

# Part III—Building Planning and Construction

## CHAPTER 3

### BUILDING PLANNING

#### SECTION R300 SITE DRAINAGE

**R300.1 Storm water drainage and retention during construction.** Projects which disturb less than one acre of soil and are not part of a larger common plan of development which in total disturbs one acre or more, shall manage storm water drainage during construction in accordance with the California Green Building Standards Code, Chapter 4, Division 4.1.

**R300.2 Grading and paving.** Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings in accordance with the California Green Building Standards Code, Chapter 4, Division 4.1.

#### SECTION R301 DESIGN CRITERIA

**R301.1 Application.** Buildings and structures, and all parts thereof, shall be constructed to safely support all loads, including dead loads, live loads, roof loads, flood loads, snow loads, wind loads and seismic loads as prescribed by this code. The construction of buildings and structures in accordance with the provisions of this code shall result in a system that provides a complete load path that meets all requirements for the transfer of all loads from their point of origin through the load-resisting elements to the foundation. Buildings and structures constructed as prescribed by this code are deemed to comply with the requirements of this section.

*Existing buildings housing existing protective social care homes or facilities established prior to 1972 (see Section 3413 of the California Building Code).*

**R301.1.1 Alternative provisions.** As an alternative to the requirements in Section R301.1 the following standards are permitted subject to the limitations of this code and the limitations therein. Where engineered design is used in conjunction with these standards, the design shall comply with the California Building Code.

1. AF&PA Wood Frame Construction Manual (WFCM).
2. AISI Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings (AISI S230).
3. ICC Standard on the Design and Construction of Log Structures (ICC 400).

**R301.1.1.1 Alternative provisions for limited-density owner-built rural dwellings.** The purpose of this subsection is to permit alternatives that provide minimum protection of life, limb, health, property, safety and

welfare of the general public and the owners and occupants of limited-density owner-built rural dwellings as defined in Chapter 2 of this code. For additional information see Chapter 1, Subchapter 1, Article 8, of Title 25, California Code of Regulations, commencing with Section 74.

To meet compliance with the requirements of this code, provisions of Section R301.1.1.1, Items 1 through 5 may be utilized for limited-density owner-built rural dwellings when the materials, methods of construction, or appliances are determined appropriate or suitable for their intended purpose by the local enforcing agency.

1. A limited-density owner-built rural dwelling may be of any type of construction which will provide for a sound structural condition. Structural hazards which result in an unsound condition and which may constitute a substandard building are delineated in Section 17920.3 of the Health and Safety Code.
2. There shall be no requirements for room dimensions as required in Chapter 3, provided there is adequate light and ventilation and means of egress.
3. There shall be no specified requirement for heating capacity or for temperature maintenance. The use of solid-fuel or solar heating devices shall be deemed as complying with the requirements of Chapter 3. If nonrenewable fuel is used in these dwellings, rooms so heated shall meet current installation standards.
4. Pier foundations, stone masonry footings and foundations, pressure-treated lumber, poles or equivalent foundation materials or designs may be used provided that bearing is sufficient.
5. Owner-produced or used materials and appliances may be utilized unless found not to be of sufficient strength or durability to perform the intended function. Owner-produced or used lumber, or shakes and shingles may be utilized unless found to contain dry rot, excessive splitting or other defects obviously rendering the material unfit in strength or durability for the intended purpose.

**R301.1.2 Construction systems.** The requirements of this code are based on platform and balloon-frame construction for light-frame buildings. The requirements for concrete and masonry buildings are based on a balloon framing system. Other framing systems must have equiva-

lent detailing to ensure force transfer, continuity and compatible deformations.

**301.1.3 Engineered design.** When a building of otherwise conventional construction contains structural elements exceeding the limits of CRC Section R301 or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice. The extent of such design need only demonstrate compliance of nonconventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the *Los Angeles Building Code* (LABC) is permitted for all buildings and structures, and parts thereof included in the scope of this code.

Buildings with masonry or concrete walls or of light-frame construction exceeding two stories shall have an engineered design in accordance with the LABC.

