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GROUND  BOUNDLESS

2022 Ca Residential Code

SIGNIFICANT CHANGES

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Part 1 Administration (Chapters 1 and 2)

- ▶ CRC 102.7.1 Additions, Alterations or Repairs
- ▶ CRC 202 Definition:
 - ▶ Child Care
 - ▶ Day-Care
 - ▶ Emergency Escape and Rescue Opening
 - ▶ Entry Level
 - ▶ Exterior Wall Assembly
 - ▶ Exterior Wall Covering
 - ▶ Inflatable Amusement Device
 - ▶ Photovoltaic (PV) System, Ground- Mounted
 - ▶ Photovoltaic (PV) System, Support Structure, Elevated
 - ▶ Toddler
 - ▶ Townhouse

R202 Definition of Photovoltaic (PV) System, Ground-Mounted

- ▶ Photovoltaic (PV) panel system, ground-mounted. An independent photovoltaic (PV) panel system without useable space underneath, installed directly on the ground.

R202 Definition of Photovoltaic (PV) Support Structure, Elevated

- ▶ Photovoltaic (PV) support structure, elevated. An independent photovoltaic (PV) panel support structure designed with useable space underneath with minimum clear height of 7 feet 6 inches (2286 mm), intended for secondary use such as providing shade or parking of motor vehicles.

Part 2 Building Planning (Chapter 3)

- ▶ R301.1.4 Intermodal Shipping Containers
- ▶ R301.2 Wind Speeds
- ▶ Table R301.2.1(1) Component and Cladding Wind Pressures
- ▶ R301.2.1.1 Special Wind Regions
- ▶ R301.2.2.6 Irregular Buildings in Seismic Areas
- ▶ R301.3 Story Height
- ▶ R302.2 Townhouses
- ▶ R302.3 Two-Family Dwelling Separation
- ▶ R302.4 Dwelling Unit Rated Penetrations
- ▶ R302.5 Dwelling-Garage Opening Protection
- ▶ R303.1 Mechanical Ventilation
- ▶ R305.1 Ceiling Height
- ▶ R308.4.5 Glazing and Wet Surfaces
- ▶ R308.6 Skylight Glass Retention Screens
- ▶ R310.1 Emergency Escape and Rescue Opening Required
- ▶ R310.2 Emergency Escape and Rescue Openings
- ▶ R310.3, R310.4 Area Wells for Emergency Escape and Rescue Openings
- ▶ R310.5, R310.6, R310.7 Emergency Escape and Rescue Openings in Existing Buildings
- ▶ R311.7, R311.8 Stairways and Ramps
- ▶ R311.7.7 Stairway and Landing Walking Surface
- ▶ R312.2 Window Fall Protection
- ▶ R315.2.2 Carbon Monoxide Alarms
- ▶ R317.1 Protection of Wood Against Decay
- ▶ R323 Storm Shelters
- ▶ R324.3 Photovoltaic System
- ▶ R324.8, R324.8.1, R324.8.2 Elevated Photovoltaic (PV) Support Structures
- ▶ R326 Habitable Attics
- ▶ R327.1, R327.1.1, R327.1.2, R327.1.3 Aging-in-Place Design and Fall Prevention
- ▶ R328.4 ESS Located in an Attached Garage
- ▶ R328.8.1, R328.2, R328.3 Vehicle Impact Protection for ESS within Garages
- ▶ R337.2 Fire-Resistant Vegetation
- ▶ R337.10.4 Fire Rating of Accessory Buildings' Roofs

R301.1.4

Intermodal Shipping Containers

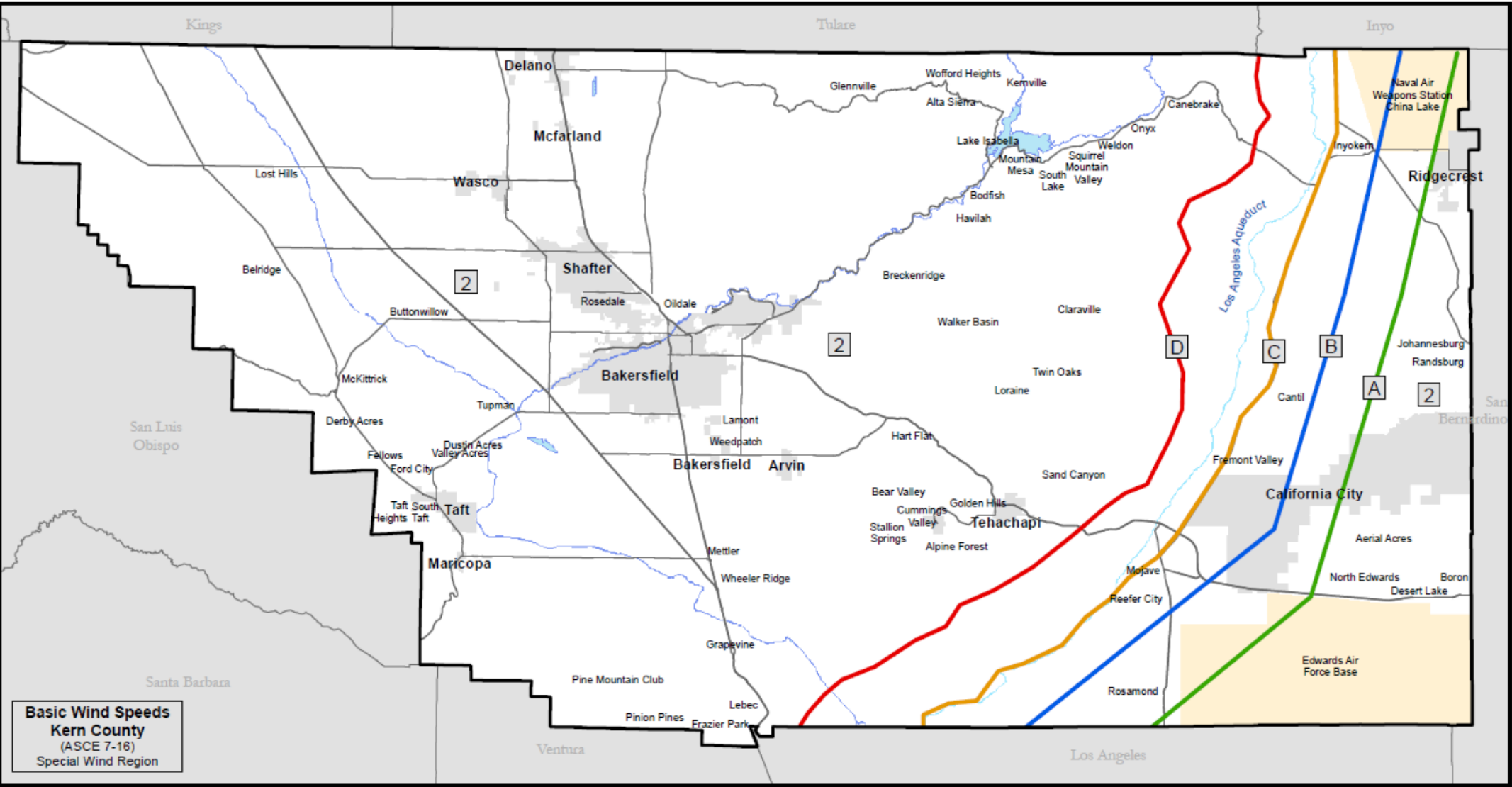
- Intermodal shipping containers that are repurposed for use as buildings or structures, shall be designed in accordance with the structural provisions in Section 3115 of the *California Building Code*.



R301.2 Wind Speeds

Change Type: Modification

- ▶ R301.2.1 Wind design criteria. Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the ultimate design wind speed in Table ~~R301.2(1)~~ R301.2 as determined from Figure ~~R301.20(5)A~~ R301.2(2).
- ▶ The basic design wind speed, v , in mph, for the determination of the wind loads in Kern County shall be determined from Figure R301.2(2)A based on the corresponding Risk Category assigned to the structure. For purposes of this section, the Special Wind Region shall be defined as shown per Figure R301.2.(2)A. (2022 Ordinance Code of the County of Kern Section 17.06.120)



Legend	V, mph			
	Risk Category			
I	II	III	IV	
A	90	95	102	106
B	100	110	115	120
C	110	120	125	130
D	120	130	135	140
*2	90	95	102	106

Kern County Basic Design Wind Speeds, V, mph

Where local records or terrain indicate higher 50 year wind speeds, they shall be used

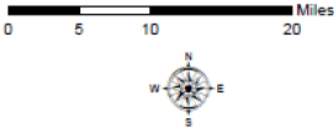


Figure R301.2(2) A
2022

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*Interpolated value recommended by ASCE 7-16 for Kern County

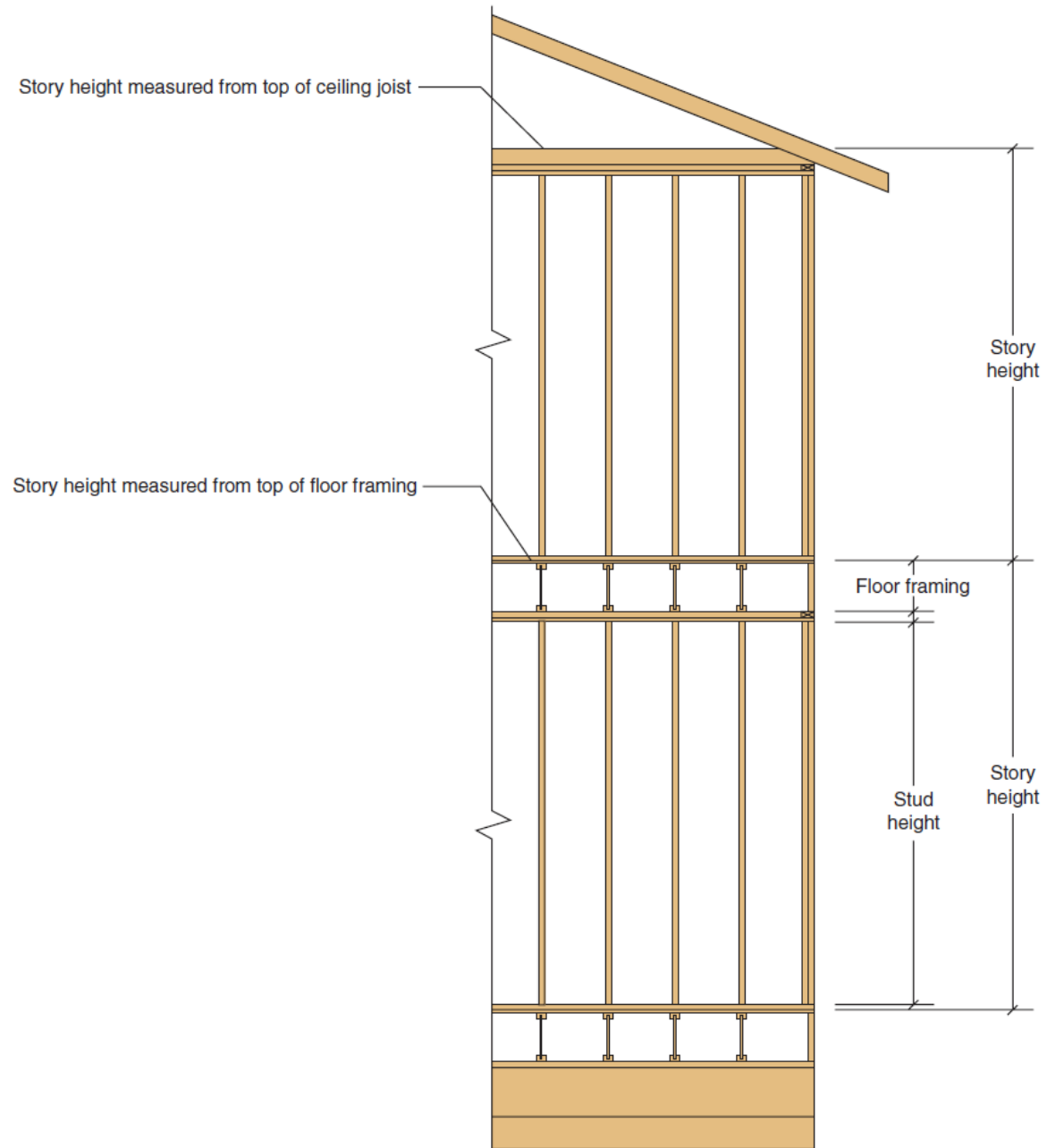
R301.3 Story Height

Change Type: Clarification

- 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 story height shall not exceed 11 feet 7 inches (3531 mm) and the laterally unsupported bearing wall stud height permitted by Table R602.3(5)

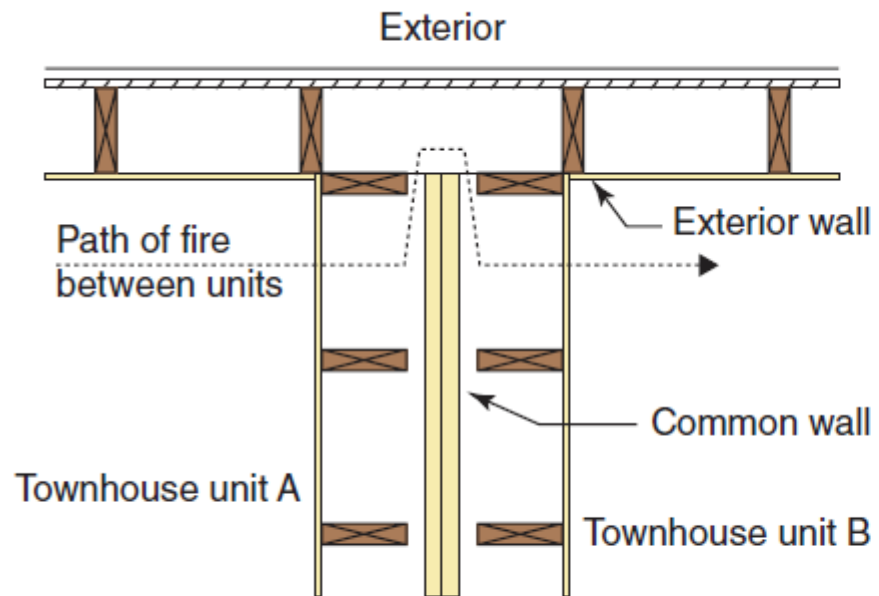
Exception: A story height not exceeding 13 feet 7 inches (4140 mm) is permitted provided the maximum wall stud clear height does not exceed 12 feet (3658 mm), the wall studs are in accordance with Exception 2 or Exception 3 of Section R602.3.1 or an engineered design is provided for the wall framing members, and wall bracing for the building is in accordance with Section R602.10. Studs shall be laterally supported at the top and bottom plate in accordance with Section R602.3.



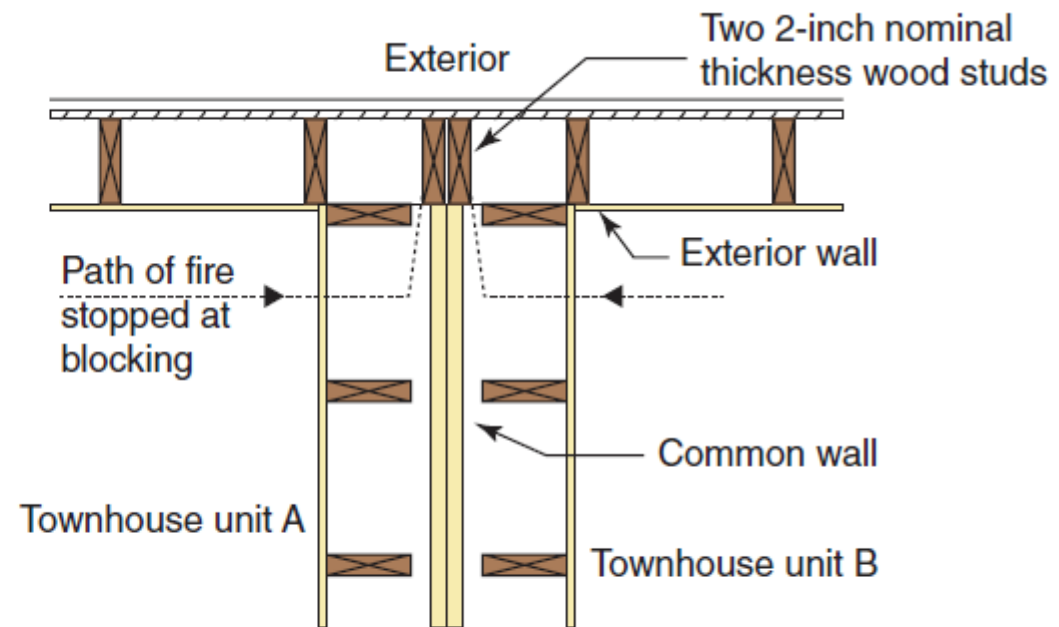
R302.2 Townhouses

Change Type: Modification

- ▶ Walls separating townhouse units shall be constructed in accordance with Section R302.2.1 or R302.2.2 and shall comply with Sections 302.2.3 through 302.2.5.
- ▶ 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*.
- ▶ R302.2.2 Common walls. Common walls separating townhouse units shall be assigned a fire-resistance rating in accordance with Item 1 or 2 and shall be rated for fire exposure from both sides. Common walls shall extend to and be tight against the exterior sheathing of the exterior walls, or the inside face of exterior walls without stud cavities, and the underside of the roof sheathing. The common wall shared by two townhouse units shall be constructed without plumbing or mechanical equipment, ducts or vents, other than water-filled fire sprinkler piping, in the cavity of the common wall.



Prohibited installation



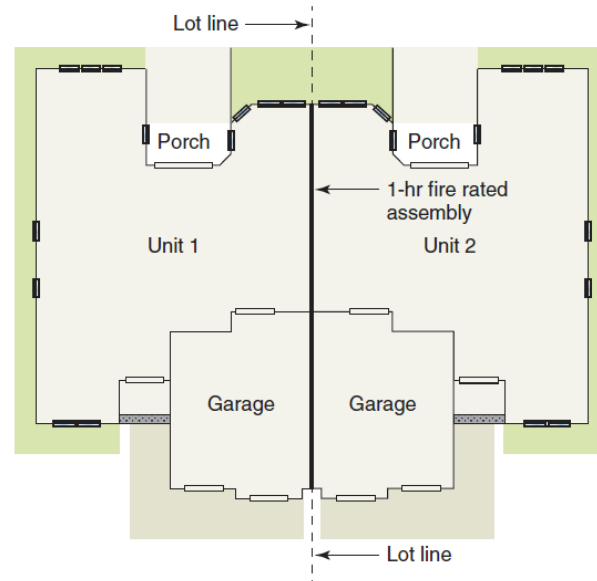
Permitted installation

Common wall extending to the inside of the exterior wall.

R302.3 Two-family dwellings

Change Type: Modification

- Dwelling units in two-family dwellings shall be separated from each other by wall and floor assemblies having not less than a 1-hour fire-resistance rating where testing in accordance with ASTM E119, UL 263 or Section 703.2.2 of the *California Building Code*. Such separation shall be provided regardless of whether a lot line exists between the two dwelling units or not.

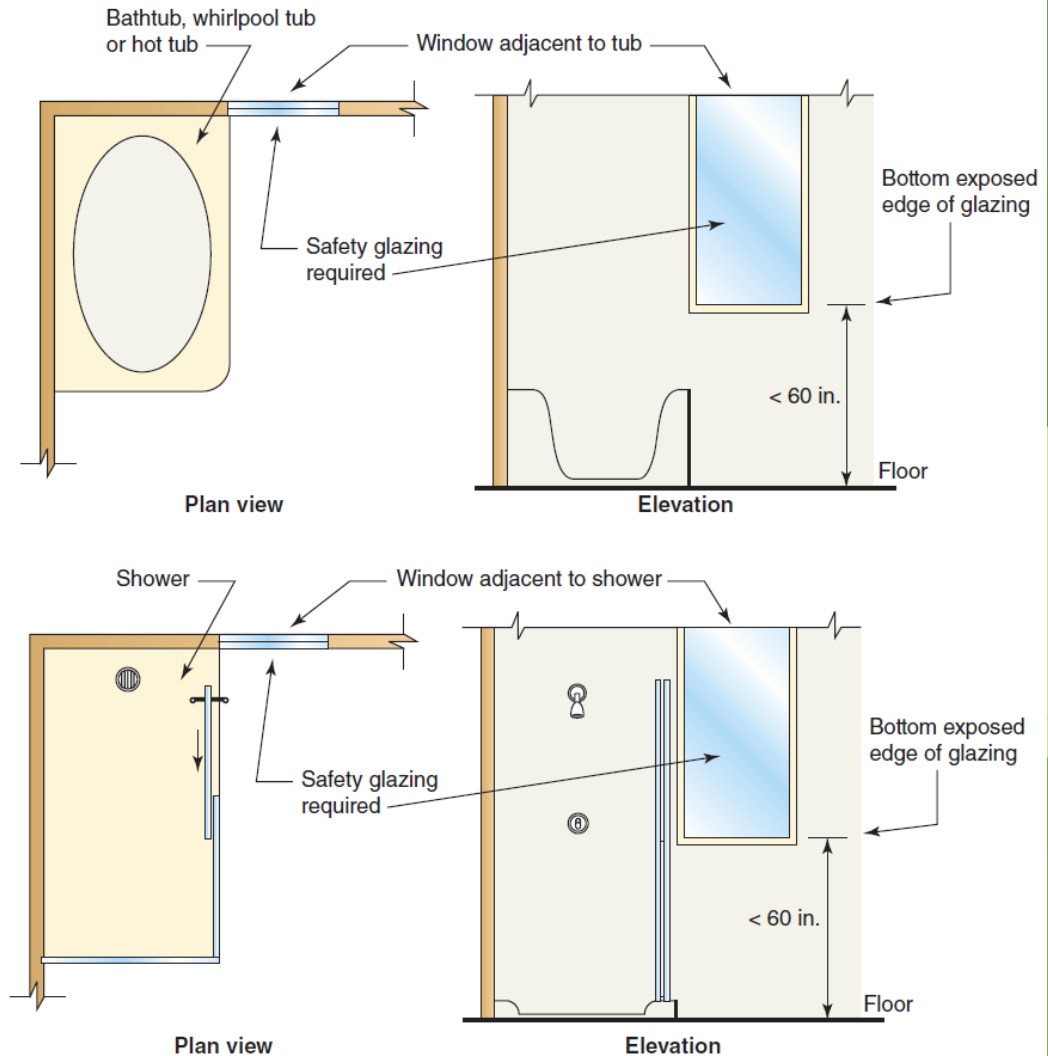


Two-family dwelling separated by lot line and 1-hr fire-resistant separation.

