

Major Changes to the 2016 California Building Code

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Learning Objectives

1. Identify significant changes made in the basic 2015 IBC that are included in the 2016 CBC.
2. Identify California-specific changes to the 2015 IBC in the 2016 CBC.
3. Identify changes made by California in the CBC Chapter 11A regarding access to covered multifamily housing and to CBC Chapter 11B for Public Accommodations.
4. Learn to recognize the impact of the noted changes on practice.

2015 IBC is the Basis for the 2016 CBC



Finding Changes

CA language (new & old) is in **Italic Type** [as are words with IBC definitions = confusing]

- || Double Vertical Lines = CA Change
- █ Solid Vertical Bar = IBC Change (NA for access Chapters 11A and 11B, which are both CA Chapters)
- > Caret Denotes CA Deletion
- ➡ Arrow Denotes IBC Deletion
- * Single asterisk means text has been relocated elsewhere in the code
- ** Double asterisk means text following mark has been moved there from elsewhere in the code

Other California Codes

- 2016 California Codes are based upon:**
- 2014 National Electrical Code – NFPA
 - 2015 Uniform Mechanical Code- IAPMO
 - 2015 Uniform Plumbing Code – IAPMO
 - 2015 International Fire Code – ICC
 - 2016 Energy Code – California Energy Commission
 - 2016 California Residential Code = Chapters 1-10 of the 2015 International Residential Code
 - CALGreen – 2016 California Green Building Standards Code – now applies to alterations as well as new construction
 - 2015 International Existing Building Code – Partial Adoption to replace deleted IBC Chapter 34

California State Fire Marshal Amendments

Key to Understanding the California State Fire Marshal's Amendments to the IBC are:

"In high-rise buildings, Group A, E, H, I, L and R occupancies and other applications listed in Section 111 regulated by the Office of the State Fire Marshal,...."

We will label these "SFM Occupancies" for further discussion.

Most SFM changes from 2013 CBC carried forward into 2016 CBC without revision

Definition Change – Braced Walls

2013 CBC

BRACED WALL LINE. A series of braced wall panels in a single story that meets the requirements of Section 2308.3 or 2308.12.4.

BRACED WALL PANEL. A section of wall braced in accordance with Section 2308.9.3 or 2308.12.4.

2016 CBC

[BS] BRACED WALL LINE. A straight line through the building plan that represents the location of the lateral resistance provided by the wall bracing.

[BS] BRACED WALL PANEL. A full-height section of wall constructed to resist in-plane shear loads through interaction of framing members, sheathing material and anchors. The panel's length meets the requirements of its particular bracing method and contributes toward the total amount of bracing required along its braced wall line.

Definition Change – Congregate Living Health Facility

2013 CBC

CONGREGATE LIVING HEALTH FACILITY (CLHF).

As termed, is a residential home with a capacity of no more than six beds, which provide inpatient care, including the following basic services: medical supervision, 24-hour skilled nursing and supportive care, pharmacy, dietary, social recreational, and at least provides services for persons who are diagnosed with a terminal illness or who are catastrophically and severely disabled.

2016 CBC

CONGREGATE LIVING HEALTH FACILITY (CLHF)

means a residential home with a capacity, except as provided in paragraph (3), of no more than 12 beds, that provides inpatient care, including the following basic services: medical supervision, 24-hour skilled nursing and supportive care, pharmacy, dietary, social, recreational, and at least one type of service specified in paragraph (1). The primary need of congregate living health facility residents shall be for availability of skilled nursing care on a recurring, intermittent, extended, or continuous basis. This care is generally less intense than that provided in general acute care hospitals but more intense than that provided in skilled nursing facilities.

PLUS MANY OPTIONS – READ THE DEFINITION

Definition Change – Common Path of Egress Travel

2013 CBC

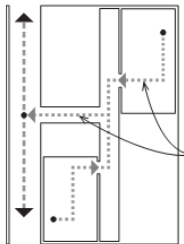
COMMON PATH OF EGRESS TRAVEL.

That portion of exit access which the occupants are required to traverse before two separate and distinct paths of egress travel to two exits are available. Paths that merge are common paths of travel. Common paths of egress travel shall be included within the permitted travel distance.