**301.1.3.1 California licensed architect or engineer.** *When any portion of any structure deviates from substantial compliance with conventional framing requirements for woodframe construction found in this code, the building official shall require the construction documents to be approved and stamped by a California licensed architect or engineer for that irregular or non-conforming portion of work. Notwithstanding other sections of law, the law establishing these provisions is found in Business and Professions Code Sections 5537 and 6737.1.*

**301.1.3.2 Woodframe structures.** The building official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of woodframe construction more than two stories and basement in height

located in Seismic Design Category A, B, or C. Notwithstanding other provisions of law, the law establishing these provisions is found in *Business and Professions Code* Sections 5537 and 6737.1.

The building official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of woodframe construction more than one story in height located in Seismic Design Category D<sub>0</sub>, D<sub>1</sub>, D<sub>2</sub>, or E.

**301.1.3.3 Structures other than woodframe.** *The building official shall require floor, wall or roof-ceiling structural elements in dwellings designed of cold-formed steel, concrete, masonry or structural insulated panels prescribed by this code to be approved and stamped by a California licensed architect or engineer. Notwithstanding other sections of law, the law establishing these provisions is found in Business and Professions Code Sections 5537 and 6737.1.*

**301.1.4 Seismic design provisions for buildings constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope).** The design and construction of new buildings and additions to existing buildings when constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope) shall comply with Section 1613.9 of the LABC.

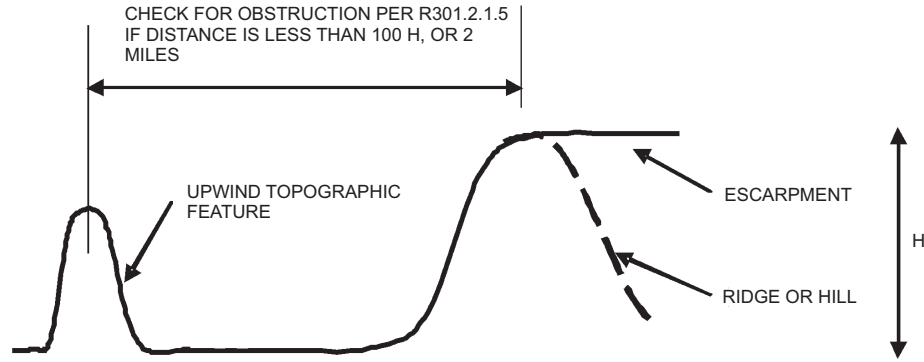
**R301.2 Climatic and geographic design criteria.** Buildings shall be constructed in accordance with the provisions of this code as limited by the provisions of this section. Additional criteria shall be established by the local jurisdiction and set forth in Table R301.2(1).

**TABLE R301.2(1)  
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA**

GROUND SNOW LOAD	WIND DESIGN		SEISMIC DESIGN CATEGORY <sup>f</sup>	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP <sup>g</sup>	ICE BARRIER UNDERLAYMENT REQUIRED <sup>h</sup>	FLOOD HAZARDS <sup>i</sup>	AIR FREEZING INDEX <sup>j</sup>	MEAN ANNUAL TEMP <sup>k</sup>
	Speed <sup>d</sup> (mph)	Topographic effects <sup>k</sup>		Weathering <sup>a</sup>	Frost line depth <sup>b</sup>	Termite <sup>c</sup>					
0	85	No	D <sub>2</sub> /E	Negligible	12"	Yes	39° to 44°	No	See Flood Map	0	61.1°

For SI: 1 pound per square foot = 0.0479 kPa, 1 mile per hour = 0.447 m/s.