R308.4.5 Glazing and Wet Surfaces

Change Type: Clarification

- ▶ Glazing in walls, enclosures or fences containing or ~~facing~~ adjacent to hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface shall be considered to be a hazardous location. This shall apply to single glazing and each pane in multiple glazing.
- ▶ Exception: Glazing that is more than 60 inches (1524 mm), measured horizontally ~~and in a straight line~~, from the water's edge of a bathtub, hot tub, spa, whirlpool or swimming pool or from the edge of a shower, sauna or steam room.

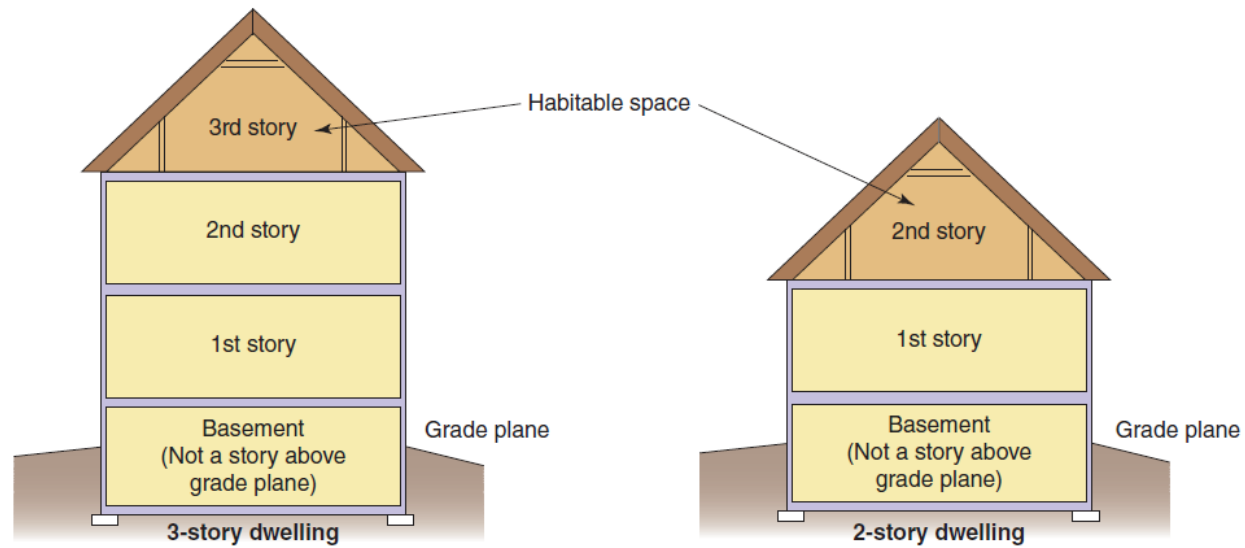
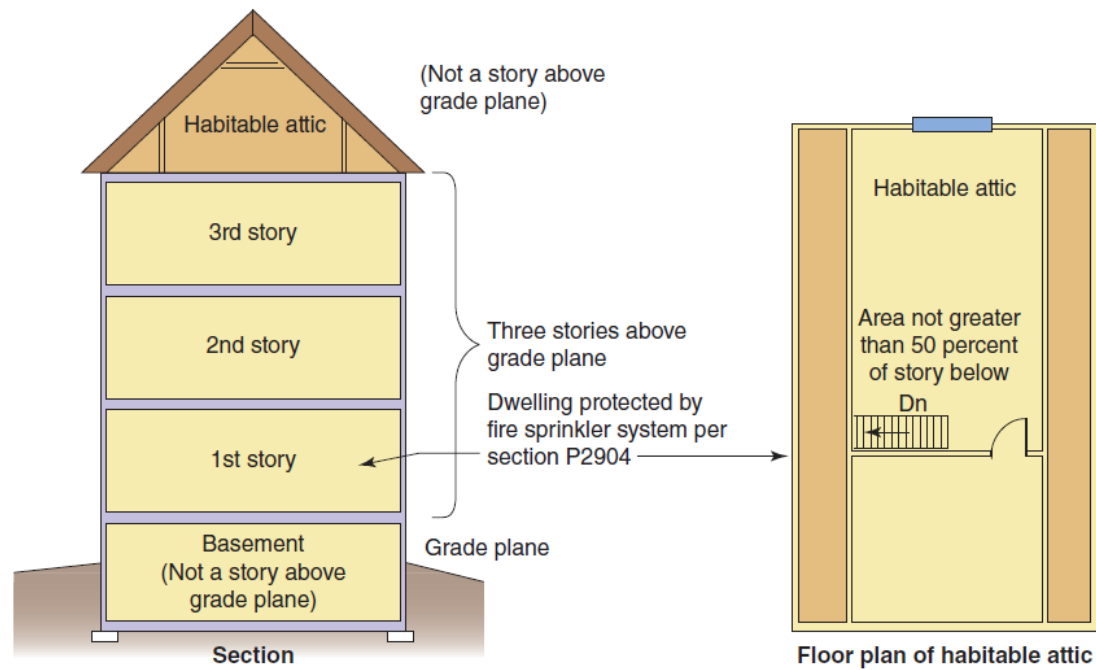


Glazing adjacent tubs and showers.

R326 Habitable Attics

Change Type: Modification

- ▶ **R325.1 General.** Mezzanies shall comply with Sections R325 through R325.5. ~~Habitable attics shall comply with Section R325.5.~~
- ▶ **R326 Habitable Attics**
- ▶ **R326.1 General.** Habitable attics shall comply with Sections R326.2 and R326.33
- ▶ **R326.2 Minimum dimensions.** A habitable attic shall have a floor area in accordance with Section R304 and a ceiling height in accordance with Section R305.
- ▶ **R326.3 Story above grade plane.** A habitable attic shall be considered a story above grade plane.
 - Exception:** A habitable attic shall not be considered to be a story above grade plane provided that the habitable attic meets all of the following:
 1. The aggregate area of the habitable attic is either of the following:
 - 1.1 Not greater than one-third of the floor area of the story below.
 - 1.2 Not greater than one-half of the floor area of the story below where the habitable attic is located within a dwelling unit equipped with a fire sprinkler system in accordance with Section R313.
 2. The occupiable space is enclosed by the roof assembly above, knee walls, if applicable, on the sides and the floor-ceiling assembly below.
 3. The floor of the habitable attic does not extend beyond the exterior walls of the story below.
 4. Where a habitable attic is located above a third story, the dwelling unit or townhouse unit shall be equipped with a fire sprinkler system in accordance with Section R313.
- ▶ **R326.4 Means of Egress.** The means of egress for habitable attics shall comply with the applicable provisions of Section R311



Dwellings meeting the CRC limit of 3 stories above grade plane.

R327.1, R327.1.1, R327.1.2, R327.1.3 Aging-in-Place Design and Fall Prevention

Change Type: Addition

- ▶ **R327.1 Aging-in-place design and fall prevention.** Newly constructed dwellings subject to the requirements of this code shall be designed and constructed in accordance with Sections R327.1.1 through R327.1.4.

Exceptions:

1. Covered multifamily dwellings designed and constructed in accordance with Chapter 11A of the California Building Code.
2. Public housing and places of public accommodation required to comply with Chapter 11B of the California Building Code.

- ▶ **R327.1.1 Reinforcement for grab bars.** At least one bathroom on the entry level shall be provided with reinforcement installed in accordance with this section. Where there is no bathroom on the entry level at least one bathroom on the second or third floor of the dwelling shall comply with this section.

1. Reinforcement shall be solid lumber or other construction materials approved by the enforcing agency.
2. Reinforcement shall not be less than 2 by 8 inch nominal lumber. [1½ by 7¼ inch actual dimension] or other construction material providing equal height and load capacity. Reinforcement shall be located between 32 inches and 39¼ inches above the finished floor flush with the wall framing.
3. Water closet reinforcement shall be installed on both side walls of the fixture, or one side wall and the back wall.

4. Shower reinforcement shall be continuous where wall framing is provided.

5. Bathtub and combination bathtub/shower reinforcement shall be continuous on each end of the bathtub and the back wall. Additionally, back wall reinforcement for a lower grab bar shall be provided with the bottom edge located no more than 6 inches above the bathtub rim.

Exceptions:

1. Where the water closet is not placed adjacent to a side wall capable of accommodating a grab bar, the bathroom shall have provisions for installation of floor-mounted, foldaway or similar alternate grab bar reinforcement approved by the enforcing agency.

2. Reinforcement shall not be required in wall framing for pre-fabricated shower enclosures and bathtub wall panels with integral factory-installed grab bars or when factory-installed reinforcement for grab bars is provided.

3. Shower enclosures that do not permit installation of reinforcement and/or grab bars shall be permitted, provided reinforcement for installation of floor-mounted grab bars or an alternate method is approved by the enforcing agency.

4. Bathtubs with no surrounding walls, or where wall panels do not permit the installation of reinforcement for installation shall be permitted, provided reinforcement for installation of floor-mounted grab bars adjacent to the bathtub or an alternate method is approved by the enforcing agency.

5. Reinforcement of floors shall not be required for bathtubs and water closets installed on concrete slab floors.

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

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

Exceptions:

1. Dedicated receptacle outlets; floor receptacle outlets; controls mounted on ceiling fans and ceiling lights; and controls located on appliances.
 2. Receptacle outlets required by the California Electrical Code on a wall space where the distance between the finish floor, such as window, is less than 15 inches.
- ▶ **R327.1.3 Interior doors.** Effective July 1, 2024, at least one bathroom and one bedroom on the entry level shall provide a doorway with a net clear opening of not less than 32 inches, measured with the door positioned at an angle of 90 degrees from the closed position; or, in the case of a two- or three-story single family dwelling, on the second or third floor of the dwelling if a bathroom or bedroom is not located on the entry level.
 - ▶ **R327.1.4 Doorbell buttons.** Doorbell buttons or controls, when installed, shall not exceed 48 inches above exterior floor or landing, measured from the top of the doorbell button assembly. Where doorbell buttons integrated with other features are required to be installed above 48 inches above exterior floor or landing, a standard doorbell button or control shall be provided at a height not exceeding 48 inches above exterior floor or landing, measured from top of the doorbell button or control.

R328.4 ESS Located in an Attached Garage

Change Type: Modification

► **R328.4 Locations.** ESS shall be installed only in the following locations:

1. Detached garages and detached accessory structures.
2. Attached garages separated from the dwelling unit living space in accordance with Section R302.6.
3. Outdoors or on the exterior side of exterior walls located not less than 3 feet from doors and windows directly entering the dwelling unit.
4. Enclosed utility closets, basements, storage or utility spaces within dwelling units with finished or noncombustible walls and ceilings. Walls and ceilings of unfinished wood-framed construction shall be provided with not less than 5/8-inch Type X gypsum wallboard.

ESS shall not be installed in sleeping rooms, or closets or spaces opening directly into sleeping rooms or *in habitable spaces of dwelling units.*

R328.8.1, R328.2, R328.3 Vehicle Impact Protection for ESS within Garages

Change Type: Modification

- ▶ **R328.8.1 Garages.** Where an ESS is installed in the normal driving path of vehicle travel within a garage, impact protection complying with Section 1207.11.7.3 shall be provided. The normal driving path is a space between the garage vehicle opening and the interior face of the back wall to a height of 48 inches above the finished floor. The width of the normal driving path shall be equal to the width of the garage door opening. Impact protection shall also be provided for ESS installed at either of the following locations (See Figure R328.8.1):
 1. On the interior face of the back wall and located within 36 inches to the left or to the right of the normal driving path.
 2. On the interior face of a side wall and located within 24 inches from the back wall and 36 inches of the normal driving path.

Exception: Where the clear height of the vehicle garage opening is 7 feet 6 inches or less, ESS installed not less than 36 inches above finished floor are not subject to vehicle impact protection requirements.
- ▶ **R328.8.2 Other locations subject to vehicle impact.** Where an ESS is installed in a location other than as defined in Section R328.8.1, and is subject to vehicle damage, impact protection shall be provided in accordance with Section R328.8.3.

► **R328.8.3 Impact protection options.** Where ESS is required to be protected from impact in accordance with Section R328.8.1 or R328.8.2, such protection shall comply with one of the following:

1. Bollards constructed in accordance with one of the following:

1.1 Minimum 48 inches in length by 3 inches in diameter Schedule 80 steel pipe embedded in a concrete pier not less than 12 inches deep and 6 inches in diameter, with at least 36 inches of pipe exposed, filled with concrete and spaced at a maximum interval of 5 feet. Each bollard shall be located not less than 6 inches from an ESS.

1.2 Minimum 36 inches in height by 3 inches in diameter Schedule 80 steel pipe fully welded to a minimum 8-inch by ¼ inch thick steel plate and bolted to a concrete floor by means of 4 ½ inch concrete anchors with 3-inch minimum embedment. Spacing shall be not greater than 60 inches, and each bollard shall be located not less than 6 inches from the ESS.

1.3 Pre-manufactured steel pipe bollards shall be filled with concrete and anchored in accordance with the manufacturer's installation instructions, with spacing not greater than 60 inches, and each bollard shall be located not less than 6" from the ESS.

2. Wheel barriers constructed in accordance with one of the following:

2.1 Four inches in height by 5 inches in width by 70 inches in length wheel barrier made of concrete or polymer, anchored to the concrete floor not less than every 36 inches and located not less than 54 inches from the ESS. Minimum 3 ½ inch diameter concrete anchors with a 3-inch embedment per barrier shall be used. Spacing between barriers shall not be no greater than 36 inches.

2.2 Pre-manufactured wheel barriers shall be anchored in accordance with the manufacturer's installation instructions.

3. Approved method designed to resist a 2000-lb. impact in the direction of travel at 24 inches above grade.



Driving Path Defined By Width of Garage Door Opening

R337 MATERIALS FOR CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE

Change Type: Modification

- ▶ **The following sections were modified:**
 - ▶ **R337.6 VENTS** - significant changes
 - ▶ **R337.7 EXTERIOR COVERING** - significant changes
 - ▶ **R337.9 DECKING** - minor changes
 - ▶ **R337.10 ACCESSORY BUILDING** - significant changes

Part 3 Building Construction (Chapters 4 through 10)

- ▶ Table R403.1(1) Footings Below Light-Frame Construction
- ▶ R406.2 Foundation Waterproofing
- ▶ R408.8 Vapor Retarder in Crawlspaces
- ▶ R506.2.3 Vapor Retarders Under Concrete Slabs
- ▶ R507 Deck Loads
- ▶ R507.3 Deck Footings
- ▶ R507.5 Deck Beams
- ▶ R507.6 Deck Joists
- ▶ R507.7 Decking
- ▶ R507.10 Exterior Guards
- ▶ Table R602.3(1) Fasteners - Roof and Wall
- ▶ Table R602.3(1) Fasteners - Roof Sheathing
- ▶ Table 602.3(2) Alternate Attachments
- ▶ R602.9 Cripple Walls
- ▶ R602.10.1.2 Location of Braced Wall Lines
- ▶ R602.10.2.2 Location of Braced Wall Panels (BWPs)
- ▶ R602.10.3(1) Bracing for Winds
- ▶ Table R602.10.3(3) Seismic Wall Bracing
- ▶ Table R602.10.3(4) Adjustment Factors - Seismic
- ▶ R602.10.6.5 Stone and Masonry Veneer
- ▶ R609.4.1 Garage Doors
- ▶ R703.2, R703.7.3 Water-Resistive Barriers
- ▶ Table R703.8.4(1) Veneer Attachment
- ▶ R703.11.2 Vinyl Siding Installation Over Foam Plastic Sheathing
- ▶ R704 Soffits
- ▶ R802 Wood Roof Framing
- ▶ Table R802.5.2(1) Heel Joint Connections
- ▶ R802.6 Rafter and Ceiling Joist Bearing
- ▶ Table R804.3 CFS Roof Framing Fasteners
- ▶ R806.1.1 Vents in the Wildland-Urban Interface (WUI)
- ▶ R905.4.4.1 Metal Roof Shingle Wind Resistance

R406.2 Foundation Waterproofing

Change Type: Deletion

- **R406.2 Concrete and masonry foundation waterproofing.** In areas where a high water table or other severe soil-water conditions are known to exist, exterior foundation walls that retain earth and enclose interior spaces and floors below grade shall be waterproofed from the higher of (a) the top of the footing or (b) 6 inches (152 mm) below the top of the basement floor, to the finish grade. Walls shall be waterproofed in accordance with one of the following:

1. Two-ply hot mopped felts
2. Fifty-five-pound (25 kg) roll roofing.
3. ~~Six-mil (0.15 mm) polyvinyl chloride.~~
4. ~~Six-mil (0.15 mm) polyethylene.~~
3. Forty-mil (1 mm) polymer-modified asphalt.
4. Sixty-mil (1.5 mm) flexible polymer cement.

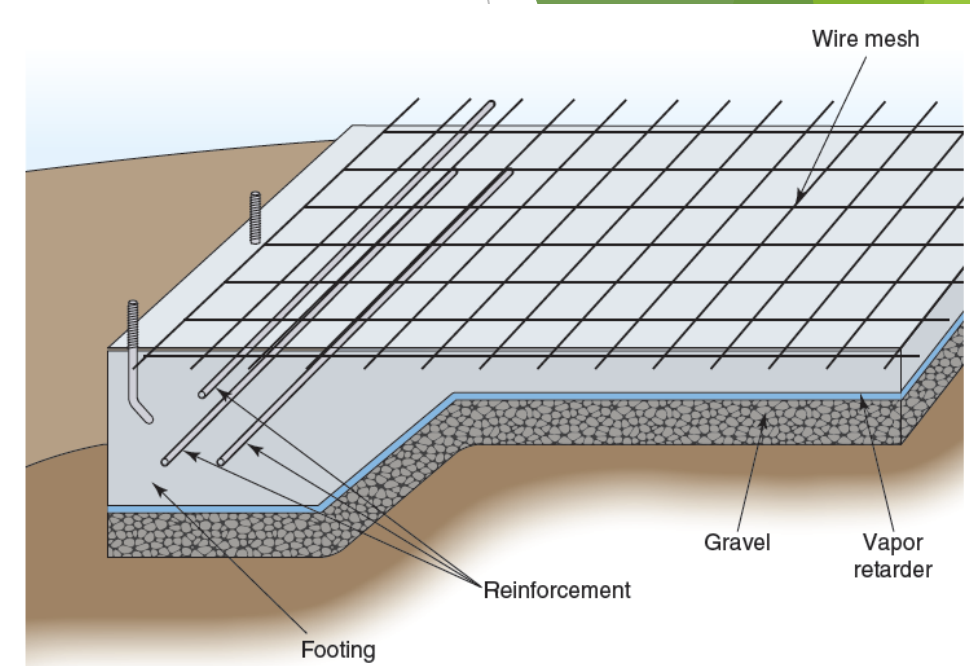
R506.2.3 Vapor Retarder Under Concrete Slabs

Change Type: Modification

- **R506.2.3 Vapor Retarder.** A minimum 6-mil 10-mil (0.006 0.010 inch; 152- μ m 0.254 mm) ~~polyethylene or approved~~ vapor retarder conforming to ASTM E1745 Class A requirements with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where a base course does not exist.

Exception: The vapor retarder is not required for the following:

1. Garages, utility buildings and other unheated accessory structures.
2. For unheated storage rooms having an area of less than 70 square feet (6.5m²) and carports.
3. Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
4. Where approved by the building official, based on local site conditions.



Vapor retarder laid between subgrade and concrete.

