will sound upon detection of accidental or unauthorized entrance into the water. The alarm shall meet and be independently certified to the ASTM International F2208 standard that includes surface motion, pressure, sonar, laser and infrared type alarms. A swimming protection alarm feature designed for individual use, including an alarm attached to a child that sounds when the child exceeds a certain distance or becomes submerged in water, is not a qualifying drowning prevention safety feature.

(7) Other means of protection, if the degree of protection afforded is equal to or greater than that afforded by any of the features set forth above and has been independently verified by an approved testing laboratory as meeting standards for those features established by ASTM International, the American Society of Mechanical Engineers, or another nation-

ally recognized standards development organization, and the feature is accompanied by a label verifying that the protection meets those standards.

(b) The requirements of subdivision (a) are not satisfied by any of the following:

(1) An exit alarm and a self-closing, self-latching device on the same door.

(2) An exit alarm and a door latch on separate doors.

(3) A safety pool cover and an alarm described in paragraph (6) of subdivision (a).

(c) Before the issuance of a final approval for the completion of permitted construction or remodeling work, the local building code official shall inspect the drowning safety prevention features required by this section and, if no violations are found, shall give final approval.

(Amended by Stats. 2024, Ch. 745 (AB 2866) and Ch 769 (SB 552) Effective January 1, 2025.)

115923. *An enclosure shall have all of the following characteristics:*

(a) Any access gates through the enclosure open away from the swimming pool and are self-closing with a self-latching device placed no lower than 60 inches above the ground.

(b) A minimum height of 60 inches.

(c) A maximum vertical clearance from the ground to the bottom of the enclosure of two inches.

(d) Gaps or voids, if any, do not allow passage of a sphere equal to or greater than four inches in diameter.

(e) An outside surface free of protrusions, cavities or other physical characteristics that would serve as handholds or footholds that could enable a child below the age of five years to climb over.

(Added by Stats. 1996, Ch. 925, Sec. 3.5. Effective January 1, 1997.)

115924.

(a) Any person entering into an agreement to build a swimming pool or spa, or to engage in permitted work on a pool or spa covered by this article, shall give the consumer notice of the requirements of this article.

(b) Pursuant to existing law, the Department of Health Services shall have available on the department's Web site, commencing January 1, 2007, approved pool safety information available for consumers to download. Pool contractors are encouraged to share this information with consumers regarding the potential dangers a pool or spa poses to toddlers. Additionally, pool contractors may provide the consumer with swimming pool safety materials produced from organizations such as the United States Consumer Product Safety Commission, Drowning Prevention Foundation, California Coalition for Children's Safety & Health, Safe Kids Worldwide, Association of Pool and Spa Professionals, or the American Academy of Pediatrics.

(Amended by Stats. 2006, Ch. 478, Sec. 3. Effective January 1, 2007.)

115925. *The requirements of this article do not apply to any of the following:*

(a) Public swimming pools.

(b) Hot tubs or spas with locking safety covers that comply with the ASTM International F1346 standard.

(c) An apartment complex or any residential setting other than a single-family home.

(Amended by Stats. 2023, Ch 769 (SB 552) Effective January 1, 2025.)

115926.

(a) The State Department of Social Services shall prescribe drowning prevention safety standards governing all swimming pools and other bodies of water located at facilities regulated by the department, regardless of whether the swimming pool is also subject to this article. The department may adopt higher drowning prevention safety standards than the requirements of this article. The department shall adopt regulations required by this section by January 1, 2027.

(b) Notwithstanding the rulemaking provisions of the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code), the State Department of Social Services may implement, interpret, or make specific this article by means of interim licensing standards or similar written instructions until regulations are adopted. These interim licensing standards or similar written instructions shall have the same force and effect as regulations until January 1, 2027.

(Added by Stats. 2024, Ch. 745 (AB 2866) Effective January 1, 2025.)