- a. Weathering may require a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code. The weathering column shall be filled in with the weathering index (i.e., “negligible,” “moderate” or “severe”) for concrete as determined from the Weathering Probability Map [Figure R301.2(3)]. The grade of masonry units shall be determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129, C 145, C 216 or C 652.
- b. The frost line depth may require deeper footings than indicated in Figure R403.1(1). The jurisdiction shall fill in the frost line depth column with the minimum depth of footing below finish grade.
- c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.
- d. The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [Figure R301.2(4)A]. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- e. Temperatures shall be permitted to reflect local climates or local weather experience as determined by the building official.
- f. The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.
- g. The jurisdiction shall fill in this part of the table with (a) the date of the jurisdiction’s entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the date(s) of the Flood Insurance Study and (c) the panel numbers and dates of all currently effective FIRMs and FBFMs or other flood hazard map adopted by the authority having jurisdiction, as amended.
- h. In accordance with Sections R905.2.7.1, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall fill in this part of the table with “NO.”
- i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F)” at [www.ncdc.noaa.gov/fpsf.html](http://www.ncdc.noaa.gov/fpsf.html).
- j. The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F)” at [www.ncdc.noaa.gov/fpsf.html](http://www.ncdc.noaa.gov/fpsf.html).
- k. In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall indicate “NO” in this part of the table.



**FIGURE R301.2.1.5.1(3)  
UPWIND OBSTRUCTION**

**R301.2.2.1.2 Alternative determination of Seismic Design Category E.** Buildings located in Seismic Design Category E in accordance with Figure R301.2(2) are permitted to be reclassified as being in Seismic Design Category D<sub>2</sub> provided one of the following is done:

1. A more detailed evaluation of the seismic design category is made in accordance with the provisions and maps of the *California Building Code*. Buildings located in Seismic Design Category E per Table R301.2.2.1.1, but located in Seismic Design Category D per the *California Building Code*, may be designed using the Seismic Design Category D<sub>2</sub> requirements of this code.
2. Buildings located in Seismic Design Category E that conform to the following additional restrictions are permitted to be constructed in accordance with the provisions for Seismic Design Category D<sub>2</sub> of this code:
  - 2.1. All exterior shear wall lines or braced wall panels are in one plane vertically from the foundation to the uppermost story.
  - 2.2. Floors shall not cantilever past the exterior walls.
  - 2.3. The building is within all of the requirements of Section R301.2.2.2.5 for being considered as regular.

**R301.2.2.2 Seismic Design Category C.** Structures assigned to Seismic Design Category C shall conform to the requirements of this section.

**R301.2.2.2.1 Weights of materials.** Average dead loads shall not exceed 15 pounds per square foot (720 Pa) for the combined roof and ceiling assemblies (on a horizontal projection) or 10 pounds per square foot (480 Pa) for floor assemblies, except as further limited by Section R301.2.2. Dead loads for walls above grade shall not exceed:

1. Fifteen pounds per square foot (720 Pa) for exterior light-frame wood walls.

2. Fourteen pounds per square foot (670 Pa) for exterior light-frame cold-formed steel walls.
3. Ten pounds per square foot (480 Pa) for interior light-frame wood walls.
4. Five pounds per square foot (240 Pa) for interior light-frame cold-formed steel walls.
5. Eighty pounds per square foot (3830 Pa) for 8-inch-thick (203 mm) masonry walls.
6. Eighty-five pounds per square foot (4070 Pa) for 6-inch-thick (152 mm) concrete walls.
7. Ten pounds per square foot (480 Pa) for SIP walls.

**Exceptions:**

1. Roof and ceiling dead loads not exceeding 25 pounds per square foot (1190 Pa) shall be permitted provided the wall bracing amounts in Chapter 6 are increased in accordance with Table R301.2.2.2.1.
2. Light-frame walls with stone or masonry veneer shall be permitted in accordance with the provisions of Sections R702.1 and R703.
3. Fireplaces and chimneys shall be permitted in accordance with Chapter 10.

**TABLE R301.2.2.2.1  
WALL BRACING ADJUSTMENT  
FACTORS BY ROOF COVERING DEAD LOAD<sup>a</sup>**

WALL SUPPORTING	ROOF/CEILING DEAD LOAD	
	15 psf or less	25 psf
Roof only	1.0	1.2
Roof plus one or two stories	1.0	1.1

For SI: 1 pound per square foot = 0.0479 kPa.

a. Linear interpolation shall be permitted.

**R301.2.2.2.2 Stone and masonry veneer.** Anchored stone and masonry veneer shall comply with the requirements of Sections R702.1 and R703.