R602.3(1) Fastening Schedule

Change Type: Modification

EXCERPT OF TABLE R602.3(1) Fastening Schedule

Item	Description of Building Elements	Number and Type of Fastener ^{a,b,c,e}	Spacing and Location
Roof			
1	<u>Blocking between ceiling joists, or rafters or trusses to top plate or other framing below</u>	4-8d box (2½" × 0.113") nails	Toenail
		3-8d common (2½" × 0.131") nails	
		3-10d box (3" × 0.128") nails	
		3-(3" × 0.131") nails	
	<u>Blocking between rafters or truss not at the wall top plates, to rafter or truss</u>	<u>2-8d common (2½" × 0.131") nails</u>	<u>Each end, toenail</u>
		<u>2-(3" × 0.131") nails</u>	
		<u>2-16d common (3½" × 0.162") nails</u>	
	<u>Flat blocking to truss and web filler</u>	<u>3-(3" × 0.131") nails</u>	<u>End nail</u>
<u>16d common (3½" × 0.162") nails</u>			
Wall			
12	<u>Adjacent full-height stud to end of header</u>	<u>3-16d common (3½" × 0.162") nails</u>	<u>End nail</u>
		<u>4-16d box (3½" × 0.135") nails</u>	
		<u>4-10d box (3" × 0.128") nails</u>	
		<u>4-(3" × 0.131") nails</u>	

R602.3(1) Fasteners - Roof Sheathing

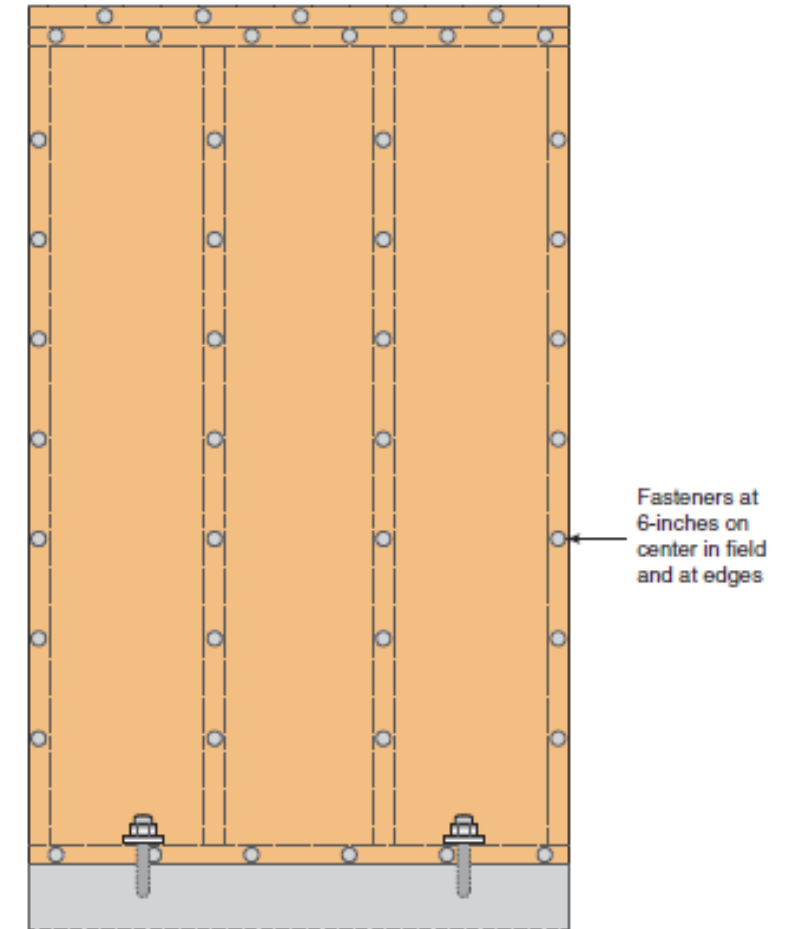
Change Type: Modification

EXCERPT OF TABLE R602.3(1) Fastening Schedule

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 (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
~~30-31~~	$\frac{3}{8}'' - \frac{1}{2}''$	6d common <u>or deformed</u> ($2'' \times 0.113'' \times 0.266''$ head) (~~subfloor, wall~~) ⁱ ;	6 ^f	~~12-6~~ ^f
		$2\frac{3}{8}'' \times 0.113'' \times 0.266''$ head nail (subfloor, wall) ⁱ		
		8d common ($2\frac{1}{2}'' \times 0.131''$) (roof) RSRS-01 ($2\frac{3}{8}'' \times 0.113''$) nail (roof) ^{ib}	6 ^f	~~12-6~~ ^f
~~31-32~~	$1\frac{9}{32}'' - 1\frac{3}{4}''$	8d common ($2 - 2\frac{1}{2}'' \times 0.131''$) (subfloor, wall)	<u>6</u>	<u>12</u>
		<u>Deformed $2\frac{3}{8}'' \times 0.113'' \times 0.266''$ head (wall or subfloor)</u>		
		8d common ($2\frac{1}{2}'' \times 0.131''$) nail (roof) RSRS-01 ($2\frac{3}{8}'' \times 0.113''$) nail (roof) ^{ib}	<u>6</u> ^f	~~12-6~~ ^f
~~32-33~~	~~$1\frac{1}{8}'' \frac{7}{8}'' - 1\frac{1}{4}''$~~	10d common ($3'' \times 0.148''$) nail ~~8d ($2\frac{1}{2}'' \times 0.131'' \times 0.281''$ head) deformed nail~~	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 ksi = 6.895 MPa.

f. For wood structural panel roof sheathing attached to gable end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 6 inches on center where the ultimate design wind speed is less than 130 mph and shall be spaced 4 inches on center where the ultimate design wind speed is 130 mph or greater but less than 140 mph greater than 130 mph in Exposure B or greater than 110 mph in Exposure C.



Method WSP fasteners are now required to be a maximum of 6 inches on center.

R602.10.1.2 Location of Braced Wall Lines

Change Type: Modification

- **R602.10.1.2 Offsets along a Location of braced wall lines and permitted offsets.** Each braced wall line shall be located such that no more than two-thirds of the required braced wall panel length is located to one side of the braced wall line. Braced wall panels shall be permitted to be offset up to 4 feet (1219 mm) from the designated braced wall line. Braced wall panels parallel to a braced wall line shall be offset not more than 4 feet (1219 mm) from the designated braced wall line location as shown in Figure R602.10.1.1

Exterior walls parallel to a braced wall line shall be offset not more than 4 feet (1219 mm) from the designated braced wall line location as shown in Figure R602.10.1.1

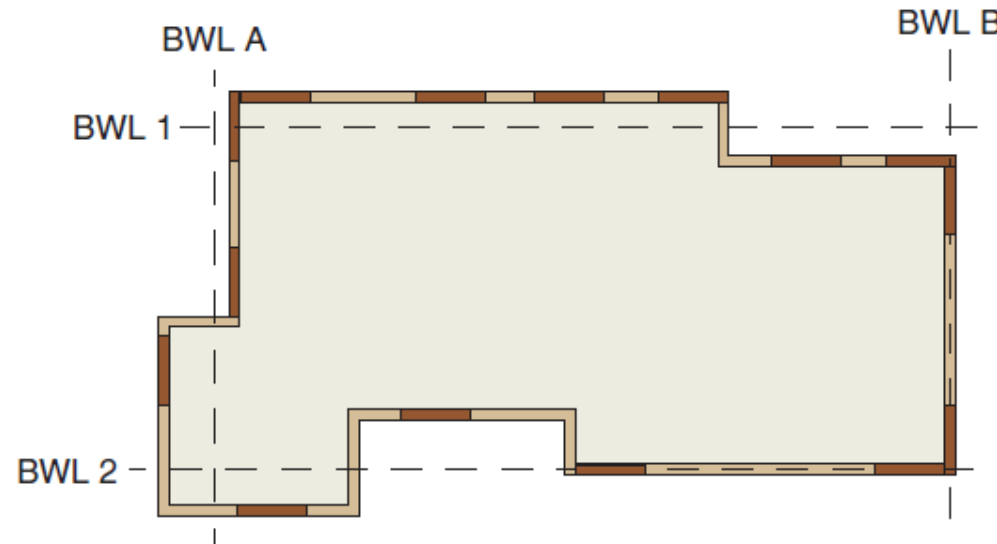
Interior walls used as bracing shall be offset not more than 4 feet (1219 mm) from a braced wall line through the interior of the building as shown in Figure R602.10.1.1

Braced wall line (BWL) examples:

--- Braced Wall Line

— Braced Wall Panel (BWP)

Example 1:



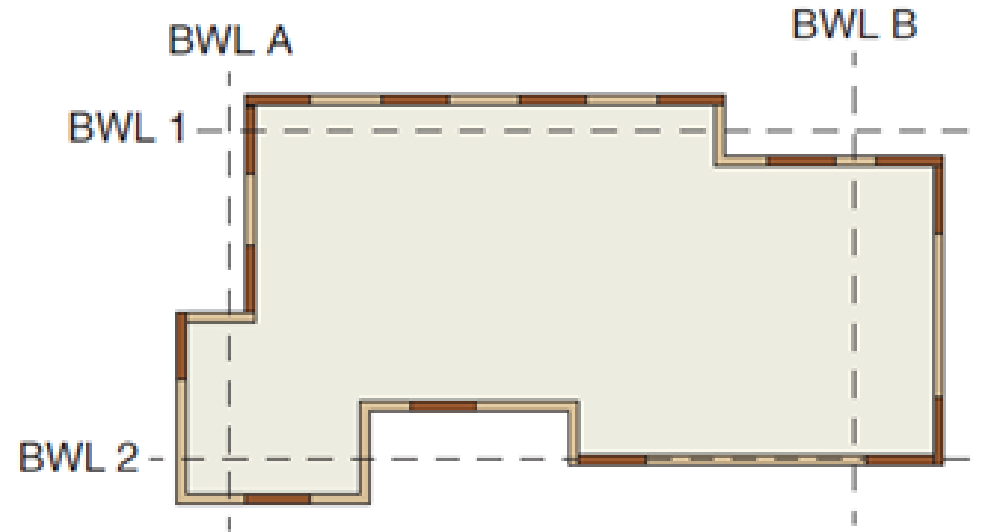
BWL 1: line runs between two walls, 4 of 6 panels on outside side of line, 2 of 6 panels on opposite side of line = OK

BWL 2: line runs between three walls, 1 of 4 panels outside line, 2 of 4 panels on BWL and 1 of 4 panels inside line = OK

BWL A: line runs between two walls, 2 of 3 panels on one side of line, 1 of 3 panels on opposite side of line = OK

BWL B: line runs on one wall = OK

Example 2:



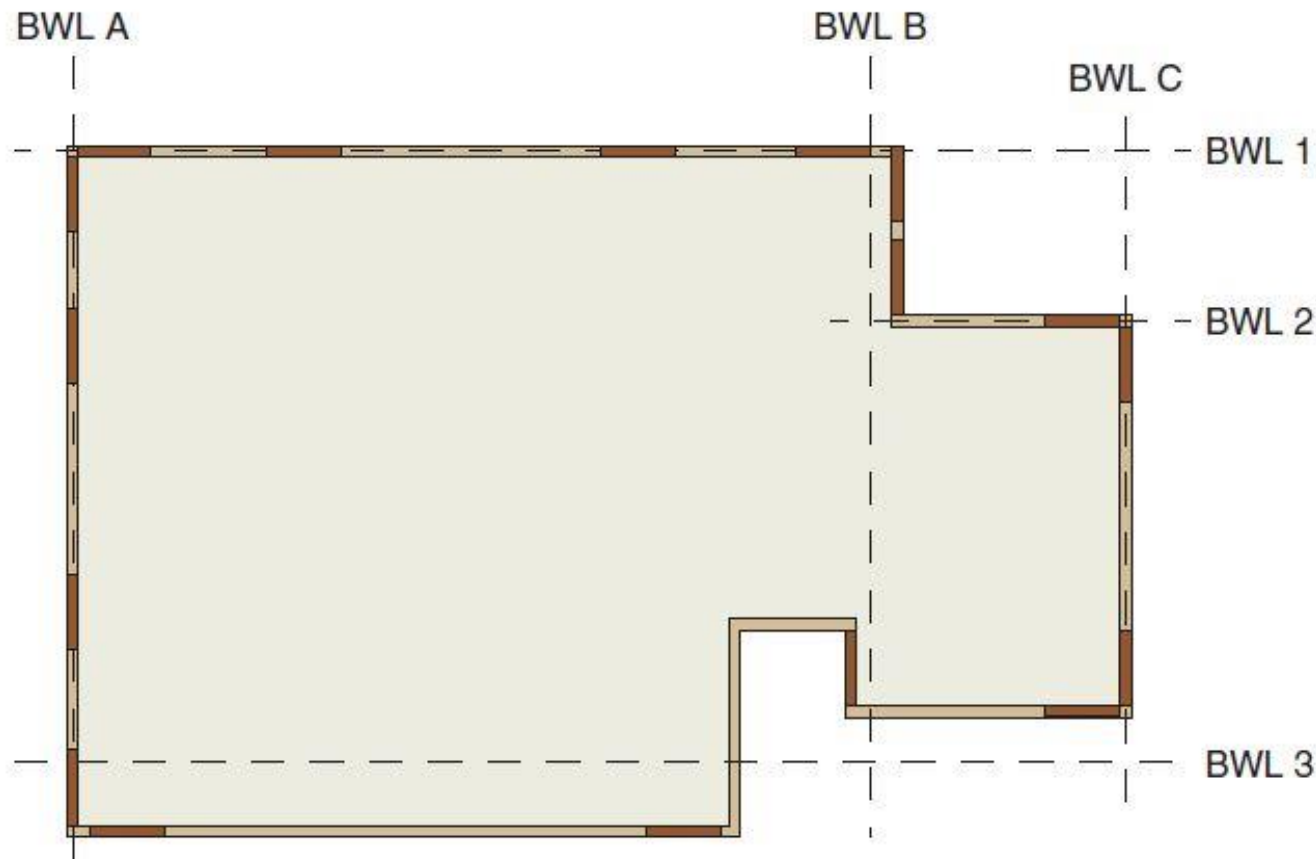
BWL 1: line runs between two walls, 4 of 6 panels on outside side of line, 2 of 6 panels on opposite side of line = OK

BWL 2: line runs between three walls, 1 of 4 panels outside line, 2 of 4 panels on BWL and 1 of 4 panels inside line = OK

BWL A: line runs between two walls, 2 of 3 panels on one side of line, 1 of 3 panels on opposite side of line = OK

BWL B: line runs inside single wall, 2 of 2 panels outside BWL = **No Good**

Example 3:



BWL 1: line runs along a single wall, 4 of 4 panels are on the BWL = OK

BWL 2: line runs along a single wall, 1 of 1 panel is on the BWL = OK

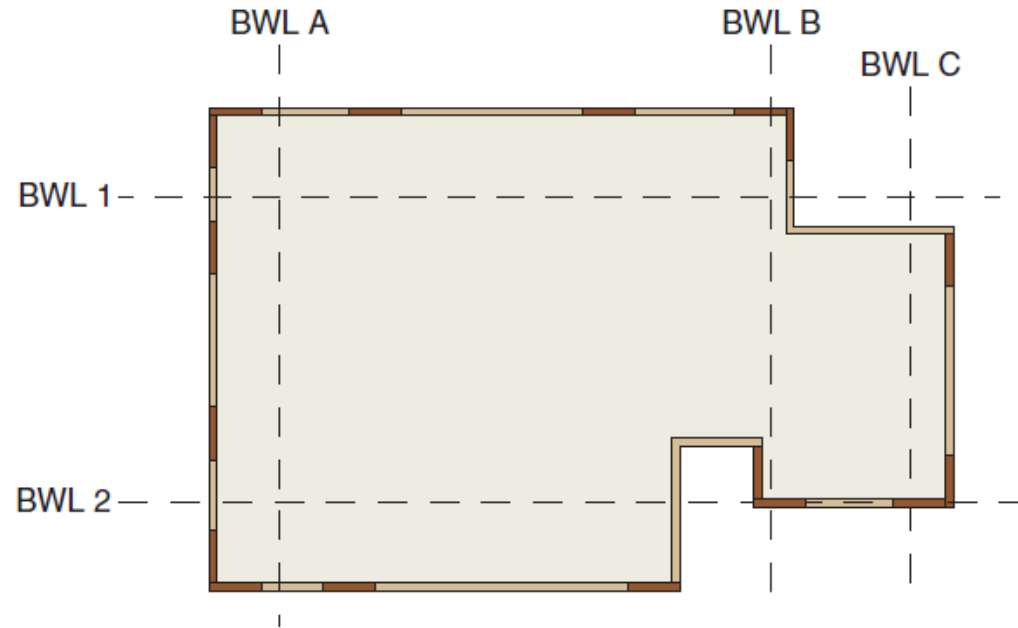
BWL 3: line runs between two walls, 2 of 3 panels on one side of line, 1 of 3 panels on opposite side of line = OK

BWL A: line runs along a single wall, 4 of 4 panels are on the BWL = OK

BWL B: line runs between two walls, 2 of 3 panels on one side of line, 1 of 3 panels on opposite side of line = OK

BWL C: line runs along a single wall, 2 of 2 panels are on the BWL = OK

Example 4:



BWL 1: line runs between two walls, 4 of 5 panels on one side of line, 1 of 5 panels on opposite side of line = **No Good**, as more than 2/3 of panels are on one side of the BWL.

BWL 2: line runs on one wall, 3 of 5 panels on one side of line, 2 of 5 panels on the wall = **No Good**

BWL A: line inside of a single wall, 4 of 4 panels are on one side of the BWL = **No Good**

BWL B: line runs between two walls, 1 of 2 panels on one side of line, 1 of 2 panels on opposite side of line = **OK**

BWL C: line inside of a single wall, 2 of 2 panels are on the inside of the BWL = **No Good**

R602.10.2.2 Location of Braced Wall Panels (BWPs)

Change Type: Clarification

- ▶ **R602.10.2.2 Locations of braced wall panels.** A braced wall panel shall begin within 10 feet (3810 mm) from each end of a braced wall line as determined in Section R602.10.1.1. The distance between adjacent edges of braced wall panels along a braced wall line shall be greater than 20 feet (6090 mm) as shown in Figure R602.10.2.2.

Exceptions:

1. Braced wall panels in Seismic Design Categories D_0 , D_1 and D_2 shall comply with Section R602.10.2.2.1.
 2. Braced wall panels with continuous sheathing in Seismic Design Categories A, B or C shall comply with Section R602.10.7.
- ▶ **R602.10.2.2.1 Location of braced wall panels in Seismic Design Categories D_0 , D_1 and D_2 .** Braced wall panels shall be located at each end of a braced wall line.
 - ▶ Exception Exceptions:
 - ▶ 1. Braced wall panels constructed of

- **R602.10.2.2.1 Location of braced wall panels in Seismic Design Categories D₀, D₁ and D₂.** Braced wall panels shall be located at each end of a braced wall line.

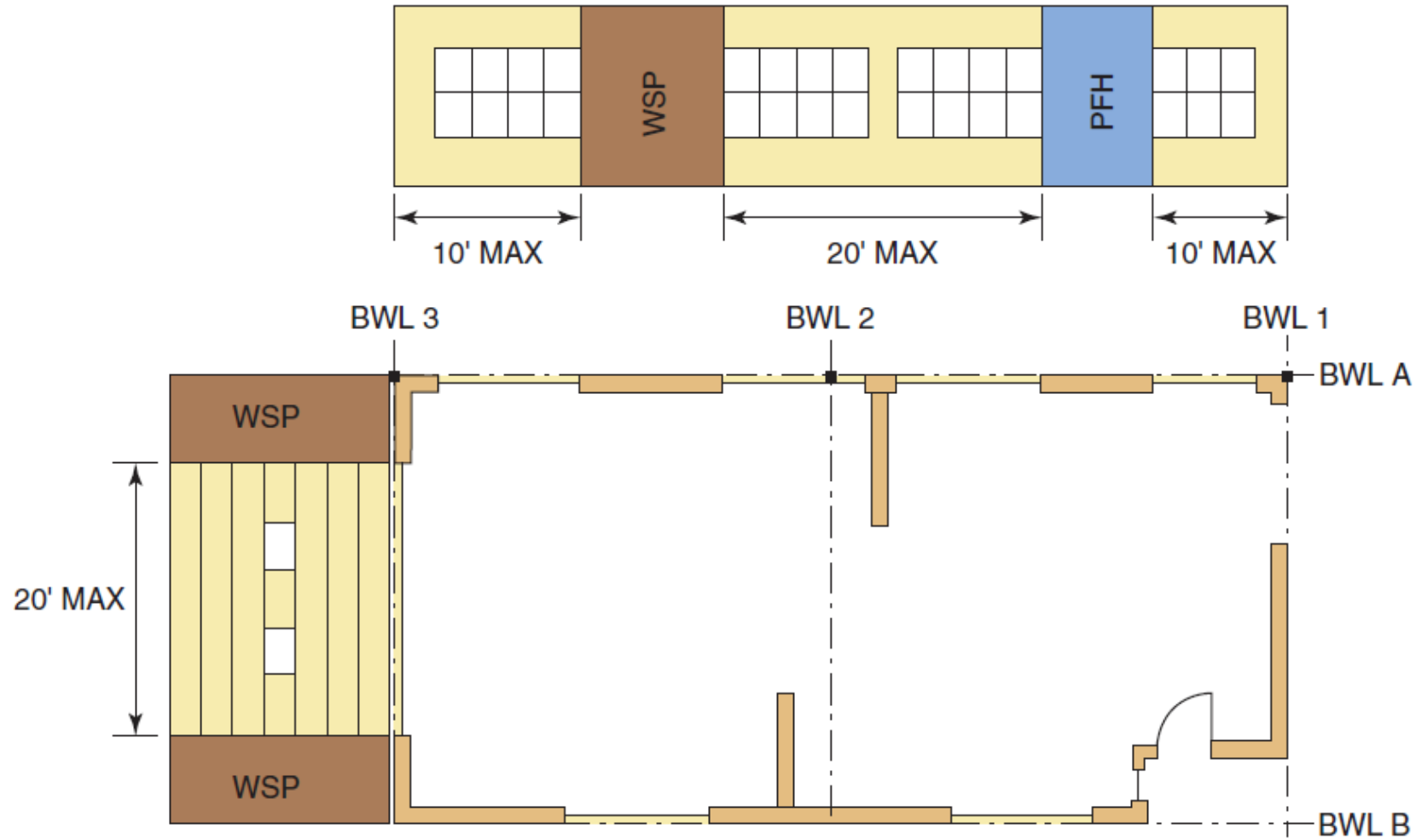
Exception Exceptions:

1. Braced wall panels constructed of Method WSP or BV-WSP and continuous sheathing methods as specified in Section R602.10.4 shall be permitted to begin not more than 10 feet (3048 mm) from each end of a braced wall line provided that each end complies with one of the following:

~~4.~~ 1.1. A minimum 24-inch-wide (610 mm) panel for Methods WSP, CS-WSP, CS-G and CSPF is applied to each side of the building corner as shown in End Condition 4 of Figure R602.10.7.

~~2.~~ 1.2. The end of each braced wall panel closest to the end of the braced wall line shall have an 1,800 lb (8 kN) hold-down device fastened to the stud at the edge of the braced wall panel closest to the corner and to the foundation or framing below as shown in End Condition 5 of Figure R602.10.7.

2. Braced wall panels constructed of Method PFH or ABW, or of Method BV-WSP where a hold-down is provided in accordance with Table R602.10.6.5.4, shall be permitted to begin not more than 10 feet from each end of a braced wall line.



Method PFH panels may start 10 feet from the end of the BWL.