115927. *Notwithstanding any other provision of law, this article shall not be subject to further modification or interpretation by any regulatory agency of the state, this authority being reserved exclusively to local jurisdictions, as provided for in paragraph (7) of subdivision (a) of Section 115922 and subdivision (c) of Section 115925.*

(Amended by Stats. 2018, Ch. 957, Sec. 13. (SB 1078) Effective January 1, 2019.)

115928. *Whenever a building permit is issued for the construction of a new swimming pool or spa, the pool or spa shall meet all of the following requirements:*

(a) (1) The suction outlets of the pool or spa for which the permit is issued shall be equipped to provide circulation throughout the pool or spa as prescribed in paragraphs (2) and (3).

(2) The swimming pool or spa shall either have at least two circulation suction outlets per pump that shall be hydraulically balanced and symmetrically plumbed through one or more "T" fittings, and that are separated by a distance of at least three

feet in any dimension between the suction outlets, or be designed to use alternatives to suction outlets, including, but not limited to, skimmers or perimeter overflow systems to conduct water to the recirculation pump.

(3) The circulation system shall have the capacity to provide a complete turnover of pool water, as specified in Section 3124B of Chapter 31B of the California Building Standards Code (Title 24 of the California Code of Regulations).

(b) Suction outlets shall be covered with antientrapment grates, as specified in the ANSI/APSP-16 performance standard or successor standard designated by the federal Consumer Product Safety Commission, that cannot be removed except with the use of tools. Slots or openings in the grates or similar protective devices shall be of a shape, area and arrangement that would prevent physical entrapment and would not pose any suction hazard to bathers.

(c) Any backup safety system that an owner of a new swimming pool or spa may choose to install in addition to the requirements set forth in subdivisions (a) and (b) shall meet the standards as published in the document, "Guidelines for Entrapment Hazards: Making Pools and Spas Safer," Publication Number 363, March 2005, United States Consumer Product Safety Commission.

(Amended by Stats. 2012, Ch. 679, Sec. 2. (AB 2114) Effective January 1, 2013.)

115928.5. *Whenever a building permit is issued for the remodel or modification of an existing swimming pool, toddler pool or spa, the permit shall require that the suction outlet or suction outlets of the existing swimming pool, toddler pool or spa be upgraded so as to be equipped with antientrapment grates, as specified in the ANSI/APSP-16 performance standard or a successor standard designated by the federal Consumer Product Safety Commission.*

(Amended by Stats. 2012, Ch. 679, Sec. 3. (AB 2114) Effective January 1, 2013.)

115929.

(a) The Legislature encourages a private entity, in consultation with the Epidemiology and Prevention for Injury Control Branch of the department, to produce an informative brochure or booklet, for consumer use, explaining the child drowning hazards of, possible safety measures for and appropriate drowning hazard prevention measures for home swimming pools and spas, and to donate the document to the department.

(b) The Legislature encourages the private entity to use existing documents from the United States Consumer Product Safety Commission on pool safety.

(c) If a private entity produces the document described in subdivisions (a) and (b) and donates it to the department, the department shall review and approve the brochure or booklet.

(d) Upon approval of the document by the department, the document shall become the property of the state and a part of the public domain. The department shall place the document on its Web site in a format that is readily available for downloading and for publication. The department shall review the document in a timely and prudent fashion and shall complete the review within 18 months of receipt of the document from a private entity.

(Added by Stats. 2003, Ch. 422, Sec. 3. Effective January 1, 2004.)

HISTORY NOTE APPENDIX

2025 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,* 2022 Triennial Edition, effective January 1, 2023.

1. (HCD 07/24, SFM 05/24) – Adoption by reference of the 2024 *International Residential Code* with necessary amendments to become the 2025 *California Residential Code*, and repeal of the 2021 edition of the *International Residential Code*. Approved by the California Building Standards Commission on February 26, 2025, filed with Secretary of State on March 7, 2025, and effective on January 1, 2026.
2. Erratum to address miscellaneous corrections in Matrix Adoption Tables and throughout Chapters 2, 3, 6, 7, 8, 44 and Appendices BF, CG, and CI, effective January 1, 2026.