**R301.2.2.2.3 Masonry construction.** Masonry construction shall comply with the requirements of Section R606.12.

**R301.2.2.2.4 Concrete construction.** Detached one- and two-family dwellings with exterior above-



seismic loads in accordance with the *California Building Code*, except when the seismic design category is reclassified to a lower seismic design category in accordance with Section R301.2.2.1. Components of buildings not required to be designed to resist seismic loads shall be constructed in accordance with the provisions of this code.

**R301.2.3 Snow loads.** Wood-framed construction, cold-formed, steel-framed construction and masonry and concrete construction, and structural insulated panel construction in regions with ground snow loads 70 pounds per square foot (3.35 kPa) or less, shall be in accordance with Chapters 5, 6 and 8. Buildings in regions with ground snow loads greater than 70 pounds per square foot (3.35 kPa) shall be designed in accordance with accepted engineering practice.

**R301.2.4 Floodplain construction.** Buildings and structures constructed in whole or in part in flood hazard areas (including A or V Zones) as established in Table R301.2(1) shall be designed and constructed in accordance with Section R322. Buildings and structures located in whole or in part in identified floodways shall be designed and constructed in accordance with ASCE 24.

**R301.2.4.1 Alternative provisions.** As an alternative to the requirements in Section R322.3 for buildings and structures located in whole or in part in coastal high-

hazard areas (V Zones) and coastal A Zones, if delineated, ASCE 24 is permitted subject to the limitations of this code and the limitations therein.

**R301.3 Story height.** The wind and seismic provisions of this code shall apply to buildings with story heights not exceeding the following:

1. For wood wall framing, the laterally unsupported bearing wall stud height permitted by Table R602.3(5) plus a height of floor framing not to exceed 16 inches (406 mm).

**Exception:** For wood-framed wall buildings with bracing in accordance with Tables R602.10.3(1) and R602.10.3(3), the wall stud clear height used to determine the maximum permitted story height may be increased to 12 feet (3658 mm) without requiring an engineered design for the building wind and seismic force-resisting systems provided that the length of bracing required by Table R602.10.3(1) is increased by multiplying by a factor of 1.10 and the length of bracing required by Table R602.10.3(3) is increased by multiplying by a factor of 1.20. Wall studs are still subject to the requirements of this section.

2. For steel wall framing, a stud height of 10 feet (3048 mm), plus a height of floor framing not to exceed 16 inches (406 mm).

*(Text continues on Page 64.)*

- For masonry walls, a maximum bearing wall clear height of 12 feet (3658 mm) plus a height of floor framing not to exceed 16 inches (406 mm).

**Exception:** An additional 8 feet (2438 mm) is permitted for gable end walls.

- For insulating concrete form walls, the maximum bearing wall height per story as permitted by Section R611 tables plus a height of floor framing not to exceed 16 inches (406 mm).
- For structural insulated panel (SIP) walls, the maximum bearing wall height per story as permitted by Section R613 tables shall not exceed 10 feet (3048 mm) plus a height of floor framing not to exceed 16 inches (406 mm).

Individual walls or walls studs shall be permitted to exceed these limits as permitted by Chapter 6 provisions, provided story heights are not exceeded. Floor framing height shall be permitted to exceed these limits provided the story height does not exceed 11 feet 7 inches (3531 mm). An engineered design shall be provided for the wall or wall framing members when they exceed the limits of Chapter 6. Where the story height limits of this section are exceeded, the design of the building, or the noncompliant portions thereof, to resist wind and seismic loads shall be in accordance with the *California Building Code*.

**R301.4 Dead load.** The actual weights of materials and construction shall be used for determining dead load with consideration for the dead load of fixed service equipment.

**R301.5 Live load.** The minimum uniformly distributed live load shall be as provided in Table R301.5.

**R301.6 Roof load.** The roof shall be designed for the live load indicated in Table R301.6 or the snow load indicated in Table R301.2(1), 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<sup>2</sup>, 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.