Table R602.10.3(1) Bracing for Winds

Change Type: Modification

TABLE R602.10.3(1) Bracing Requirements Based on Wind Speed

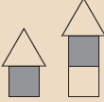
• Exposure Category B • 30-foot Mean Roof Height • 10-foot Wall Height • 2 Braced Wall Lines						
		Minimum Total Length (feet) of Braced Wall Panels Required Along Each Braced Wall Line ^a				
Ultimate Design Wind Speed (mph)	Story Location	Braced Wall Line ^c (feet)	Method LIB ^b	Method GB	Methods DWB, WSP, SFB, PBS, PCP, HPS, BV-WSP, ABW, PFH, PFG, CS-SFB	Methods CS-WSP, CS-G, CS-PF
< 95 mph		10	2.5	2.5	1.5	1.5
		20	4.5	4.5	2.5	2.5
		30	6.5	6.5	4.0	3.5
		40	8.5	8.5	5.0	4.0
		50	10.5	10.5	6.0	5.0
		60	12.5	12.5	7.0	6.0
		10	5.0	5.0	3.0	2.5
		20	8.5	8.5	5.0	4.5
		30	12.5	12.5	7.0	6.0
		40	16.0	16.0	9.5	8.0
		50	20.0	20.0	11.5	10.0
		60	23.5	23.5	13.5	11.5
		10	NP	7.0	4.0	3.5
		20	NP	13.0	7.5	6.5
		30	NP	18.5	10.5	9.0
		40	NP	24.0	13.5	11.5
		50	NP	29.5	17.0	14.5
		60	NP	35.0	20.0	17.0

(All changes to text or footnotes are shown.)

Table R602.10.3(3) Seismic Wall Bracing

Change Type: Clarification

TABLE R602.10.3(3) Bracing Requirements Based on Seismic Design Category

← SOIL CLASS D ^b • Wall Height = 10 feet • 10 PSF Floor Dead Load • 15 PSF Roof/Ceiling Dead Load • Braced Wall Line Spacing ≤ 25 feet		Minimum Total Length (Feet) of Braced Wall Panels Required along each Braced Wall Line ^{a,f,g}					
Seismic Design Category ^h	Story Location	Braced Wall Line Length (feet) ^c	Method LIB ^d	Method GB	Methods DWB, SFB, PBS, PCP, HPS, CS-SFB ^e	Methods WSP, PFH ^f , PFG ^{e,f} and ABW ^f	Methods CS-WSP, CS-G, CS-PF
D ₂ ^h		10	NP	4	4	2.5	2.1
		20	NP	8	8	5	4.3
		30	NP	12	12	7.5	6.4
		40	NP	16	16	10	8.5
		50	NP	20	20	12.5	10.6
		10	NP	7.5	7.5	5.5	4.7
		20	NP	15	15	11	9.4
		30	NP	22.5	22.5	16.5	14
		40	NP	30	30	22	18.7
		50	NP	37.5	37.5	27.5	23.4
	Cripple wall below one- or two-story dwelling	10	NP	NP	NP	7.5	6.4
		20	NP	NP	NP	15	12.8
		30	NP	NP	NP	22.5	19.1
		40	NP	NP	NP	30	25.5
		50	NP	NP	NP	37.5	31.9

b. Wall bracing lengths are based on a soil site class "D."^g Interpolation of bracing length between the S_{DS} values associated with the seismic design categories shall be permitted when a site-specific S_{DS} value is determined in accordance with Section 1613.2 of the *California Building Code*.

f. Methods PFH, PFG and ABW are only permitted on a single story or a first of two stories.

f.g. Where more than one bracing method is used, mixing methods shall be in accordance with Section R602.10.4.1.

h. One- and two-family dwellings in Seismic Design Category D₂ exceeding two stories shall be designed in accordance with accepted engineering practice.

(All changes to text or footnotes are shown.)

Table R602.10.3(4) Adjustment Factors - Seismic

Change Type: Clarification

TABLE R602.10.3(4) Seismic Adjustment Factors to the Required Length of Wall Bracing

Item Number	Adjustment Based On	Story ^g	Condition	Adjustment Factor [Multiply length from Table R602.10.3(3) by this factor]	Applicable Methods
7	Walls with stone or masonry veneer, detached one- or two-family dwellings in SDC D ₀ -D ₂	Any Story	See <u>Section R602.10.6.5.4</u> ~~Table R602.10.6.5~~		BV-WSP
8	Walls with stone or masonry veneer, detached one- or two-family dwellings in SDC D ₀ -D ₂	First and second story of two-story dwelling	<u>Limited Brick Veneer on Second Story</u> . See Section <u>R602.10.6.5.3</u> . ~~Table R602.10.6.5~~	1.2	WSP, CS-WSP
10	Horizontal blocking	Any story	Horizontal blocking omitted	2.0	WSP, <u>PBS</u> , CS-WSP

g. One- and two-family dwellings in Seismic Design Category D₂ exceeding two stories shall be designed in accordance with accepted engineering practice.

(All changes to text or footnotes are shown.)

R602.10.6.5 Stone and Masonry Veneer

Change Type: Clarification

- ▶ **R602.10.6.5 Wall bracing for dwellings with stone and masonry veneer in Seismic Design Categories D_0 , D_1 and D_2 .** Townhouses in Seismic Design Categories D_0 , D_1 and D_2 with stone or masonry veneer exceeding the first-story height shall be designed in accordance with accepted engineering practice.

One- and two-family dwellings in Seismic Design Category D_2 exceeding two stories and having stone or masonry veneer shall be designed in accordance with accepted engineering practice.

Where stone and masonry veneer are installed in accordance with Section R703.8, wall bracing on exterior braced wall lines and braced wall lines on the interior of the building, backing or perpendicular to the laterally supporting veneered walls shall comply with this section.

- ▶ **R602.10.5.1.1 Veneer on first story only.** Where dwellings in Seismic Design Categories D_0 , D_1 and D_2 have stone or masonry veneer installed in accordance with Section R703.8, and the veneer does not exceed the first-story height, wall bracing shall be in accordance with Section R602.10, exclusive of Section R602.10.6.5.
- ▶ **R602.10.6.5.2 Veneer exceeding first story height.** Where detached one- or two-family dwellings in Seismic Design Categories D_0 , D_1 and D_2 have stone or masonry veneer installed in accordance with Section R703.8, and the veneer exceeds the first-story height, wall bracing at exterior braced wall lines and braced wall lines on the interior of the building shall be constructed using Method BV-WSP in accordance with this section and Figure R602.10.6.5.2. Cripple walls shall not be permitted and required interior braced wall lines shall be supported on continuous foundations.

- **R602.10.6.5.3 Limited veneer exceeding first story height.** Where detached one- or two-family dwellings in Seismic Design Categories have D_0 , D_1 and D_2 exterior veneer installed in accordance with Section R703.8 and brick veneer installed above the first story height meets the following limitations, bracing in accordance with Method WSP or CS-WSP shall be permitted provided that the total length of braced wall panels specified by Table 602.10.3(3) is multiplied by 1.2 for each first- and second-story braced wall line.
1. The dwelling does not exceed more than two stories above grade plane.
 2. The veneer does not exceed 5 inches (127 mm) in thickness.
 3. The height of veneer on gable-end walls does not extend more than 8 feet (2438 mm) above the bearing wall top plate elevation.
 4. Where veneer is installed on multiple walls above the first story, the total area of the veneer on the second-story exterior walls shall not exceed 25 percent of the occupied second floor area.
 5. Where the veneer is installed on one entire second-story exterior wall, including walls on bay windows or similar appurtenances, brick veneer shall not be installed on any of the other walls on that floor.
- **R602.6.5.4 Length of bracing.** The length of bracing along each braced wall line shall be the greater of that required by the ultimate design wind speed and braced wall line spacing in accordance with Table R602.10.3(1) as adjusted by the factors in Table R602.10.3(2) or the seismic design category and braced wall line length in accordance with either Table R602.10.6.5.4 when using Method BV-WSP, or Table R601.10.3(3) as adjusted by the factors in Table R602.10.3(4) when using Method WSP or CS-WSP. Angled walls shall be permitted to be counted in accordance with Section R602.10.1.4, and braced wall panel location shall be in accordance with Section R602.10.2.2. Spacing between braced wall lines shall be in accordance with Table R602.10.1.3. The seismic adjustment factors in Table R602.10.3(4) shall not be applied to the length of bracing determined using Table R602.10.6.5.4, except that the bracing amount increase for braced wall lines spacing greater than 25 feet (7620 mm) in accordance with Table R602.10.1.3 shall be required. The minimum total length of bracing in a braced wall line, after all adjustments have been taken, shall not be less than 48 inches (1219 mm) total.

R609.4.1 GARAGE DOORS

Change Type: Addition

- ▶ **R609.4.1 Garage Door Labeling.** Garage doors shall be labeled with a permanent label provided by the garage door manufacturer. The label shall identify the garage door manufacturer, the garage door model/series number, the positive and negative design wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.



KERN COUNTY BUILDING AND CODE DIVISION

Garage doors must be labeled.

R703.2, R703.7.3 Water-Resistive Barriers

Code Type: Modification

- **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. 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 R703.4.

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 I or II
3. ASTM E331 in accordance with Section R703.1.1
4. Other approved materials installed 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).

- ▶ **R703.7.3 Water-resistive barriers.** Water-resistive barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall comply with Section R703.7.3.1 or R703.7.3.2.
- ▶ **R703.7.3.1 Dry climates.** In Dry (B) climate zones indicated in Figure N1101.7, 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 or other non-water-absorbing layer or a designed drainage space.
- ▶ **R703.3.2 Moist or marine climates.** In the Moist (A) or Marine (C) climate zones indicated in Figure N1101.7, 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 side 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.

R704 Soffits

Change Type: Addition

- ▶ **R704.1 General wind limitations.** Where design wind pressure is 30 pounds per square foot (1.44 kPa) or less, soffits shall comply with Section R704.2. Where the design wind pressure exceeds 30 pounds per square foot (1.44 kPa), soffits shall comply with Section R704.3. The design wind pressure on soffits shall be determined using the component and cladding loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet and adjusted for height and exposure in accordance with Table R301.2.1(2).
- ▶ **R704.2 Soffit installation where the design wind pressure is 30 psf or less.** Where the design wind pressure is 30 pounds per square foot (1.44 kPa) or less, soffit installation shall comply with Section R704.2.1, Section R704.2.2, Section R704.2.3, or Section R704.2.4. Soffit materials not addressed in Sections R704.2.1 through R704.2.4 shall be in accordance with the manufacturer's installation instructions.
- ▶ **R704.2.1 Vinyl soffit panels.** Vinyl soffit panels shall be installed using fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or subfascial component in accordance with Figure R704.2.1(2). Vinyl soffit panels shall be installed in accordance with the manufacturer's installation instructions. Fascia covers shall be installed in accordance with the manufacturer's installation instructions.

- ▶ **R704.2.2 Fiber-cement soffit panels.** Fiber-cement soffit panels shall be a minimum of $\frac{1}{4}$ -inch in thickness and shall comply with the requirements of ASTM C1186, Type A, minimum Grade II or ISO 8336, Category A, minimum Class 2. Panel joints shall occur over framing or over wood structural panel sheathing. Soffit panels shall be installed with spans and fasteners in accordance with the manufacturer's installation instructions.
- ▶ **R704.2.3 Hardboard soffit panels.** Hardboard soffit panels shall be not less than $\frac{7}{16}$ -inch in thickness and shall be fastened to framing or nailing strips with $2\frac{1}{2}$ " x 0.113" (64 mm x 2.9 mm) siding nails spaced not more than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.
- ▶ **R703.3.1.1 R704.2.4 Wood structural panel soffit.** The minimum nominal thickness for wood structural panel soffits shall be $\frac{3}{8}$ -inch (9.5 mm) and shall be fastened to framing or nailing strips with 2-inch by 0.099-inch (51 mm x 2.5 mm) nails. Fasteners shall be spaced not less than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.
- ▶ **R704.3 Soffit installation where the design wind pressure exceeds 30 psf.** Where the design wind pressure is greater than 30 psf, soffit installation shall comply with Section R704.3.1, Section R704.3.2, Section R704.3.3, or Section R704.3.4. Soffit materials not addressed in Section R704.3.1 through R704.3.4 shall be in accordance with the manufacturer's installation instructions.

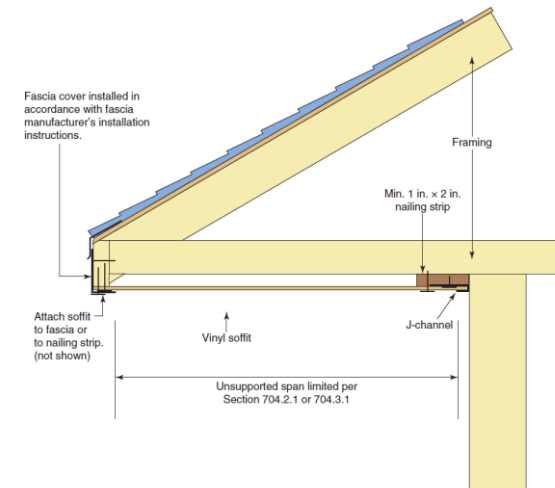
- ▶ **R704.3.1 Vinyl soffit panels.** Vinyl soffit panels and their attachments shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet (0.929 m²) and adjusted for height and exposure in accordance with Table R301.2.1(2). Vinyl soffit panels shall be installed using fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or subfascia component in accordance with Figure R704.2.1(1). Where the supported span of soffit panels is greater than 12 inches (305 mm), intermediate nailing strips shall be provided in accordance with Figure R704.2.1(2). Vinyl soffit panels shall be installed in accordance with the manufacturer's installation instructions. Fascia covers shall be installed in accordance with the manufacturer's installation instructions.
- ▶ **R704.3.2 Fiber-cement soffit panels.** Fiber-cement soffit panels shall comply with Section R704.2.2 and shall be capable of resisting wind loads specified in Table 301.2.1(1) for walls using an effective wind area of 10 square feet (0.929 m²) and adjusted for height and exposure in accordance with Table R301.2.1(2).
- ▶ **R704.3.3 Hardboard soffit panels.** Hardboard soffit panels shall comply with the manufacturer's installation instructions and shall be capable of resisting wind loads specified in Table 301.2.1(1) for walls using an effective wind area of 10 square feet (0.929 m²) and adjusted for height and exposure in accordance with Table R301.2.1(2).
- ▶ **R704.3.4 Wood structural panel soffit.** Wood structural panel soffits shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet (0.929 m²) and adjusted for height and exposure in accordance with Table R301.2.1(2). Alternatively, wood structural panel soffits shall be installed in accordance with Table R704.3.4

TABLE R704.3.4 Prescriptive Alternative for Wood Structural Panel Soffit^{b,c,d,e}

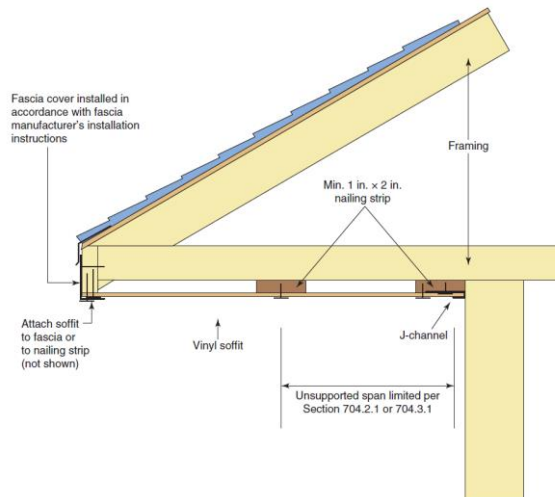
Maximum Design Pressure (+ or – psf)	Minimum Panel Span Rating	Minimum Panel Performance Category	Nail Type and Size	Fastener ^a Spacing Along Edges and Intermediate Supports	
				Galvanized Steel	Stainless Steel
30	24/0	3/8	6d box (2 × 0.099 × 0.266 head diameter)	6 ^f	4
40	24/0	3/8	6d box (2 × 0.099 × 0.266 head diameter)	6	4
50	24/0	3/8	6d box (2 × 0.099 × 0.266 head diameter)	4	4
			8d common (2½ × 0.131 × 0.281 head diameter)	6	6
60	24/0	3/8	6d box (2 × 0.099 × 0.266 head diameter)	4	3
			8d common (2½ × 0.131 × 0.281 head diameter)	6	4
70	24/16	7/16	8d common (2½ × 0.131 × 0.281 head diameter)	4	4
			10d box (3 × 0.128 × 0.312 head diameter)	6	4
80	24/16	7/16	8d common (2½ × 0.131 × 0.281 head diameter)	4	4
			10d box (3 × 0.128 × 0.312 head diameter)	6	4
90	32/16	15/32	8d common (2½ × 0.131 × 0.281 head diameter)	4	3
			10d box (3 × 0.128 × 0.312 head diameter)	6	4

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

- Fasteners shall comply with Sections R703.3.2 and R703.3.3.
- Maximum spacing of soffit framing members shall not exceed 24 inches.
- Wood structural panels shall be of an exterior exposure grade.
- Wood structural panels shall be installed with strength axis perpendicular to supports with not fewer than two continuous spans.
- Wood structural panels shall be attached to soffit framing members with specific gravity of at least 0.42. Framing members shall be minimum 2 × 3 nominal with the larger dimension in the cross section aligning with the length of fasteners to provide sufficient embedment depths.
- Spacing at intermediate supports shall be not greater than 12 inches on center.



Soffit support: Single span.



Soffit support: Double span.

R802 Wood Rood Framing

Change Type: Modification

- ▶ **R802.3 Ridge.** A ridge board used to connect opposing rafters shall be not less than 1 inch (25 mm) nominal thickness and not less in depth than the cut end of the rafter. Where ceiling joist or rafter ties do not provide continuous ties across the structure as required by Section R802.5.2, the a ridge shall be supported by a wall or ridge beam designed in accordance with accepted engineering practice shall be provided and supported on each end by a wall or column girder.
- ▶ **R802.5 Ceiling joists.** Ceiling joists shall be continuous across the structure or securely joined where they meet over interior partitions in accordance with Table R802.5.2 Section R802.5.1. Ceiling joists shall be fastened to the top plate in accordance with Table R602.3(1).
- ▶ **R802.5.2 Ceiling joists and rafter connections.** Where ceiling joists run parallel to rafters, and are located they shall be connected to rafters at the top wall plate in accordance with Table R802.5.2. ~~Where ceiling joists are not connected to the rafters at the top wall plate, they shall be installed in the bottom third of the rafter height, they shall be installed in accordance with Figure R802.4.5 and fastened to rafters in accordance with Table R802.5.2(1).~~ Where the ceiling joists are installed above the bottom third of the rafter height, the ridge shall be designed as a beam in accordance with Section R802.3. Where ceiling joists do not run parallel to rafter, ~~the ceiling joist shall be connected to top plates in accordance with Table R602.3(1).~~ Each rafters shall be tied across the structure with a rafter tie in accordance with Section R802.5.2.2, or the ridge shall be designed as a beam in accordance with R802.3. or a 2-inch by 4-inch (51 mm x 102 mm) kicker connected to the ceiling diaphragm with nails equivalent in capacity to Table R802.5.2.

- ▶ **R802.2.1 Ceiling joists lapped.** Ends of ceiling joists shall be lapped not less than 3 inches (76 mm) or butted over bearing partitions or beams and toenailed to the bearing member. Where ceiling joists are used to provide the continuous tie across the building ~~resistance to rafter thrust~~, lapped joists shall be nailed together in accordance with Table R802.5.2(1) and butted joists shall be tied together with a connection of equivalent capacity ~~in a manner to resist such thrust~~. Laps in joists ~~Joists that do not resist thrust~~ provide the continuous tie across the building shall be permitted to be nailed in accordance with Table R602.3(1). ~~Wood structural panel roof sheathing, in accordance with Table R503.2.1.1(1), shall not cantilever more than 9 inches (229 mm) beyond the gable end wall unless supported by gable overhang framing.~~
- ▶ **R802.5.2.2 Rafter ties.** Wood rafter ties shall be not less than 2 inches by 4 inches (51 mm x 102 mm) installed in accordance with Table R802.5.2(1) ~~at each rafter~~ a maximum of 24 inches (610 mm) on center. Other approved rafter tie methods shall be performed.
- ▶ **R8002.5.2.3 Blocking.** Blocking shall be not less than utility grade lumber.

Chapter 44 Referenced Standards

Change Type: Modification

▶ **ACI**

- ▶ 318-19: Building Code Requirements for Structural Concrete

▶ **AWC**

- ▶ ANSI/AWC NDS - 2018: National Design Specification (NDS) for Wood Construction - with 2018 Supplement
- ▶ ANSI/AWC WFCM - 2018: Wood Frame Construction Manual for One- and Two-family Dwellings
- ▶ AWC STJR - 2021: Span Tables for Joists and Rafters
- ▶ ANSI/AWC SDPWS - 2021: Special Design Provisions for Wind and Seismic

2022 Ordinance Code of the County of Kern Chapter 17.06

SIGNIFICANT CHANGES

17.06.172 - Section R302.15 added - Sound Transmission

Change type: New Section

- ▶ R302.15 Sound Transmission. Wall and floor ceiling assemblies separating dwelling units and townhouse units, shall be provided with sound transmission insulation in accordance with Section 1206 of the California Building Code.

17.36 Residential Swimming Pool and Spa Code

Change Type: Modification

► 17.36.020 International Swimming Pool and Spa Code - Adopted.

That portion of the International Swimming Pool and Spa Code, 2021 Edition, including Appendix AX of the 2022 California Residential Code (California Swimming Pool Safety Act), as modified and amended by this chapter, is adopted by this reference into the Kern County Residential Swimming Pool and Spa Code.

2022 Title 24, Part 6 Building Energy Efficiency Standards

SIGNIFICANT CHANGES

www.energycodeace.com

- ▶ Please visit Energy Code Ace for tools, training, and resources.



GROUND  BOUNDLESS

2022 CA Building Code

SIGNIFICANT CHANGES TO THE CALIFORNIA BUILDING CODE 2022 EDITION

**KERN COUNTY BUILDING AND CODE DIVISION
2700 M STREET, BAKERSFIELD, CA 93301
661.862.8681
WWW.KERNPUBLICWORKS.COM**

PART 1 Administration (Chapters 1 and 2)

PART 1 Administration (Chapters 1 and 2)

17 Changes

- ▶ Chapter 1 Format of Administrative Provisions
- ▶ 105.5.1 Permit Expirations
- ▶ 110.3.5 Type IV Connection Protection
- ▶ 110.3.7 Inspection of Weather-Exposed Balconies
- ▶ 202 Definition of Access Aisle
- ▶ 202 Definition of Atrium
- ▶ 202 Definition of Change of Occupancy
- ▶ 202 Definition of Child-Care
- ▶ 202 Definition of Day-Care
- ▶ 202 Definition of Inflatable Amusement Device
- ▶ 202 Definition of Mass Timber
- ▶ 202 Definition of Nailable Substrate
- ▶ 202 Definition of Penthouse
- ▶ 202 Definition of Photovoltaic (PV) Panel System, Ground-Mounted
- ▶ 202 Definition of Photovoltaic (PV) Support Structure, Elevated
- ▶ 202 Definition of Structural Members
- ▶ 202 Definition of Toddler

105.5.1 Permit Expirations

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **105.5.1 Expiration. [BSC]** *On or after January 1, 2019, every permit issued shall become invalid unless the work on the site authorized by such permit is commenced within 12 months after its issuance, or if the work authorized on the site by such permit is suspended or abandoned for a period of 12 months after the time the work is commenced. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.(See Health and Safety Code Section 18938.5 and 18938.6.)*
- ▶ **CHANGE SIGNIFICANCE:** Building Standards Commission (BSC) has added Section 105.5.1, and the language mirrors that contained within the recently added sections of the Health and Safety Code. The language is intended to extend all building permits and their expirations from 180 days to 12 months. The Health and Safety Code language was a result of the natural disasters throughout the state and the impact on the construction industry and their timelines. This allows a permit to not be expired for 12 months after issuance, thereby alleviating some of those concerns moving forward.

110.3.7 Inspection of Weather-Exposed Balconies

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT:** ~~110.3.6~~ **110.3.7 Weather-exposed balcony and walking surface waterproofing.** Where balconies or other elevated walking surfaces ~~are exposed to water from direct or blowing rain, snow or irrigation~~ have weather-exposed surfaces, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall not be concealed until inspected and approved.

Exception: Where special inspections are provided in accordance with Section 1705.1.1, Item 3

- ▶ **CHANGE SIGNIFICANCE:** The scope of the inspection for weather-exposed balcony and walking surface waterproofing, mandated where applicable, has been modified through the introduction of the defined term “weather-exposed surfaces.” The reference to a currently defined term accomplishes two things: (1) it allows for a more consistent application of the code through specified conditions under which exterior surfaces are not considered exposed to the weather, and (2) it deletes the inspection where the only water exposure concern is due to irrigation.

202 Definition of Change of Occupancy

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 202 Change of occupancy.** ~~A change in the use of a building or a portion of a building which results in one of the following:~~ Either of the following shall be considered as a change of occupancy where this code requires a greater degree of safety, accessibility, structural strength, fire protection, means of egress, ventilation or sanitation than is existing in the current building or structure:
 1. Any change in the occupancy classification of a building or structure.
 2. Any change in the purpose of, or a change in the level of activity within, a building or structure.
 - ~~1. A change of occupancy classification.~~
 - ~~2. A change from one group to another group within an occupancy classification.~~
 - ~~3. Any change in use within a group for which there is a change in application of the requirements of this code.~~
- ▶ **CHANGE SIGNIFICANCE:** The scope of a change of occupancy has been narrowed where no classification change takes place. Where no change in occupancy classification occurs, a change of occupancy now exists only in those buildings where (1) there is a change in a building's purpose or level of activity, (2) that functional change is such that the current CBC requires a greater degree of regulation than presently exists in the current building, and (3) the greater degree of regulation required by the current CBC occurs only in the areas of accessibility, structural strength, fire protection, means of egress, ventilation or sanitation. The intent is to limit the application of a change of occupancy where there is no change in classification to only those new uses that present a higher risk to the life safety or welfare of the occupants than was created by the previous use.

202 Definition of Inflatable Amusement Device

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **202 Inflatable amusement device.** A device made of flexible fabric or other combustible materials that is inflated by one or more air-blowers providing internal air pressure to maintain its shape. Such a device is designed for recreational activities that allow occupants to bounce, climb, slide, negotiate an obstacle course or participate in interactive play.
- ▶ **CHANGE SIGNIFICANCE:** It is important to note that an amendment in the Referenced Standards was also made that now includes ASTM F2374, *Standard Practice for Design, Manufacture, Operation, and Maintenance of Inflatable Amusement Devices*. These devices are continuing to become more popular throughout the State of California. Similarly, the number of injuries related to these devices is significant; therefore, the State Fire Marshal proposed the language be included and the ASTM standard be referenced to provide a greater level of safety for the users of these devices and a tool for enforcement by local jurisdictions.



202 Definition of Photovoltaic (PV) Panel System, Ground-Mounted

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** 202 Photovoltaic (PV) panel system, ground-mounted. An independent photovoltaic (PV) panel system without useable space underneath, installed directly on the ground.
- ▶ **CHANGE SIGNIFICANCE:** The term now has a definition for jurisdictions to better apply ground-mounted photovoltaic panel system requirements as appropriate and differentiate those installations from elevated photovoltaic support structures.



202 Definition of Photovoltaic (PV) Support Structure, Elevated

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** 202 Photovoltaic (PV) support structure, elevated. An independent photovoltaic (PV) panel support structure designed with useable space underneath with minimum clear height of 7 feet 6 inches (2286 mm), intended for secondary use such as providing shade or parking of motor vehicles.
- ▶ **CHANGE SIGNIFICANCE:** This new definition clarifies the intent of how elevated photovoltaic panel systems, and their supports are defined in the code and how the requirements for these structures are applied. Specifically, most PV panels in the marketplace have been fire tested and assigned a “type rating” in accordance with UL 1703. However, some PV panels might not have that fire testing, and could be marked “not fire rated.” PV panels marked “not fire rated” cannot be used on elevated/ overhead PV structures that could have people or cars beneath them, with or without a full roof assembly. The definition as adopted helps code users to identify applications where these types of panels can or cannot be installed.



PART 2 Building Planning (Chapters 3 through 6)

30 Changes

- ▶ 305.2 Group E, Child-Care Facilities
- ▶ 306.2 Group F-1 Occupancy Classification
- ▶ 307.1.1 Uses Not Classified as Group H
- ▶ 311.2, 311.3 Alcoholic Beverage Storage
- ▶ 404.1 Scope of Atrium Provisions
- ▶ 404.5 Smoke Control in Atriums
- ▶ 404.6 Horizontal Assemblies in Atriums
- ▶ 406.2.4 Floor Surfaces in Parking Garages
- ▶ 407.3.1.1 Group I-2 Corridor Doors
- ▶ 407.6.1 Automatic-Closing Doors in Group I-2
- ▶ 411.5 Puzzle Rooms
- ▶ 414.2.3 Fire Wall Use for Control Areas
- ▶ 422.7 Cooking in Ambulatory Care Facilities
- ▶ 424 Play Structures
- ▶ 455.2 Large Family Day-Cares
- ▶ 503.1.4 Occupied Roof Allowances
- ▶ Table 504.3 Allowable Height in Feet
- ▶ Table 504.4 Allowable Height in Stories
- ▶ Table 506.2 Allowable Building Area
- ▶ 506.3.2 Allowable Area Frontage Increase
- ▶ 508.4.4 Separated Occupancies
- ▶ 508.4.4.1, 509.4.1.1 Fire Separations of Mass Timber
- ▶ 508.5 Live/Work Units
- ▶ Table 509.1 Storage Battery Systems as Incidental Uses
- ▶ 510.2 Stairway Construction in Podium Buildings
- ▶ Table 601 Type IV Fire-Resistance
- ▶ 602.4 Mass Timber Type IV Buildings
- ▶ 602.4.1-602.4.3 Type IV-A, IV-B and IV-C Buildings
- ▶ 602.4.4 Type IV-HT Buildings
- ▶ 603.1 Combustible Materials in Types I and II

306.2 Group F-1 Occupancy Classification

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 306.2 Moderate-hazard factory industrial, Group F-1.** Factory industrial uses that are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:
- ▶ **CHANGE SIGNIFICANCE:** Energy storage systems and water/sewer treatment activities have been added to the listing of Group F-1 occupancies.

406.2.4 Floor Surfaces in Parking Garages

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 406.2.4 Floor surfaces.** Floor surfaces shall be of concrete or similar approved noncombustible and nonabsorbent materials. The area of floor used for the 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. The surface of vehicle fueling pads in motor fuel-dispensing facilities shall be in accordance with Section 406.7.1.

Exceptions:

1. *(no change to exception)*
2. ~~Floors of Group S-2 parking garages shall not be required to have a sloped surface.~~
- 3.2.** *(no change to exception)*

- ▶ **CHANGE SIGNIFICANCE:** The mandate for a sloping floor in the vehicle areas of parking garages has been reinstated in the CBC for those garages classified as Group S-2 occupancies.

407.3.1.1 Group I-2 Corridor Doors

CHANGE TYPE: Clarification

- ▶ **2022 CODE TEXT:** **407.3.1.1 Door construction.** Corridor doors not required to have a fire protection rating shall comply with the following:
 1. Solid doors shall have close-fitting operational tolerances, head and jamb stops.
 2. Dutch-style doors shall have an astragal, rabbet or bevel at the meeting edges of the upper and lower door sections. Both the upper and lower door sections shall have latching hardware. Dutch-style doors shall have hardware that connects the upper and lower sections to function as a single leaf.
- ▶ **CHANGE SIGNIFICANCE:** Several specific conditions related to corridor doors have expanded the smoke-resistant criteria in order to address the various types of doors used in corridors of Group I-2 care facilities..



407.6.1 Automatic-Closing Doors in Group I-2

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT:** **407.6.1 Activation of automatic-closing doors.** Automatic-closing doors on hold-open devices in accordance with Section 716.2.6.6 shall also close upon activation of a fire alarm system, an automatic sprinkler system, or both. The automatic release of the hold-open device on one door shall release all such doors within the same smoke compartment.
- ▶ **CHANGE SIGNIFICANCE:** In Group I-2 occupancies, the closing of automatic-closing doors on hold-open devices must now also occur upon activation of the fire alarm system or automatic sprinkler system.



411.5 Puzzle Rooms

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **411.5 Puzzle room exiting.** Puzzle room exiting shall comply with one of the following:

1. Exiting in accordance with Chapter 10.
2. An alternative design approved by the *authority having jurisdiction*.
- 3.Exits shall be open and readily available upon activation by the automatic fire alarm system, automatic sprinkler system, and a manual control at a constantly attended location.

- ▶ **CHANGE SIGNIFICANCE:** A new type of building use, the puzzle room, is now regulated in a manner consistent with traditional special amusement areas. In addition, special means of egress requirements have been established that are specific only to such puzzle rooms.

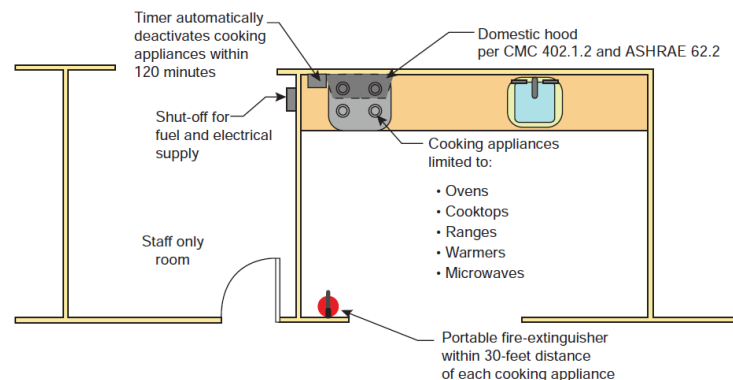


422.7 Cooking in Ambulatory Care Facilities

CHANGE TYPE: Addition

- **2022 CODE TEXT:** **422.7 Domestic cooking.** Installation of cooking appliances used in domestic cooking facilities shall comply with all of the following:
1. The types of cooking appliances permitted are limited to ovens, cooktops, ranges, warmers and microwaves.
 2. Domestic cooking hoods installed and constructed in accordance with the *California Mechanical Code* shall be provided over cooktops or ranges.
 3. A shutoff for the fuel and electrical supply to the cooking equipment shall be provided in a location to which only staff has access.
 4. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes.
 5. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906 and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance.

- **CHANGE SIGNIFICANCE:** Where domestic cooking facilities are provided in ambulatory care facilities, conditions addressing the installation of the cooking appliances have now been established to address any fire concerns.



506.3.2 Allowable Area Frontage Increase

CHANGE TYPE: Modification

- **2022 CODE TEXT: 506.3.2 Minimum frontage distance.** To qualify for an area factor increase based on frontage, the public way or open space adjacent to the building perimeter shall have a minimum distance of 20 feet (6096 mm) measured at right angles from the building face to any of the following:

1. The closest interior lot line.
2. The entire width of a street, alley or public way.
3. The exterior face of an adjacent building on the same property.

The frontage increase shall be based on the smallest public way or open space that is 20 feet (6096 mm) or greater, and the percentage of building perimeter having a minimum 20 feet (6096 mm) public way or openspace.

506.3.3 Amount of increase. The area factor increase based on frontage shall be determined in accordance with ~~Equation 5-5: Table~~ 506.3.3.

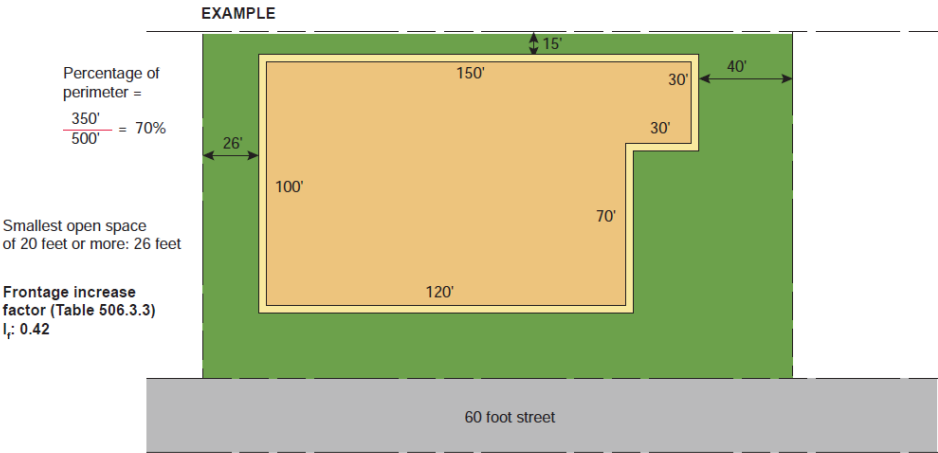
506.3.2 Allowable Area Frontage Increase

CHANGE TYPE: Modification

TABLE 506.3.3 Frontage Increase Factor^a

Percentage of Building Perimeter	Open Space			
	0 to less than 20 feet	20 to less than 25 feet	25 to less than 30 feet	30 feet or greater
0 to less than 25	0	0	0	0
25 to less than 50	0	0.17	0.21	0.25
50 to less than 75	0	0.33	0.42	0.50
75 to 100	0	0.50	0.63	0.75

a. Interpolation is permitted.



506.3.2 Allowable Area Frontage Increase

CHANGE TYPE: Modification

- ~~Exception (to Section 506.3.2):~~ **506.3.3.1 Section 507 buildings.** Where a building meets the requirements of Section 507, as applicable, except for compliance with the minimum 60-foot (18 288 mm) public way or yard requirement, ~~and the value of W is greater than 30 feet, the value of W shall not exceed 60 feet~~ the area factor increase based on frontage shall be determined in accordance with Table 506.3.3.1.

TABLE 506.3.3.1 Section 507 Buildings^a

Percentage of Building Perimeter	Open Space					
	30 to less than 35 feet	35 to less than 40 feet	40 to less than 45 feet	45 to less than 50 feet	50 to less than 55 feet	55 to less than 60 feet
0 to less than 25	0	0	0	0	0	0
25 to less than 50	0.29	0.33	0.38	0.42	0.46	0.50
50 to less than 75	0.58	0.67	0.75	0.83	0.92	1.00
75 to 100	0.88	1.00	1.13	1.25	1.38	1.50

a. Interpolation is permitted.

508.4.4 Separated Occupancies

CHANGE TYPE: Clarification

- **2022 CODE TEXT: 508.4.4 Separation.** Individual occupancies shall be separated from adjacent occupancies in accordance with Table 508.4.
- **CHANGE SUMMARY:** The clarity and functionality provided by a format change to Table 508.4.4 addressing separated occupancies is intended to eliminate any confusion as to the table's proper use.

TABLE 508.4 Required Separation of Occupancies (Hours)^h

Occupancy	A, E		I-4', R-2.1		I-2', I-2.1		I-3		R-1 ^a , R-2 ^a , R2-2 ^a , R-3 ^a , R-3.1 ^a , R-4 ^a		F-2, S-2 ^b , U		B ^e , F-1 ^{g,h} , M, S-1		L		H-1		H-2		H-3, H-4		H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A, E	N	N	2	2	2	NP	2	NP	1	2	N	1	1	2	2	NP	NP	NP	3	4	2	3	2	NP
I-4 ⁱ , R-2.1	2	2	1 ^e	NP	2	NP	2	NP	1	NP	1	2	1	2	2	NP	NP	NP	4	NP	2	NP	2	NP
I-2 ^j , I-2.1	2	NP	2	NP	N	NP	2	NP	2	NP	2	NP	2	NP	2	NP	NP	NP	4	NP	2	NP	2	NP
I-3	2	NP	2	NP	2	NP	N	NP	2	NP	2	2	2	2	2	NP	NP	NP	4	NP				
R-1 ^a , R-2 ^a , R-2-2 ^a , R-3 ^a , R-3.1 ^a , R-4 ^a	1	2	1	NP	2	NP	2	NP	N	N	1 ^c	2 ^c	1	2	4	NP	NP	NP	3	NP	2	NP	2	NP
F-2, S-2 ^b , U	N	1	1	2	2	NP	2	2	1 ^c	2 ^c	N	N	1	2	1	NP	NP	NP	3	4	2	3	2	NP
B ^e , F-1 ^{g,h} , M, S-1	1	2	1	2	2	NP	2	2	1	2	1	2	N	N	1	NP	NP	NP	2	3	1	2	1	NP
L	2	NP	2	NP	2	NP	2	NP	4	NP	1	NP	1	NP	1	NP	NP	NP	2	NP	1	NP	1	NP
H-1	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	N	NP	NP	NP	NP	NP	NP	NP
H-2	3	4	4	NP	4	NP	4	NP	3	NP	3	4	2	3	2	NP	NP	NP	N	NP	1	NP	1	NP
H-3, H-4	2	3	2	NP	2	NP			2	NP	2	3	1	2	1	NP	NP	NP	1	NP	1 ^d	NP	1	NP
H-5	2	NP	2	NP	2	NP			2	NP	2	NP	1	NP	1	NP	NP	NP	1	NP	1	NP	N	NP

S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

N = No separation requirement.

NP = Not Permitted.

a. See Section 420.

b. The required separation from areas used only for private or pleasure vehicles shall be reduced by 1 hour but not to less than 1 hour.

c. See Sections 406.3.2 and 406.6.4.

d. Separation is not required between occupancies of the same classification.

e. See Section 422.2 for ambulatory care facilities.

f. Occupancy separations that serve to define fire area limits established in Chapter 9 for requiring fire protection systems shall also comply with Section 707.3.10 and Table 707.3.10 in accordance with Section 901.7.

g. [SFM] Group I and F1 occupancies and Group R-2.1 and F-1 occupancies shall have a 3 hour separation.

h. [SFM] Commercial kitchens not associated with cafeterias and similar dining facilities in Group I-2 and Group R-2.1 shall have a 2-hour separation and shall be protected by an automatic sprinkler system.

i. [SFM] Group E child-care separation with I-4 child care can be reduced to 1 hour with the installation of automatic fire sprinklers in accordance with Section 903.3.1.1.

j. When not considered an accessory use in accordance with Section 508.2.4, the required separation between Group I-2 and required covers for accessible entrances and emergency vehicle entrances, when in accordance with Section 406.5.2 and protected by an automatic sprinkler system, shall be reduced by 1 hour but not to less than 1 hour. See Section 903.2.21.

508.5 Live/Work Units

CHANGE TYPE: Clarification

- ▶ **2022 CODE TEXT:** ~~SECTION 419 LIVE/WORK UNITS~~ **508.1 General.** Each portion of a building shall be individually classified in accordance with Section 302.1. Where a building contains more than one occupancy group, the building or portion thereof shall comply with the applicable provisions of Section 508.2, 508.3 ~~or~~ 508.4 or 508.5, or a combination of these sections.

Exceptions:

(no changes to Exceptions 1 and 2)

- ~~3. Uses within live/work units, complying with Section 419, are not considered separate occupancies.~~

~~419.1 General~~ **508.5 Live/work units.** A live/work unit shall comply with Sections ~~419.1~~ 508.5 through ~~419.9~~ 508.5.11.

(no change to Exception)

~~419.1~~ **508.5.1** through ~~419.9~~ **508.5.11.** *(no changes to provisions)*

- ▶ **CHANGE SIGNIFICANCE:** The criteria for live/work units has been relocated from the special use provisions of Chapter 4 to the mixed occupancy provisions of Section 508, with no change to the technical requirements.



Table 509.1 Storage Battery Systems as Incidental Uses

CHANGE TYPE: Modification

- **CHANGE SUMMARY:** The identification of stationary storage battery systems as incidental uses, and the corresponding fire separations required for such uses, have been deleted from Table 509.1 and are now more comprehensively regulated by Section 1207 of the CFC.

2022 CODE TEXT:

TABLE 509.1 Incidental Uses

Room or Area	Separation and/or Protection
Furnace room where any piece of equipment is over 400,000 Btu per hour input	1 hour or provide automatic sprinkler system
Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower	1 hour or provide automatic sprinkler system
Refrigerant machinery room	1 hour or provide automatic sprinkler system
Hydrogen fuel gas rooms, not classified as Group H	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.
Incinerator rooms	2 hours and provide automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic sprinkler system
In Group E occupancies, laboratories and vocational shops not classified as Group H	1 hour or provide automatic sprinkler system
<i>[SFM] Rooms or areas with special hazards such as laboratories, vocational shops and other such areas not classified as Group H, located in Group E occupancies where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.</i>	1 hour
In Group I-2 and I-2.1 occupancies, laboratories not classified as Group H	1 hour ^a
In ambulatory care facilities, laboratories not classified as Group H	1 hour or provide automatic sprinkler system
Laundry rooms over 100 square feet	1 hour or provide automatic sprinkler system
In Group I-2 and I-2.1 laundry rooms over 100 square feet	1 hour ^a
Group I-3 cells and Group I-2 and I-2.1 patient rooms equipped with padded surfaces	1 hour ^a
In Group I-2 and I-2.1 physical plant maintenance shops	1 hour ^a
In ambulatory care facilities or Group I-2 and I-2.1 occupancies, waste and linen collection rooms with containers that have an aggregate volume of 10 cubic feet or greater	1 hour ^a
In other than ambulatory care facilities and Group I-2 and I-2.1 occupancies, waste and linen collection rooms over 100 square feet	1 hour or provide automatic sprinkler system
In ambulatory care facilities or Group I-2 and I-2.1 occupancies, storage rooms greater than 100 square feet	1 hour ^a
Electrical installations and transformers	See Sections 110.26 through 110.34 and Sections 450.8 through 450.48 of the <i>California Electrical Code</i> for protection and separation requirements.