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

**TABLE R301.5**  
**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS**  
**(in pounds per square foot)**

USE	LIVE LOAD
Uninhabitable attics without storage <sup>b</sup>	10
Uninhabitable attics with limited storage <sup>b, g</sup>	20
Habitable attics and attics served with fixed stairs	30
Balconies (exterior) and decks <sup>e</sup>	40
Fire escapes	40
Guardrails and handrails <sup>d</sup>	200 <sup>h</sup>
Guardrail in-fill components <sup>f</sup>	50 <sup>h</sup>
Passenger vehicle garages <sup>a</sup>	50 <sup>a</sup>
Rooms other than sleeping room	40
Sleeping rooms	30
Stairs	40 <sup>c</sup>

For SI: 1 pound per square foot = 0.0479 kPa, 1 square inch = 645 mm<sup>2</sup>, 1 pound = 4.45 N.

- Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.
- Uninhabitable attics without storage are those where the maximum clear height between joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches high by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.
- Individual stair treads shall be designed for the uniformly distributed live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.
- A single concentrated load applied in any direction at any point along the top.
- See Section R502.2.2 for decks attached to exterior walls.
- Guard in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.
- Uninhabitable attics with limited storage are those where the maximum clear height between joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses.

The live load need only be applied to those portions of the joists or truss bottom chords where all of the following conditions are met:

- The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is a minimum of 30 inches.
- The slopes of the joists or truss bottom chords are no greater than 2 inches vertical to 12 units horizontal.
- Required insulation depth is less than the joist or truss bottom chord member depth.

The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 lb/ft<sup>2</sup>.

- Glazing used in handrail assemblies and guards shall be designed with a safety factor of 4. The safety factor shall be applied to each of the concentrated loads applied to the top of the rail, and to the load on the in-fill components. These loads shall be determined independent of one another, and loads are assumed not to occur with any other live load.

**SECTION R302**  
**FIRE-RESISTANT CONSTRUCTION**

**R302.1 Exterior walls.** Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or dwellings

**R308.6.7 Screen characteristics.** The screen and its fastenings shall be capable of supporting twice the weight of the glazing, be firmly and substantially fastened to the framing members, and have a mesh opening of no more than 1 inch by 1 inch (25 mm by 25 mm).

**R308.6.8 Curbs for skylights.** All unit skylights installed in a roof with a pitch flatter than three units vertical in 12 units horizontal (25-percent slope) shall be mounted on a curb extending at least 4 inches (102 mm) above the plane of the roof unless otherwise specified in the manufacturer's installation instructions.

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

## SECTION R309 GARAGES AND CARPORTS

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

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

**R309.2 Carports.** Carports shall be open on at least two sides. Carport floor surfaces shall be of approved noncombustible material. Carports not open on at least two sides shall be considered a garage and shall comply with the provisions of this section for garages.

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

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

**R309.3 Flood hazard areas.** For buildings located in flood hazard areas as established by Table R301.2(1), garage floors shall be:

1. Elevated to or above the design flood elevation as determined in Section R322; or
2. Located below the design flood elevation provided they are at or above grade on at least one side, are used solely for parking, building access or storage, meet the requirements of Section R322 and are otherwise constructed in accordance with this code.

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

**R309.5 Fire sprinklers location on property.** Private garages shall be protected by fire sprinklers where the garage wall has been designed based on Table R302.1(2), Footnote a. Sprinklers in garages shall be connected to an automatic sprinkler system that complies with Section R313. Garage

sprinklers shall be residential sprinklers or quick-response sprinklers, designed to provide a density of 0.05 gpm/ft<sup>2</sup>. Garage doors shall not be considered obstructions with respect to sprinkler placement.

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

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

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

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

**R309.7 Extension garage door springs.** Every extension garage door spring sold or offered for sale, whether new or sold as a replacement, or installed in any garage or carport which is accessory to a dwelling covered by this code, shall conform to the requirements for garage door springs located in Section 1211 of the California Building Code.

## SECTION R310 EMERGENCY ESCAPE AND RESCUE OPENINGS

**R310.1 Emergency escape and rescue required.** Basements, habitable attics and every sleeping room shall have at least one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided they shall have *the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor.* Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

**Exception:** Basements used only to house mechanical equipment and not exceeding total floor area of 200 square feet (18.58 m<sup>2</sup>).

**R310.1.1 Minimum opening area.** All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.530 m<sup>2</sup>).

**Exception:** Grade floor openings shall have a minimum net clear opening of 5 square feet (0.465 m<sup>2</sup>).

**R310.1.2 Minimum opening height.** The minimum net clear opening height shall be 24 inches (610 mm).

**R310.1.3 Minimum opening width.** The minimum net clear opening width shall be 20 inches (508 mm).

**R310.1.4 Operational constraints.** Emergency escape and rescue openings shall be *maintained free of any obstructions other than those allowed by this section and shall be operational from the inside of the room without the use of keys, tools or special knowledge.*

**R310.2 Window wells.** The minimum horizontal area of the window well shall be 9 square feet (0.9 m<sup>2</sup>), with a minimum horizontal projection and width of 36 inches (914 mm). The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

**Exception:** The ladder or steps required by Section R310.2.1 shall be permitted to encroach a maximum of 6 inches (152 mm) into the required dimensions of the window well.

**R310.2.1 Ladder and steps.** Window wells with a vertical depth greater than 44 inches (1118 mm) shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or steps required by this section shall not be required to comply with Sections R311.7 and R311.8. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center vertically for the full height of the window well.

**R310.2.2 Drainage.** Window wells shall be designed for proper drainage by connecting to the building’s foundation drainage system required by Section R405.1 or by an approved alternative method.

**Exception:** A drainage system for window wells is not required when the foundation is on well-drained soil or sand-gravel mixture soils according to the United Soil Classification System, Group I Soils, as detailed in Table R405.1.

**R310.3 Bulkhead enclosures.** Bulkhead enclosures shall provide direct access to the basement. The bulkhead enclosure with the door panels in the fully open position shall provide the minimum net clear opening required by Section R310.1.1. Bulkhead enclosures shall also comply with Section R311.7.10.2.

**R310.4 Bars, grilles, covers and screens.** Bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided the minimum net clear opening size complies with Sections R310.1.1

to R310.1.3, and such devices shall be releasable or removable from the inside without the use of a key, tool, special knowledge or force greater than that which is required for normal operation of the escape and rescue opening. *The release mechanism shall be maintained operable at all times.*

*Such bars, grilles, grates or any similar devices shall be equipped with an approved exterior release device for use by the fire department only when required by the authority having jurisdiction.*

*Where security bars (burglar bars) are installed on emergency egress and rescue windows or doors, on or after July 1, 2000, such devices shall comply with California Building Standards Code, Part 12, Chapter 12-3 and other applicable provisions of this code.*

**SECTION R311  
MEANS OF EGRESS**

**R311.1 Means of egress.** All dwellings shall be provided with a means of egress as provided in this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the exterior of the dwelling at the required egress door without requiring travel through a garage.

**311.2 Egress door.** At least one egress door shall be provided for each dwelling unit. The egress door shall be side-hinged, and shall provide a minimum clear width of 32 inches (813 mm) when measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The minimum clear height of the door opening shall not be less than 78 inches (1981 mm) in height measured from the top of the threshold to the bottom of the stop. This is accomplished by providing a door not less than 3 feet in width and not less than 6 feet 8 inches in height. Egress doors shall be readily openable from inside the dwelling unit without the use of a key or special knowledge or effort. Every interior door in a doorway through which occupants pass shall have a minimum width of 32 inches (813 mm).

**R311.3 Floors and landings at exterior doors.** There shall be a landing or floor on each side of each exterior door. The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel. Exterior landings shall be permitted to have a slope not to exceed 1/4 unit vertical in 12 units horizontal (2-percent).

**Exception:** Exterior balconies less than 60 square feet (5.6 m<sup>2</sup>) and only accessible from a door are permitted to have a landing less than 36 inches (914 mm) measured in the direction of travel.

**R311.3.1 Floor elevations at the required egress doors.** Landings or finished floors at the required egress door shall not be more than 1 1/2 inches (38 mm) lower than the top of the threshold.

**Exception:** The landing or floor on the exterior side shall not be more than 7 3/4 inches (196 mm) below the top of the threshold provided the door does not swing over the landing or floor.

Where exterior landings or floors serving the required egress door are not at grade, they shall be provided with access to grade by means of a ramp in accordance with

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