For SI: 1 square foot = 0.0929 m², 1 pound per square inch (psi) = 6.9 kPa, 1 British thermal unit (Btu) per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L, 1 cubic foot = 0.0283 m³.
a. [SFM] Fire barrier protection and automatic sprinkler protection required throughout the fire area in I-2 and I-2.1 occupancies as indicated.



603.1 Combustible Materials in Types I and II

CHANGE TYPE: Modification

- **2022 CODE TEXT: 603.1 Allowable materials.** Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:

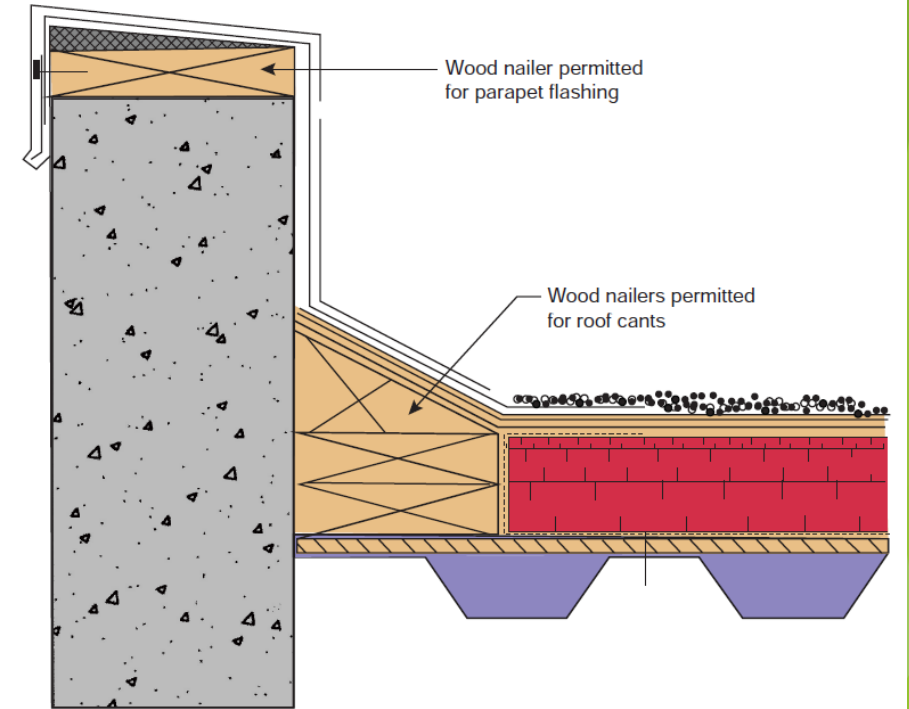
1. Fire-retardant-treated wood shall be permitted in:

- 1.1 Nonbearing partitions where the required fire-resistance rating is 2 hours or less except in shaft enclosures within Group I-2 occupancies and ambulatory care facilities.
- 1.2 Nonbearing exterior walls where fire-resistance-rated construction is not required.
- 1.3 Roof construction, including girders, trusses, framing and decking.

Exceptions:

- 1. In buildings of Type IA construction exceeding two stories above grade plane, fire-retardant-treated wood is not permitted in roof construction where the vertical distance from the upper floor to the roof is less than 20 feet (6096 mm)
- 2. Group I-2 roof construction containing fire-retardant-treated wood shall be covered by not less than a Class A roof covering or roof assembly, and the roof assembly shall have a fire-resistance rating where required by the construction type.
- 1.4. Balconies, porches, decks and exterior stairways not used as required exits on buildings three stories or less above grade plane.
(no change to applications 2 through 26)
- 27. Wood nailers for parapet flashing and roof cants.

- **CHANGE SIGNIFICANCE:** In buildings of Type I and II construction, the allowance for the use of fire-retardant-treated wood in shaft enclosure and roof construction has been modified for Group I-2 buildings. In addition, the use of wood nailers for parapet flashing and roof cants is permitted in all buildings.



Example of wood nailers for parapet flashing and roof cants.

PART 3 Fire Protection (Chapters 7 through 9)

35 Changes

- ▶ 702A Definition of Exterior Wall Assembly
- ▶ 702A Definition of Exterior Wall Covering
- ▶ 702A Definition of Fire-Resistant Vegetation
- ▶ 703.6, 703.7 Noncombustible Protection for Mass Timber
- ▶ 704.6.1 Secondary Attachments and Fireproofing
- ▶ **Table 705.5 Exterior Wall Ratings**
- ▶ 707.4, 716 Separations of Energy Storage Systems
- ▶ 707.5 Enclosure of Exit Passageways
- ▶ 708.1, 708.4.1 Supporting Construction for Fire Partitions
- ▶ 709.4.1 Smoke Barrier Continuity
- ▶ 710.5.2.1, 710.5.3 Smoke Partition Openings
- ▶ 713.12 Top of Shaft Enclosure
- ▶ 715 Protection of Joints and Voids
- ▶ 716.2.2.1.1 Prohibited Use of Terminated Stops
- ▶ **716.4 Fire-Protective Curtain Assemblies**
- ▶ Table 716.1(2) Doors in Double Fire Walls
- ▶ 717.2.3, 717.6.2.1 Ceiling Radiation Dampers
- ▶ 717.4 Access to Dampers
- ▶ 717.5.2 Flex Connectors
- ▶ 722.7 Fire-Resistance Rating of Mass Timber
- ▶ **806.9 Combustible Lockers as Interior Finish**
- ▶ **903.2.4, 903.2.7, 903.2.9 Upholstered Furniture and Mattresses**
- ▶ **2022 Kern County Code of Building Regulations section 17.08.252.**
- ▶ **903.2.4.2, 903.2.9.3 Distilled Spirits**
- ▶ 903.2.10 Sprinklers in Parking Garages
- ▶ 903.2.10.2 Mechanical-Access Parking Garages
- ▶ **903.3.1.2 NFPA 13R Sprinkler Protection**
- ▶ **903.3.1.2.2 Corridor and Balcony Sprinklers**
- ▶ 905.3.1 Standpipes in Parking Garages
- ▶ **907.2.6.4 Group I-4**
- ▶ **907.2.10 Manual Alarms in Group S Buildings**
- ▶ 907.2.11.8 Specific Location Requirements (Smoke Alarms and Detectors)
- ▶ 907.5.2.1.3 Fire Alarm Occupant Notification
- ▶ 909.20 Smokeproof Enclosures 184
- ▶ 911 Fire Command Centers in Groups F-1 and S-1

Table 705.5 Exterior Wall Ratings

CHANGE TYPE: Modification

- **2022 CODE TEXT: 705.5 Fire-resistance ratings.** *For other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 exterior walls shall be fire-resistance rated in accordance with ~~Tables Table 601, and 602~~ and this section based on the type of construction, and Table 705.5 based on the fire separation distance.* The required fire-resistance rating of exterior walls with a fire separation distance of greater than 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required fire-resistance rating of exterior walls with a fire separation distance of less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

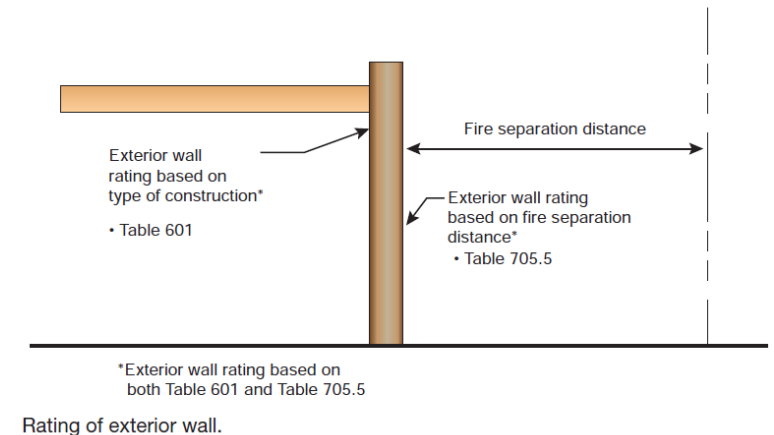
- **CHANGE SIGNIFICANCE:** The previous Table 602 dealing with exterior wall fire-resistance ratings based on fire separation distance has been relocated to Section 705 for inclusion with the general exterior wall requirements. The table was also revised to include the new mass timber construction types.

TABLE 602 705.5 Fire-Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance^{a,d,g}

Fire Separation Distance = X (feet)	Type Of Construction	Occupancy Group H ^e	Occupancy Group F-1, M, S-1 ^f	Occupancy Group A, B, E, F-2, I, R ¹ , S-2, U ^h
X < 5 ^b	All	3	2	1
5 ≤ X < 10	IA, IV-A	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB, IV-A, IV-B	2	1	1 ^c
	IIB, VB	1	0	0
	Others	1	1	1 ^c
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

(No change to footnotes)



716.4 Fire-Protective Curtain Assemblies

CHANGE TYPE: Addition

- **2022 CODE TEXT:** **202 Fire protective curtain assembly.** An assembly consisting of a fabric curtain, a bottom bar, guides, a coil, and an operating and closing system.

Fire protective curtain assembly. Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials tested without hose stream in accordance with UL 10D, and shall comply with the Sections 716.4.1 through 716.4.3

Label. Fire protective curtain assemblies used as opening protectives in fire-rated walls and smoke partitions shall be labeled in accordance with Section 716.2.9.

Smoke and draft control. Fire protective curtain assemblies used to protect openings where smoke and draft control assemblies are required shall comply with Section 716.2.1.4.

716.4.3 Installation. Fire protective curtain assemblies shall be installed in accordance with NFPA 80.

- **CHANGE SIGNIFICANCE:** Labeling and performance requirements for fabric fire-protective curtain assemblies have been established.



806.9 Combustible Lockers as Interior Finish

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT: 806.9 Combustible lockers.** Where lockers constructed of combustible materials are used, the lockers shall be considered to be interior finish and shall comply with Section 803.

Exception: Lockers constructed entirely of wood and noncombustible materials shall be permitted to be used wherever interior finish materials are required to meet a Class C classification in accordance with Section 803.1.2.

- ▶ **CHANGE SIGNIFICANCE:** Combustible lockers are now regulated for interior finish purposes.



903.2.4, 903.2.7, 903.2.9 Upholstered Furniture and Mattresses

CHANGE TYPE: Modification

- **2022 CODE TEXT: 903.2.4 Group F-1.** An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:
1. A Group F-1 fire area exceeds 12,000 square feet (1115 m²).
 2. A Group F-1 fire area is located more than three stories above grade plane.
 3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
 4. ~~A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).~~

903.2.4.1 Woodworking operations. *(No change)*

903.2.4.2 Group F-1 distilled spirits. *(New)*

903.2.4.3 Group F-1 upholstered furniture or mattresses.

An automatic sprinkler system shall be provided throughout a Group F-1 fire area that exceeds 2,500 square feet (232 m²) used for the manufacture of upholstered furniture or mattresses.

2022 Kern County Code of Building Regulations 17.08.240 Section 903.2.4 amended - Group F. Section 903.2.4 is amended to read as follows:

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

1. A Group F fire area exceeds 10,000 square feet (929 m²);
2. A Group F fire area is located more than three stories above grade plane; or
3. The combined area of all Group F fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group F fire area is used for cannabis cultivation, processing or extraction.

903.2.4, 903.2.7, 903.2.9 Upholstered Furniture and Mattresses

CHANGE TYPE: Modification

- **2022 CODE TEXT: 903.2.7 Group M.** An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 12,000 square feet (1115 m²).
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. ~~A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m²).~~
4. The structure exceeds 24,000 square feet (465 m²), contains more than one fire area containing a Group M occupancy, and is separated into two or more buildings by fire walls of less than 4-hour resistance rating without openings.

903.2.7.1 High-piled storage. *(No change)*

903.2.7.2 Group M upholstered furniture or mattresses. An automatic sprinkler system shall be provided throughout a Group M fire area where the area used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464m²).

2022 Kern County Code of Building Regulations 17.08.250 Section 903.2.7 amended - Group M. Section 903.2.7, Item 1 is amended to read as follows:

1. A Group M fire area exceeds 10,000 square feet (929 m²);
2. A Group M fire area is located more than three stories above grade plane
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group M fire area is used for retail cannabis or cannabis product.

903.2.4, 903.2.7, 903.2.9 Upholstered Furniture and Mattresses

CHANGE TYPE: Modification

- **2022 CODE TEXT: 903.2.9 Group S-1.** An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m²).
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).
5. ~~A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).~~

Repair garages. *(No change)*

Bulk storage of tires. *(No change)*

Group S-1 Distilled spirits or wine. *(New)*

903.2.9.4 Group S-1 upholstered furniture and mattresses. An automatic sprinkler system shall be provided throughout a Group S-1 fire area where the area used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

Exception: Self-service storage facilities no greater than one story above grade plane where all storage spaces can be accessed directly from the exterior.

2022 Kern County Code of Building Regulations 17.08.260 Section 903.2.9 amended - Group S-1. Section 903.2.9, Item 1 is amended to read as follows:

1. A Group S1 fire area exceeds 10,000 square feet (929 m²);

2022 Kern County Code of Building Regulations 17.08.270 Section 903.2.9.1 amend repair garages. Section 903.2.9.1 is amended to read as follows:

903.2.9.1 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with the Kern County Building Code, as follows:

1. Buildings with a fire area containing a repair garage exceeding 10,000 square feet (929 m²).
2. Buildings with a repair garage servicing vehicles parked in the basement.
3. Group S-1 fire area used for the repair of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).

2022 Kern County Code of Building Regulations

17.08.252 Section 903.2.8.5 added - Manufactured Homes.

CHANGE TYPE: Addition

17.08.252 Section 903.2.8.5 added – Manufactured Homes.

Section 903.2.8.5 is added to Chapter 9 of the Kern County Fire Code to read as follows:

903.2.8.5 Manufactured Homes. An automatic sprinkler system shall be installed in new manufactured homes, as defined in Health and Safety Code Sections 18007 & 18009, and multiple family manufactured homes with two dwelling units, as defined in Health and Safety Code Section 18008.7, in accordance with Title 25 of the California Code of Regulations.

903.2.4.2, 903.2.9.3 Distilled Spirits

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **903.2.4.2 Group F-1 distilled spirits.** An automatic sprinkler system shall be provided throughout a Group F-1 fire area used for the manufacture of distilled spirits.
903.2.9.3 Group S-1 Distilled spirits or wine. An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine.
- ▶ **CHANGE SIGNIFICANCE:** Imposes a sprinkler requirement for both the manufacturing and bulk storage of distilled spirits.



903.3.1.2 NFPA 13R Sprinkler Protection

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 903.3.1.2 NFPA 13R sprinkler systems.** Automatic sprinkler systems in Group R occupancies ~~up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane~~ shall be permitted to be installed throughout in accordance with NFPA 13R *as amended in Chapter 35*.

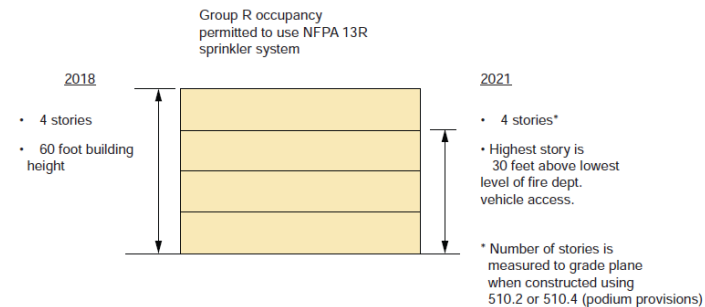
1. Four stories or fewer above grade plane.

2. The floor level of the highest story is 30 feet (9114 mm) or less above the lowest level of fire department vehicle access.

3. The floor level of the lowest story is 30 feet (9114 mm) or less below the lowest level of fire department vehicle access.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 shall be measured from ~~the horizontal assembly creating separate buildings~~ grade plane.

- ▶ **CHANGE SIGNIFICANCE:** The maximum building height where an NFPA 13R sprinkler system is permitted has been reduced. In addition, where the podium provisions of Section 510 are applied, the story height measuring point has been changed to grade plane.



Limits for using a 13R sprinkler system.

903.3.1.2.2 Corridor and Balcony Sprinklers

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT:** ~~903.3.1.2.2 Open-ended corridors~~ **Corridors and balconies in the means of egress.** Sprinkler protection shall be provided in corridors and for balconies in the means of egress where any of the following conditions apply:
 1. Corridors with combustible floor or walls.
 2. Corridors with an interior change of direction exceeding 45 degrees (0.79 rad).
 3. Corridors that are less than 50 percent open to the outside atmosphere at the ends.
 4. Open-ended corridors and associated exterior stairways and ramps as specified in Section 1027.6, Exception 3.
 5. Egress balconies not complying with Sections 1021.2 and 1021.3.

- ▶ **CHANGE SIGNIFICANCE:** Sprinkler protection must now be extended into corridors and balconies used in the means of egress, even though the location may be exempt based upon the NFPA 13R standard.



907.2.6.4 Group I-4

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** 907.2.6.4 Group I-4. An automatic smoke detection system shall be installed throughout the Group I-4, including contiguous day rooms, group activity spaces and other common spaces normally occupied by the clients. Group I-4 facilities located above the first story shall comply with the provisions of Section 436.1.
- ▶ **CHANGE SIGNIFICANCE:** The State Fire Marshal has added automatic smoke detection throughout Group I-4 occupancies.



907.2.10 Manual Alarms in Group S Buildings

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** 907.2.10 Group S. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group S public and self-storage occupancies three stories or greater in height for interior corridors and interior common areas. Visible notification appliances are not required within storage units.

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

- ▶ **CHANGE SIGNIFICANCE:** A manual fire alarm system is now required in self-storage facilities that are three stories or more in height and have interior corridors.



PART 4 Means of Egress (Chapter 10)

18 Changes

- ▶ 1006.2.1 Egress from Mechanical Rooms and Penthouses
- ▶ 1006.3 Egress from Occupied Roofs
- ▶ 1006.3.4 Single Exit Stories
- ▶ 1008.2.1 Stairway Illumination
- ▶ 1009.2.1 Accessible Elevators to Occupied Roofs
- ▶ 1009.6.2 Areas of Refuge
- ▶ 1009.6.3, 3008.6.4 Area of Refuge Floor Space
- ▶ 1010.1.1 Door Widths
- ▶ 1010.1.1.1 Projections into Door Openings
- ▶ 1010.1.3 Door Opening Forces
- ▶ 1010.2.4 Locks and Latches
- ▶ 1010.2.8 Locking Arrangements in Group I-4
- ▶ 1011.6 Stairway Landings
- ▶ 1016.2 Egress Through Intervening Spaces
- ▶ 1019.3 Exit Access Stairways
- ▶ 1020.5 Dead-End Corridors
- ▶ 1030.16 Handrails at Social Stairs
- ▶ 1031 Emergency Escape and Rescue Openings

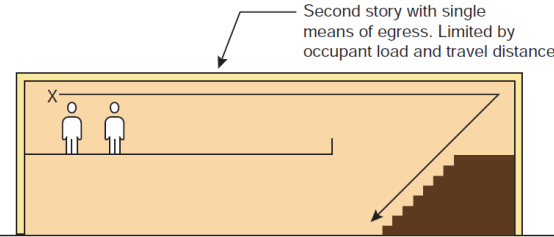
1006.3.4 Single Exit Stories

CHANGE TYPE: Modification

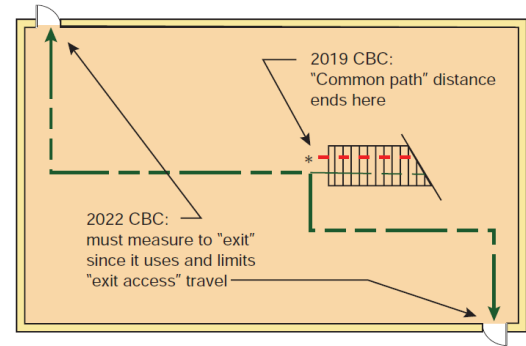
- ▶ **2022 CODE TEXT:** ~~1006.3.3~~ **1006.3.4 Single exits.** A single exit or access to a single exit shall be permitted from any story or occupied roof where one of the following conditions exists:
 1. The occupant load, number of dwelling units and ~~common path of egress~~ exit access travel distance do not exceed the values in Table ~~1006.3.3(1) or 1006.3.3(2)~~ 1006.3.4(1) or 1006.3.4(2).
 2. Rooms, areas and spaces complying with Section 1006.2.1 with exits that discharge directly to the exterior at the level of exit discharge, are permitted to have one exit or access to a single exit.
 3. Parking garages where vehicles are mechanically parked shall be permitted to have one exit or access to a single exit.
 4. Group R-3 and R-4 occupancies shall be permitted to have one exit or access to a single exit.
 5. Individual single-story or multistory dwelling units shall be permitted to have a single exit or access to a single exit from the dwelling unit provided that both of the following criteria are met:
 - 5.1. The dwelling unit complies with Section 1006.2.1 as a space **with one means of egress.**
 - 5.2 Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.
- ▶ **CHANGE SIGNIFICANCE:** For single-exit stories, the travel distance limits are now based on the exit access travel distance as opposed to the common path of egress travel.

1006.3.4 Single Exit Stories

CHANGE TYPE: Modification



Section



Plan

Example: 2019 “common path” vs. 2022 “exit access”.

TABLE 1006.3.3(1) 1006.3.4(1) Stories with One Exit or Access to One Exit for R-2 Occupancies

Story	Occupancy	Maximum Number of Dwelling Units	Maximum Common-Path-of-Egress Exit Access Travel Distance
Basement, first, second or third story above grade plane	R-2 ^{a,b}	4 dwelling units	125 feet
Fourth story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 3048 mm.
NP = Not Permitted.
NA = Not Applicable.
a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.
b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2) 1006.3.4(2).

TABLE 1006.3.3(2) 1006.3.4(2) Stories with One Exit or Access to One Exit for Other Occupancies

Story	Occupancy	Maximum Occupant Load per Story	Maximum Common-Path-of-Egress Exit Access Travel Distance (Feet)
First story above or below grade plane	A, B ^b , E, F ^b , M, U	49	75
	H-2, H-3	3	25
	H-4, H-5, I, R-1, R-2 ^{a,c}	10	75
	S ^{b,d}	29	75
Second story above grade plane	B, F, M, S ^d	29	75
Third story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.
NP = Not Permitted.
NA = Not Applicable.
a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.
b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall have a maximum exit access travel distance of 100 feet.
c. This table is used for R-2 occupancies consisting of sleeping units. For R-2 occupancies consisting of dwelling units, use Table 1006.3.3(1) 1006.3.4(1).
d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

1008.2.1 Stairway Illumination

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 1008.2.1 Illumination level under normal power.** The means of egress illumination level shall be not less than 1 footcandle (11 lux) at the walking surface. Along exit access stairways, exit stairways and at their required landings, the illumination level shall not be less than 10 footcandles (108 lux) at the walking surface when the stairway is in use.
- ▶ **Exception:** For auditoriums, theaters, concert or opera halls and similar assembly occupancies, the illumination at the walking surface is permitted to be reduced during performances by one of the following methods provided that the required illumination is automatically restored upon activation of a premises' fire alarm system:
 1. Externally illuminated walking surfaces shall be permitted to be illuminated to not less than 0.2 footcandle (2.15 lux).
 2. Steps, landings and the sides of ramps shall be permitted to be marked with self-luminous materials in accordance with Sections 1025.2.1, 1025.2.2 and 1025.2.4 by systems listed in accordance with UL 1994.
- ▶ **CHANGE SIGNIFICANCE:** The minimum illumination level for both exit and exit access stairways has been increased from 1 foot-candle to 10 foot-candles.

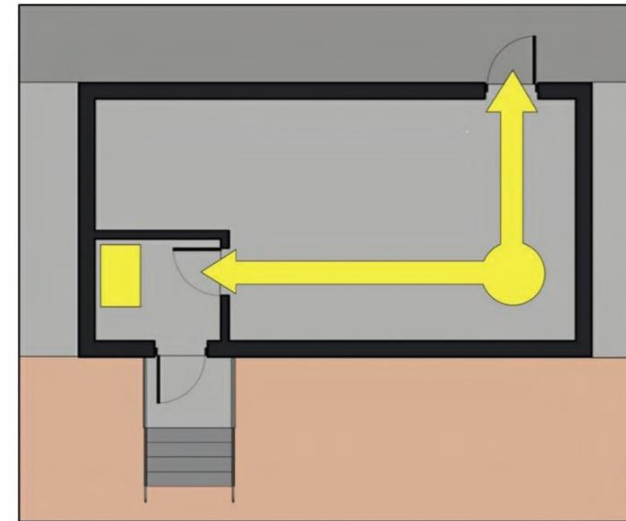


1009.6.2 Areas of Refuge

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 1009.6.2 Stairway or elevator access.**
Every required area of refuge shall have direct access to a stairway complying with Sections 1009.3 and 1023 or an elevator complying with Section 1009.4.

Exception: An interior area of refuge at the level of exit discharge that provides direct access to an exterior exit door.
- ▶ **CHANGE SIGNIFICANCE:** The use of an interior area of refuge at the level of exit discharge instead of an exterior area for assisted rescue is now permitted.



1009.6.3, 3008.6.4 Area of Refuge Floor Space

CHANGE TYPE: Modification

- **2022 CODE TEXT: 1009.6.3 Size.** Each area of refuge shall be sized to accommodate *two* wheelchair spaces *that are not less than 30 inches by 48-52 inches* (762 mm by ~~1219-1320~~ mm). *The total number of such 30-inch by 48-52-inch* (762 mm by ~~1219-1320~~ mm) *spaces per story shall be not less than one for every 200 persons of calculated occupant load served by the area of refuge.* Such wheelchair spaces shall not reduce the means of egress minimum width or required capacity. Access to any of the required wheelchair spaces in an area of refuge shall not be obstructed by more than one adjoining wheelchair space.

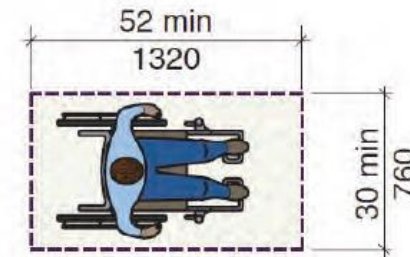
3008.6.4 Lobby size. Each occupant evacuation elevator lobby shall have minimum floor area as follows:

1. The occupant evacuation elevator lobby floor area shall accommodate, at 3 square feet (0.28 m²) per person, not less than 25 percent of the occupant load of the floor area served by the lobby.
2. The occupant evacuation elevator lobby floor area shall accommodate one wheelchair space of 30 inches by ~~48-52~~ inches (760 mm by ~~1220-1320~~ mm) for each 50 persons, or portion thereof, of the occupant load of the floor area served by the lobby.

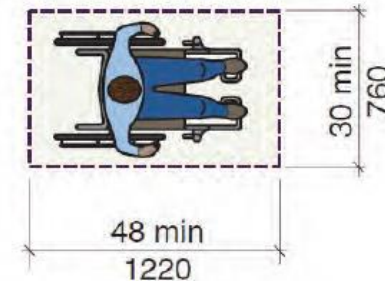
- **Exception:** The size of lobbies serving multiple banks of elevators shall have the minimum floor area approved on an individual basis and shall be consistent with the building's fire safety and evacuation plan.

- **CHANGE SIGNIFICANCE:** The minimum required size of the clear floorspace for a wheelchair has been increased to 30 inches in width by 52 inches in length to coordinate with the 2017 edition of the ICC A117.1 Standard.

2022 CBC



2019 CBC

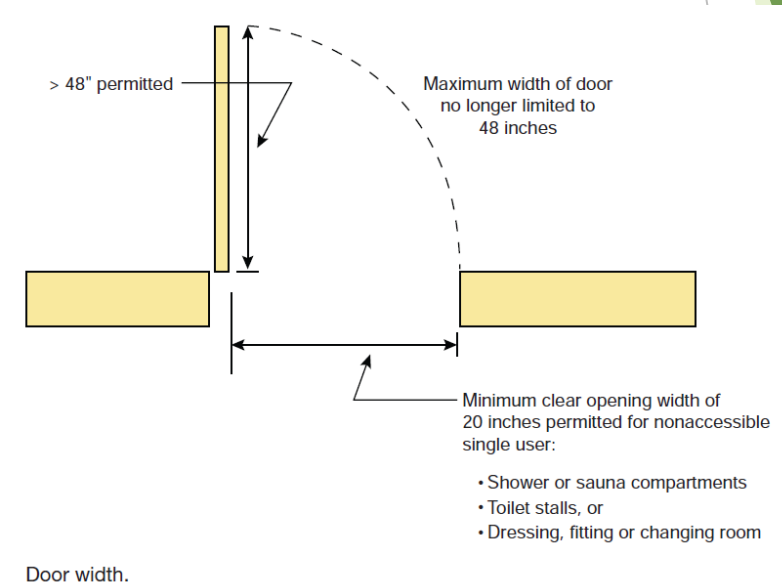


Increased size of clear floor space.

1010.1.1 Door Widths

CHANGE TYPE: Modification

- **2022 CODE TEXT: 1010.1.1 Size of doors.** The required capacity of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear opening width of 32 inches (813 mm). The clear opening width of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 32 inches (813 mm). In Group I-2 or I-2.1, doors serving as means of egress doors where used for the movement of beds and *stretcher patients* shall provide a minimum clear opening width of 44 inches (1118 mm). Where this section requires a minimum clear opening width of 44 inches (1118 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 44 inches (1118 mm). ~~The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal.~~ The minimum clear opening height of doors shall be not less than 80 inches (2032 mm).



- **CHANGE SIGNIFICANCE:** The maximum width for a swinging door is no longer regulated and a consolidated exception now allows for reduced door sizes where serving single-user showers, saunas and toilet compartments, as well as dressing, fitting and changing rooms.

1010.1.1 Door Widths

CHANGE TYPE: Modification

Exceptions:

- ▶ **1.** In Group R-2 and R-3 dwelling and sleeping units that are not required to be *adaptable or accessible as specified in Chapter 11A*, the minimum ~~and maximum~~ width shall not apply to door openings that are not part of the required means of egress.
- ▶ **2.** (No change)
- ▶ **3.** (No change)
- ▶ **4.** The maximum width of door leaves in revolving doors that comply with Section ~~1010.1.4.1~~ 1010.3.1 shall not be limited.
- ▶ **5.** The maximum width of door leaves in power-operated doors that comply with Section ~~1010.1.4.2~~ 1010.3.2 shall not be limited
- ▶ **6.** (No change)
- ▶ **7.** (No change)
- ▶ **8.** In Groups R-2, R-3 and R-4, in dwelling and sleeping units that are not required to be *adaptable or accessible as specified in Chapter 11A*, the minimum clear opening widths shall not apply to interior egress doors.
- ▶ **9.** Doors to walk-in freezers and coolers less than 1,000 square feet (93 m²) in area shall have a maximum width of 60 inches (1524 mm) nominal.
- ▶ **10.** The minimum clear opening width shall not apply to doors for *nonadaptable or non accessible* shower or sauna compartments, *as specified in Chapter 11A*.
- ▶ **11.** Doors serving nonadaptable or non accessible single-user shower or sauna compartments, toilet stalls or dressing, fitting or changing rooms shall have a minimum clear opening width of 20 inches (508 mm).

1010.1.1.1 Projections into Door Openings

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT:** **1010.1.1.1 Projections into clear ~~width-opening~~.** There shall not be projections into the required clear opening width lower than 34 inches (864 mm) above the floor or ground. Projections into the clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm).

Exceptions:

1. Door closers, overhead door stops, power door operators, and electromagnetic door ~~stops~~ locks shall be permitted to be 78 inches (1980 mm) minimum above the floor.
2. *In a Group I-2 or I-2.1 occupancy, there shall be no projections into the clear width of doors used for the movement of beds and stretcher patients in the means of egress.*



Door closer and electromagnetic lock projecting into door height.

- ▶ **CHANGE SIGNIFICANCE:** Additional components are now specifically permitted to project into the minimum required door opening height.

1010.1.3 Door Opening Forces

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT:** ~~1010.1.3 Door opening force.~~ The force for pushing or pulling open interior swinging egress doors, other than fire doors, shall not exceed 5 pounds (22 N). These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. For other swinging doors, as well as sliding and folding doors, the door latch shall release when subjected to a 15-pound (67 N) force. The door shall be set in motion when subjected to a 30-pound (133 N) force. The door shall swing to a full-open position when subjected to a 15-pound (67 N) force.

1010.1.3 Forces to unlatch and open doors. The forces to unlatch doors shall comply with the following:

1. Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (67 N).
2. Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).

The force to open doors shall comply with the following:

1. For interior swinging egress doors that are manually operated, other than doors required to be fire rated, the force for pushing or pulling open the door shall not exceed 5 pounds (22 N).
2. For other swinging doors, sliding doors, or folding doors, and doors required to be fire rated, the door shall require not more than a 30-pound (133 N) force to be set in motion and shall move to a full-open position when subjected to not more than a 15-pound (67 N) force.

- ▶ **CHANGE SIGNIFICANCE:** The requirements for releasing the latching hardware and the force to open the door have been divided into separate sub-sections to provide coordination with the 2017 edition of the ICC A117.1.



Operational force for door hardware.

1010.2.4 Locks and Latches

CHANGE TYPE: Modification

► **2022 CODE TEXT:** ~~1010.1.9.4~~ **1010.2.4 Locks and latches.**

Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

1. *(No change)*

2. In Group I-1, Condition 2 and Group I-2 occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by all clinical staff at all times or all clinical staff have the codes or other means necessary to operate the locks at all times.

~~2-3.~~ *(No change)*

~~3-4.~~ *(No change)*

~~4-5.~~ *(No change)*

~~5-6.~~ *(No change)*

~~6-7.~~ *(No change)*

9. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.

10. Locking devices are permitted on doors to balconies, decks or other exterior spaces of 250 square feet (23.23 m²) or less serving a private office space.

8. Other than egress courts, where occupants must egress from an exterior space through the building for means of egress, exit access doors shall be permitted to be equipped with an approved locking device where installed and operated in accordance with all of the following:

8.1. The maximum occupant load shall be posted where required by Section 1004.9. Such sign shall be permanently affixed inside the building and shall be posted in a conspicuous space near all the exit access doorways.

8.2. A weatherproof telephone or two-way communication system installed in accordance with Sections 1009.8.1 and 1009.8.2 shall be located adjacent to not less than one required exit access door on the exterior side.

8.3. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.

8.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m²) in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.

8.5. A readily visible, durable sign shall be posted on the interior side on or adjacent to each locked required exit access door serving the exterior area stating, "THIS DOOR TO REMAIN UNLOCKED WHEN THE OUTDOOR AREA IS OCCUPIED." The letters on the sign shall be not less than 1 inch (25.4 mm) high on a contrasting background.

8.6. The occupant load of the occupied exterior area shall not exceed 300 occupants in accordance with Section 1004.

- **CHANGE SIGNIFICANCE:** The general locking provisions have been expanded to allow locked doors in the egress system when desired due to the clinical needs of care recipients or where exterior areas egress back through the building.

PART 5 Accessibility Chapters 11A and 11B

1 Change

- ▶ 11B-206.4, 11B-207 Accessible Means of Egress

11B-206.4, 11B-207 Accessible Means of Egress

CHANGE TYPE: Modification

► **2022 CODE TEXT: 11B-206.4**

11B-206.4 Entrances. Entrances shall be provided in accordance with Section 11B-206.4. Entrance doors, doorways, and gates shall comply with Section 11B-404 and shall be on an accessible route complying with Section 11B-402.

Exceptions:

1. Reserved.
2. Reserved.

11B-206.4.1 Entrances and exterior ground floor exits. All entrances and exterior ground floor exits to buildings and facilities shall comply with Section 11B-404.

Exceptions:

1. Exterior ground floor exits serving smoke-proof enclosures, stairwells, and exit doors serving stairs only shall not be required to comply with Section 11B-404.
2. Exits in excess of those required by Chapter 10, and which are more than 24 inches (610 mm) above grade shall not be required to comply with Section 11B-404. Directional signs shall comply with Chapter 10, Section 1009.10.

- ### ► **CHANGE SIGNIFICANCE:**
- This is a two-part amendment in Sections 11B-206.4 and 11B-207 and addresses that the provisions for exits is being moved under accessible means of egress rather than the code section for entrances.

11B-206.4, 11B-207 Accessible Means of Egress

CHANGE TYPE: Modification

► **2022 CODE TEXT: 11B-207**

11B-207 Accessible means of egress

11B-207.1 General. Means of egress shall comply with *Chapter 10, Section 1009 and Section 11B-207.*

Exceptions:

1. Where means of egress are permitted by local building or life safety codes to share a common path of egress travel, accessible means of egress shall be permitted to share a common path of egress travel.
2. *Areas of refuge shall not be required in detention and correctional facilities.*
3. *Accessible means of egress are not required to be provided in existing buildings.*
4. *Doors that provide access only to interior or exterior stairways shall not be required to comply with Section 11B-404.*
5. *Exits in excess of those required by Chapter 10, and which are more than 24 inches (610 mm) above grade shall not be required to comply with Section 11B-404 or be on an accessible route. Directional signs shall be provided in compliance with Chapter 10, Section 1009.10.*

- **CHANGE SIGNIFICANCE:** This is a two-part amendment in Sections 11B-206.4 and 11B-207 and addresses that the provisions for exits is being moved under accessible means of egress rather than the code section for entrances.

PART 6 Building Envelope, Structural Systems and Construction Materials)Chapters 12 through 26)

54 Changes

- ▶ 1202.3 Insulation of Unvented Attics
- ▶ 1207 Enhanced Classroom Acoustics
- ▶ 1208.4 Efficiency Dwelling Units
- ▶ 1210.3 Restroom Privacy
- ▶ 1404.3 Vapor Retarders
- ▶ Table 1404.3(4) Class II Vapor Retarders
- ▶ 1404.3.2 Class III Vapor Retarders
- ▶ 1406.10 Metal Composite Material Cladding
- ▶ 1503.3 Parapet Walls
- ▶ 1504.5 Ballasted Roofs
- ▶ 1504.9 Aggregate-Surfaced Roofs
- ▶ 1603.1.4 Construction Document Wind Zones
- ▶ Table 1604.5 Risk Categories of Assembly Spaces
- ▶ 1605 Load Combinations
- ▶ 1606 Dead Loads
- ▶ 1607.11.4 Rope Descent Systems
- ▶ 1607.17 Fixed Ladder Live Load
- ▶ 1608.2 Snow Maps
- ▶ 1610.2 Soil-Caused Uplift
- ▶ 1611 Rain Loads
- ▶ 1612.4 Flood Hazard Documents
- ▶ 1704.6 Structural Observations
- ▶ Table 1705.3 Special Inspection of Precast Concrete
- ▶ 1705.4.1 Empirically Designed Masonry
- ▶ 1705.5.3, 1705.2 Mass Timber Special Inspection
- ▶ 1705.10 Structural Integrity of Deep Foundations
- ▶ 1705.13.7 Special Inspection of Storage Racks
- ▶ 1705.18 Firestop Inspections in Group R
- ▶ 1709.5 Window and Door Assemblies
- ▶ 1809.5.1 Frost Protection at Required Exits
- ▶ Table 1810.3.2.6 Allowable Stresses in Deep Foundations
- ▶ 1810.3.3.1.9 Helical Piles
- ▶ 1810.3.5.3.1 Structural Steel H-piles
- ▶ 1810.3.6 Deep Foundation Element Splicing
- ▶ 1810.3.8 Precast Concrete Piles
- ▶ 1810.3.11 Pile Caps
- ▶ 1810.4.5 Vibratory Drivers
- ▶ 1901.2 Concrete Design and Construction
- ▶ 1901.7 Structural Concrete Tolerances
- ▶ 2109.2.4.8 Exterior Finish of Adobe Masonry
- ▶ 2205.2.1 AISC 358 for Prequalified Connections
- ▶ 2209 Steel Storage Racks
- ▶ 2303.2 Fire-Retardant-Treated Wood
- ▶ 2303.4.1.2 Wood Truss Bracing
- ▶ 2304.10.1 Mass Timber Connection Protection
- ▶ Table 2304.10.2 Sheathing Fasteners
- ▶ 2304.11 Concealed Spaces in Type IV-HT
- ▶ 2305 Lateral Force-Resisting Systems
- ▶ 2308.5.6, 2308.6.6.2 Cripple Walls
- ▶ Table 2308.7.3.1 Rafter Tie Connections
- ▶ 2510.6 Water-Resistive Barriers for Stucco
- ▶ 3114 Public-Use Restrooms in Flood Hazard Areas
- ▶ 3115 Intermodal Shipping Containers
- ▶ 3313 Fire Protection During Construction

1603.1.4 Construction Document Wind Zones

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 1603.1.4 Wind design data.** The following information related to wind loads shall be shown, regardless of whether wind loads govern the design of the lateral force-resisting system of the structure:
 1. Basic design wind speed, V , miles per hour and allowable stress design wind speed, V_{asd} , as determined in accordance with Section 1609.3.1.
 2. Risk category.
 3. Wind exposure. Applicable wind direction if more than one wind exposure is utilized.
 4. Applicable internal pressure coefficient.
 5. Design wind pressures and their applicable zones with dimensions to be used for exterior component and cladding materials not specifically designed by the registered design professional responsible for the design of the structure, pounds per square foot (kN/m^2).

- ▶ **CHANGE SIGNIFICANCE:** Component and cladding wind zones must now be identified in the construction documents.

1603.1.4 Construction Document Wind Zones

CHANGE TYPE: Modification

Flat and low-slope (0-7 degrees) roofs

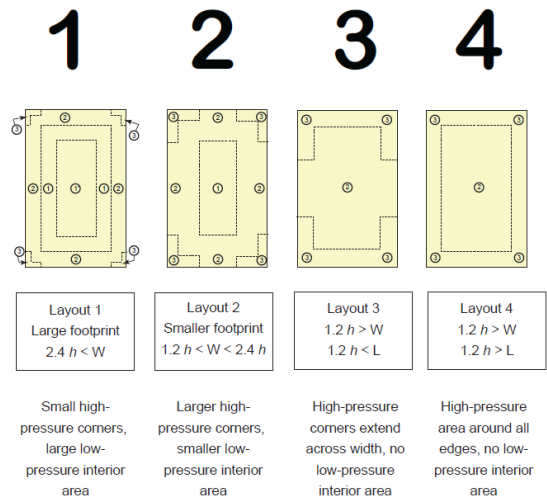
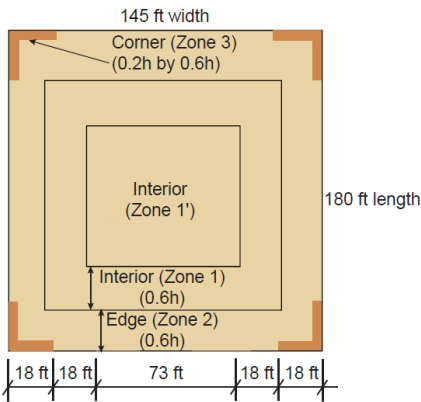


Figure 16-1 Component and cladding wind zone sizes may change significantly with building shape.

Example 1: Flat Roof
Building Height ~ Mean Roof Height = 30 ft
 $0.2h = 0.2 \times 30 \text{ ft} = 6 \text{ ft}$ (corner zone depth)
 $0.6h = 0.6 \times 30 \text{ ft} = 18 \text{ ft}$ (corner zone length, edge zone depth)



Example 2: High-Slope Hip Roof
4-story building
10:12 pitch roof
Mean Roof Height = 55 ft
 $a = 10\%$ of the least roof dimension or $0.4h$
 $0.1w = 0.1 \times 60 \text{ ft} = 6 \text{ ft}$ $6 \text{ ft} < 22 \text{ ft}$, $a = 6 \text{ ft}$
 $0.4h = 0.4 \times 55 \text{ ft} = 22 \text{ ft}$

When designing hip roofs, the use of the variable a to determine the length and depth of corner, ridge and eave edge zones continues. The value is either 10 percent of the roof width or 40 percent of the building height, whichever is smaller.

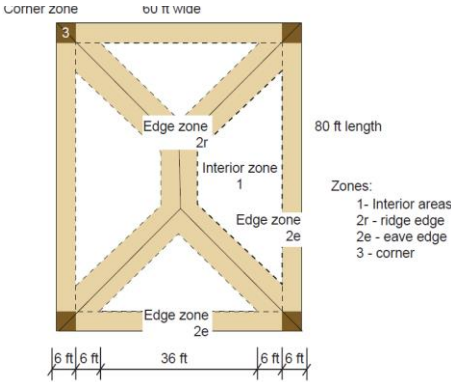


Table 1604.5 Risk Categories of Assembly Spaces

CHANGE TYPE: Modification

2022 CODE TEXT:

TABLE 1604.5 Risk Category of Buildings and Other Structures

Risk Category	Nature of Occupancy
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. • <u>Buildings and other structures containing one or more public assembly spaces, each having an occupant load greater than 300 and a cumulative occupant load of the public assembly spaces of greater than 2,500.</u> • Buildings and other structures containing Group E or <u>Group I-4 occupancies or combination thereof</u>, with an occupant load greater than 250. <i>(Other Risk Category III criteria remain unchanged)</i>

Example: Hotel Conference Center



Photo courtesy of mustafagull

5-story hotel with conference center
440 guest rooms
2 ballrooms with 1,200 occupants each
3 meeting rooms with 90 occupants each
Total assembly occupants: 2,670 people

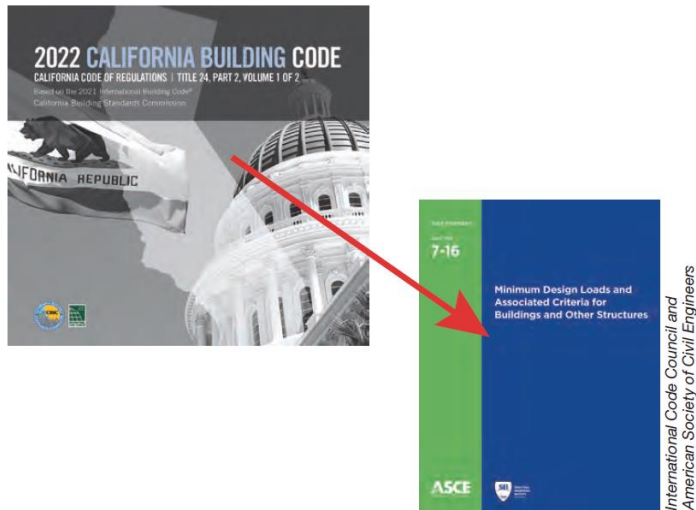
Risk Category III

- **CHANGE SIGNIFICANCE:** Mixed occupancy buildings with assembly spaces are now designated as Risk Category III when the total public assembly occupant load is greater than 2,500 people.

1605 Load Combinations

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 1605.1 General.** Buildings and other structures and portions thereof shall be designed to resist the strength load combinations specified in ASCE 7, Section 2.3, the allowable stress design load combinations specified in ASCE 7, Section 2.4, or the alternative allow-able stress design load combinations of Section 1605.2.
- ▶ **CHANGE SIGNIFICANCE:** The strength design and allowable stress design load combinations have been deleted while direct reference to Chapter 2 of ASCE 7 has been added to Section 1605.



2022 CBC directly references ASCE 7-16 for load combinations.

1606 Dead Loads

CHANGE TYPE: Modification

- **2022 CODE TEXT:** **1606.2 ~~Design dead load.~~ Weights of materials of construction.** For purposes of design, the actual weights of materials of construction ~~and fixed service equipment~~ shall be used. In the absence of definite information, values used shall be subject to the approval of the building official.

1606.3 Weight of fixed service equipment. In determining dead loads for purposes of design, the weight of fixed service equipment, including the maximum weight of the contents of fixed service equipment, shall be included. The components of fixed service equipment that are variable, such as liquid contents and movable trays, shall not be used to counteract forces causing overturning, sliding, and uplift conditions in accordance with Section 1.3.6 of ASCE 7.

1606.4 Photovoltaic panel systems. The weight of photovoltaic panel systems, their support system, and ballast shall be considered as dead load.

1606.5 Vegetative and landscaped roofs. The weight of all landscaping and hardscaping materials for vegetative and landscaped roofs shall be considered as dead load. The weight shall be computed considering both fully saturated soil and drainage layer materials and fully dry soil and drainage layer materials to determine the most severe load effects on the structure.

- **CHANGE SIGNIFICANCE:** Dead loads at the roof level have been clarified as well as fixed service equipment concentrated loads.



Examples of roof dead loads – HVAC equipment, solar panels and vegetative roofs.

1607.17 Fixed Ladder Live Load

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **1607.17 Fixed ladders.** Fixed ladders with rungs shall be designed to resist a single concentrated load of 300 pounds (1.33 kN) in accordance with Section 4.5.4 of ASCE 7. Where rails of fixed ladders extend above a floor or platform at the top of the ladder, each side rail extension shall be designed to resist a single concentrated load of 100 pounds (0.445 kN) in accordance with Section 4.5.4 of ASCE 7. Ship's ladders shall be designed to resist the stair loads given in Table 1607.1.
- ▶ **CHANGE SIGNIFICANCE:** Live loads for fixed and ship's ladders have been added to the CBC.



Photo courtesy of svedoliver

Fixed ladder loads are assigned by ASCE 7.

1610.2 Soil-Caused Uplift

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **1610.2 Uplift loads on floor and foundations.** Basement floors, slabs on ground, foundations, and similar approximately horizontal elements below grade shall be designed to resist uplift loads where applicable. The upward pressure of water shall be taken as the full hydrostatic pressure applied over the entire area. The hydrostatic load shall be measured from the underside of the element being evaluated. The design for upward loads caused by expansive soils shall comply with Section 1808.6.
- ▶ **CHANGE SIGNIFICANCE:** Concrete slabs on ground must now be designed for uplift due to soil expansion and water pressure in areas prone to soil movement or a shallow water table.



Photo courtesy of Mark Winfrey

Slab foundations require design for soil heave.

1704.6 Structural Observations

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT: 1704.6 Structural observations.** Where required by the provisions of Section 1704.6.1, ~~1704.6.2 or 1704.6.3~~, the owner or the owner's authorized agent shall employ a registered design professional to perform structural observations. The structural observer shall visually observe representative locations of structural systems, details and load paths for general conformance to the approved construction documents. Structural observation does not include or waive the responsibility for the inspections in Section 110 or the special inspections in Section 1705 or other sections of this code. Prior to the commencement of observations, the structural observer shall submit to the building official a written statement identifying the frequency and extent of structural observations. At the conclusion of the work included in the permit, the structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.
- ▶ **CHANGE SIGNIFICANCE:** A structural observer must now visually observe the construction of structural systems for general design conformance for all buildings assigned to Risk Category III or IV.



Photo courtesy of espion

Visual observation of construction of structural systems.

Table 1705.3 Special Inspection of Precast Concrete

CHANGE TYPE: Addition

2022 CODE TEXT:

TABLE 1705.3 Required Special Inspections and Tests of Concrete Construction

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard	CBC Reference
10. Inspect erection of precast concrete members.	—	×	ACI 318: 26.9	—
11. For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category C, D, E or F, inspect such connections and reinforcement in the field for:				
a. Installation of the embedded parts	×	—	ACI 318: 26.13.1.3	—
b. Completion of the continuity of reinforcement across joints.	×	—		
c. Completion of connections in the field.	×	—	ACI 550.5	
12. Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5.	—	×	ACI 318: 26.13.1.3	—

(Full table not shown for clarity and brevity.)



Precast concrete diaphragm construction.

Photo courtesy of Ahmet K

- **CHANGE SIGNIFICANCE:** Special inspection requirements for precast concrete diaphragm connections have been added to the list of general concrete special inspections and tests.

1705.10 Structural Integrity of Deep Foundations

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **1705.10 Structural integrity of deep foundation elements.** Whenever there is a reasonable doubt as to the structural integrity of a deep foundation element, an engineering assessment shall be required. The engineering assessment shall include tests for defects performed in accordance with ASTM D4945, ASTM D5882, ASTM D6760 or ASTM D7949, or other approved method.
- ▶ **CHANGE SIGNIFICANCE:** When installed deep foundation elements appear to be understrength due to quality, location or alignment, an engineering assessment must now be done.



Photo courtesy of Chaiyaporn 1144

Verification of deep foundation element strength.

1705.13.7 Special Inspection of Storage Racks

CHANGE TYPE: Addition

- **2022 CODE TEXT:** ~~1705.12.7~~ **1705.13.7 Storage racks.** Periodic special inspection is required for the anchorage of storage racks that are 8 feet (2438 mm) or greater in height in structures assigned to Seismic Design Category D, E or F. Steel storage racks and steel cantilevered storage racks that are 8 feet (2438 mm) in height or greater and assigned to Seismic Design Category D, E or F shall be provided with periodic special inspection as required by Table 1705.13.7.
- **CHANGE SIGNIFICANCE:** Steel storage rack special inspection duties have been clarified with the addition of special inspection tasks.

TABLE 1705.13.7 Required Inspections of Storage Rack Systems

Type	Periodic Inspection	Referenced Standard	CBC Reference
1. Materials used, to verify compliance with one or more of the material test reports in accordance with the approved construction documents.	×		
2. Fabricated storage rack elements.	×		1704.2.5
3. Storage rack anchorage installation.	×	ANSI/MH16.1 Section 7.3.2	
4. Completed storage rack system, to indicate compliance with the approved construction documents.	×		



Photo courtesy of Michael Krinke

Cantilevered storage racks.

1705.18 Firestop Inspections in Group R

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT:** ~~1705.17~~—**1705.18 Fire-resistant penetrations and joints.** In high-rise buildings ~~or~~, in buildings assigned to Risk Category III or IV, or in fire areas containing Group R occupancies with an occupant load greater than 250, special inspections for through- penetrations, membrane penetration firestops, fire-resistant joint systems and perimeter fire ~~barrier~~ containment systems that are tested and listed in accordance with Sections 714.4.1.2, 714.5.1.2, 715.3.1 and 715.4 shall be in accordance with Section 1705.18.1 or 1705.18.2.
- ▶ **CHANGE SIGNIFICANCE:** The installation of firestops, fire-resistant joint systems and perimeter fire barrier systems in residential-use buildings now requires special inspection in those Group R fire areas having an occupant load exceeding 250.



Photo courtesy of buzbuzzr

Hotels may require special inspection of firestop systems.

1709.5 Window and Door Assemblies

CHANGE TYPE: Modification

- ▶ **1709.5.2.1 Garage doors and rolling doors.** Garage doors and rolling doors shall be tested in accordance with either ASTM E330 or ANSI/ DASHMA 108, and shall meet the pass/fail criteria of ANSI/DASHMA 108. Garage doors and rolling doors shall be labeled with a permanent label identifying the door manufacturer, the door model/series number, the positive and negative design wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.
- ▶ **CHANGE SIGNIFICANCE:** Testing standards and analysis procedures have been clarified for exterior door and window assemblies, including garage door assemblies.



Photo courtesy of vaximilian

Garage doors must be tested by the manufacturer and labeled.

PART 7 Building Services, Special Devices and Special Conditions (Chapters 27 through 33)

6 Changes

- ▶ 3001.2 Emergency Elevator Communication Systems
- ▶ 3103.1 Special Event Structures
- ▶ 3111.3.5 Elevated Photovoltaic (PV) Support Structures
- ▶ 3114 Public-Use Restrooms in Flood Hazard Areas
- ▶ 3115 Intermodal Shipping Containers
- ▶ 3313 Fire Protection During Construction

3111.3.5 Elevated Photovoltaic (PV) Support Structures

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **3111.3.5 Elevated photovoltaic (PV) support structures.** *Elevated PV support structures shall comply with either 3111.3.5.1 or 3111.3.5.2.*

Exception: *Elevated PV support structures that are installed over agricultural use.*

3111.3.5.1 PV panels installed over open grid framing or non-combustible deck. *Elevated PV support structures with PV panels installed over open grid framing or over a noncombustible deck shall have PV panels tested, listed and labeled with a fire type rating in accordance with UL 1703 or with both UL 61730-1 and UL 61730-2. Photovoltaic panels marked “not fire rated” shall not be installed on elevated PV support structures.*

3111.3.5.2 PV panels installed over a roof assembly. *Elevated PV support structures with a PV panel system installed over a roof assembly shall have a fire classification in accordance with Section 1505.9.*

- ▶ **CHANGE SIGNIFICANCE:** The State Fire Marshal has added new language to establish appropriate fire testing and listing criteria for overhead photovoltaic support structures that could have people or vehicles in the space beneath them.



An example of an elevated PV support structure.

3115 Intermodal Shipping Containers

CHANGE TYPE: Addition

- **2022 CODE TEXT: SECTION 3115 INTERMODAL SHIPPING CONTAINERS** *Not permitted by OSHPD.*

General. The provisions of Section 3115 and other applicable sections of this code shall apply to intermodal shipping containers that are repurposed for use as buildings or structures, or as a part of buildings or structures.

Exceptions: [DSA-SS & DSA-SS/CC] Not permitted by DSA.

1. Intermodal shipping containers previously approved as existing relocatable buildings complying with Chapter 14 of the *California Existing Building Code*.
2. Stationary storage battery arrays located in intermodal shipping containers complying with Chapter 12 of the *California Fire Code*.
3. Intermodal shipping containers that are listed as equipment complying with the standard for equipment, such as air chillers, engine generators, modular data centers, and other similar equipment.
4. Intermodal shipping containers housing or supporting experimental equipment are exempt from the requirements of Section 3115 provided they comply with all of the following:
 - 4.1. Such units shall be single stand-alone units supported at grade level and used only for occupancies as specified under Risk Category I in Table 1604.5.
 - 4.2 Such units are located a minimum of 8 feet (2438 mm) from adjacent structures and are not connected to a fuel gas system or fuel gas utility.
 - 4.3 In hurricane-prone regions and flood hazard areas, such units are designed in accordance with the applicable provisions of Chapter 16.
5. [HCD] Shipping containers constructed or converted off-site that meet the definition of Factory-built Housing in Health and Safety Code Section 19971 or Commercial Modular(s) as defined in Health and Safety Code Section 18001.8 shall be approved by the Department of Housing and Community Development.

(remainder of code text omitted for brevity purposes)

- **CHANGE SIGNIFICANCE:** The use of intermodal shipping containers as buildings and structures is now recognized in the CBC, and criteria have been established to address the minimum safety requirements without duplicating existing code provisions.



Multi-level structure of intermodal shipping containers.

PART 9 2022 California Existing Building Code (CEBC) (Chapters 1 through 5)

11 Changes

- ▶ 303 Storm Shelters
- ▶ 306.7 Accessible Toilet and Bathing Rooms
- ▶ 307, 308 Smoke Alarms and CO Detection
- ▶ 309 Exterior Wall Coverings and Envelopes
- ▶ 405.2.4 Snow Loads and Substantial Damage
- ▶ 502.6, 503.16, 506.6 Classroom Acoustics
- ▶ 503.4 Rooftop Equipment Dead Load
- ▶ 503.12 Roof Diaphragm Wind Loads
- ▶ 503.17 Locking in Educational Occupancies
- ▶ 506.4 Emergency Escape and Rescue Openings
- ▶ 506.5.3 Change of Occupancy from Group S or U

309 Exterior Wall Coverings and Envelopes

CHANGE TYPE: Addition

► 2022 CODE TEXT:

SECTION 309

ADDITIONS AND REPLACEMENTS OF EXTERIOR WALL COVERINGS AND EXTERIOR WALL ENVELOPES

309.1 General. The provisions of Section 309 apply to all alterations, repairs, additions, relocations of structures and changes of occupancy regardless of compliance method.

Additions and replacements. Where an exterior wall covering or exterior wall envelope is added or replaced, the materials and methods used shall comply with the requirements for new construction in Chapter 14 and Chapter 26 of the *California Building Code* if the added or replaced exterior wall covering or exterior wall envelope involves two or more contiguous stories and comprises more than 15 percent of the total wall area on any side of the building.

- **CHANGE SIGNIFICANCE:** When significant portions of a building's exterior wall coverings or exterior wall envelopes are added or replaced, they must comply with the requirements of Chapters 14 and 26 of the CBC.



Grenfell fire.

Photo courtesy of Natalie Oxford

405.2.4 Snow Loads and Substantial Damage

CHANGE TYPE: Modification

- ▶ **2022 CODE TEXT:** **405.2.4 Substantial structural damage to gravity load-carrying components.** Gravity load-carrying components that have sustained substantial structural damage shall be rehabilitated to comply with the applicable provisions for dead, live and live-snow loads in the *California Building Code*. ~~Snow loads shall be considered if the substantial structural damage was caused by or related to snow load effects.~~ Undamaged gravity load-carrying components that receive dead, live or snow loads from rehabilitated components shall also be rehabilitated if required to comply with the design loads of the rehabilitation design.
- ▶ **CHANGE SIGNIFICANCE:** Snow loads must be addressed for the repair of substantial structural damage regardless of whether the damage was a result of snow.



Photo courtesy of catnap72

Roof snow load.

503.4 Rooftop Equipment Dead Load

CHANGE TYPE: Modification

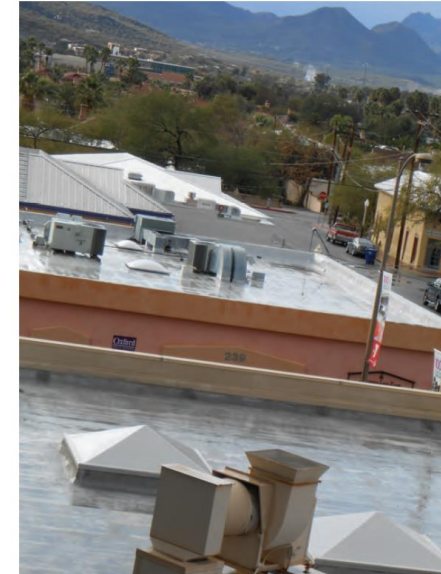
- **2022 CODE TEXT:** **503.4 Existing structural elements carrying lateral load.** Except as permitted by Section 503.13, where the alteration increases design lateral loads, results in a prohibited structural irregularity as defined in ASCE 7 or decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall meet the requirements of Sections 1609 and 1613 of the *California Building Code*. Reduced seismic forces shall be permitted.

Exceptions:

1. Any existing lateral load-carrying structural element whose demand-capacity ratio with the alteration considered is not more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613 of the California Building Code. Reduced seismic forces shall be permitted. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

2. Buildings in which the increase in the demand capacity ratio is due entirely to the addition of roof top supported mechanical equipment individually having an operating weight less than 400 pounds (181.4 kg) and when the total additional weight of all roof top equipment placed after initial construction of the building is less than 10 percent of the roof dead load. For purposes of this exception roof shall mean the “roof” level above a particular story.

- **CHANGE SIGNIFICANCE:** The addition of equipment to the roof without a full structural analysis is now permitted when the equipment weighs less than 400 pounds and is less than 10 percent of the total roof dead load.



Typical rooftop equipment.

506.4 Emergency Escape and Rescue Openings

CHANGE TYPE: Addition

- ▶ **2022 CODE TEXT:** **506.4 Existing emergency escape and rescue openings.** Where a change of occupancy would require an emergency escape and rescue opening in accordance with Section 1031.1 of the *California Building Code*, operable windows serving as the emergency escape and rescue opening shall comply with the following:
 1. An existing operable window shall provide a minimum net clear opening of 4 square feet (0.38 m²) with a minimum net clear opening height of 22 inches (559 mm) and a minimum net clear opening width of 20 inches (508 mm).
 2. A replacement window where such window complies with both of the following:
 - 2.1 The replacement window meets the size requirements in Item 1.
 - 2.2 The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window shall be permitted to be of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.
- ▶ **CHANGE SIGNIFICANCE:** The new Sections 506.4 add allowances during a change of occupancy to use replacement window requirements for the installation of emergency escape and rescue openings.



Typical emergency escape and rescue opening.

506.5.3 Change of Occupancy from Group S or U

CHANGE TYPE: Modification

- **2022 CODE TEXT:** ~~506.4.3~~ **506.5.3 Seismic loads (seismic force-resisting system).** Where a change of occupancy results in a building being assigned to a higher risk category, or where the change is from a Group S or Group U occupancy to any occupancy other than Group S or Group U, the building shall satisfy the requirements of Section 1613 of the *California Building Code* for the new risk category using full seismic forces.

Exceptions:

1. Where the area of the new occupancy is less than 10 percent of the building area, the occupancy is not changing from a Group S or Group U occupancy, and the new occupancy is not assigned to Risk Category IV, compliance with this section is not required. The cumulative effect of occupancy changes over time shall be considered.
2. Where a change of use results in a building being reclassified from Risk Category I or II to Risk Category III and the seismic coefficient, SDS, is less than 0.33, compliance with this section is not required.
3. Unreinforced masonry bearing wall buildings assigned to Risk Category III and to Seismic Design Category A or B, shall be permitted to use Appendix Chapter A1 of this code.
4. Where the change is from a Group S or Group U occupancy and there is no change of risk category, use of reduced seismic forces shall be permitted.

- **CHANGE SIGNIFICANCE:** An upgrade threshold has been added when changing from a Group S or U occupancy to another occupancy.



Change of occupancy from Group U to Group A-2.

Photo courtesy of C. Mae Design