2016 CBC

COMMON PATH OF EGRESS TRAVEL.

That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.



Definition Change – Treated Wood – coordinates definition with Chapter 23 specs to allow other than pressure treatment for wood.

2013 CBC

TREATED WOOD. Wood and wood-based materials that use vacuum-pressure impregnation processes to enhance fire retardant or preservative properties.

Fire-retardant-treated wood. Pressure-treated lumber and plywood that exhibit reduced surface-burning characteristics and resist propagation of fire.

Preservative-treated wood. Pressure-treated wood products that exhibit reduced susceptibility to damage by fungi, insects or marine borers.

2016 CBC

[B5] TREATED WOOD. Wood products that are conditioned to enhance fire-retardant or preservative properties.

Fire-retardant-treated wood. Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-burning characteristics and resist propagation of fire.

Preservative-treated wood. Wood products that, conditioned with chemicals by a pressure process or other means, exhibit reduced susceptibility to damage by fungi, insects or marine borers.

Ch. 3 - Use and Occupancy

304.1 B Occupancies

Small Commercial Kitchens

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m2) in area. **NOT "A-2" OR "F-1" OCCUPANCIES**

Training Centers

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

404 - Atriums

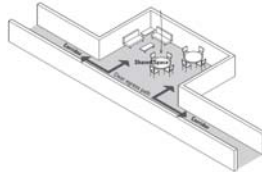
Smoke Control at two story atriums in I-2 (Hospital) Occupancies and R2.1 (Residential Care) Occupancies

Exception to 404.3 allows two-story atriums without smoke control except for the two occupancy groups noted above. These are health-care occupancies where occupants may not be capable of unassisted self-preservation.

407.2.5 I-2 Nursing Home Layout

Shared spaces may be open to corridors if criteria are met:

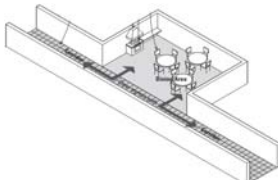
1. The walls and ceilings of the space are constructed as corridors.
2. The spaces are not resident sleeping rooms, treatment rooms, incidental uses in accordance with Section 509, or hazardous uses.
3. The open space is protected by an automatic *smoke* detection system installed in accordance with 907.
4. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic *smoke* detection system installed in accordance with 907, *and* the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with 903.3.2.
5. The space is arranged so as not to obstruct access to the required exits.
6. Each space is located to permit direct visual supervision by the facility staff.



407.2.6 I-2 Nursing Home Layout

Cooking areas may be open to corridors if criteria are met:

1. The number of care recipients housed in the smoke compartment is not greater than 30.
2. The number of care recipients served by the cooking facility is not greater than 30.
3. Only one cooking facility area is permitted in a smoke compartment.
4. The types of domestic cooking appliances permitted are limited to ovens, cooktops, ranges, warmers and microwaves.
5. A domestic cooking *range* hood installed and constructed in accordance with the *California Mechanical Code* is provided over the cooktop or range.
6. A portable fire extinguisher shall be installed in accordance with Section 906 of the *California Fire Code*.



505.3 – Mezzanine Egress

Mezzanine means of egress now almost fully covered only in Chapter 10. But 505.3 Exception 2 now allows a mezzanine with two means of egress to be enclosed and not open to the room it is in. Previously the exception required at least one mezzanine exit to connect directly to an exit. That provision has been removed. Must look at both 505.3 and Chapter 10 to understand all of the mezzanine means of egress requirements.

Ch. 5-Heights & Areas – Major Format Changes

The 2015 IBC made major changes to the way allowable heights and areas are determined. The intent is that there is **NO CHANGE IN THE ALLOWABLE HEIGHTS AND AREAS FROM THE PREVIOUS CODE EDITION**. The change incorporates previous exceptions and design decisions about materials and heights into new tables to make the process more user -friendly. But it looks quite different. The less you know about how this was done in the past the better off you will be. Look at this with new eyes. But, if confused, check using the old code. Results should be the same.

Ch. 5-Heights & Areas New Nomenclature

- NS:** Buildings not equipped throughout with an automatic sprinkler system
- S:** Buildings equipped throughout with an automatic sprinkler system installed in accordance with 903.3.1.1 (NFPA 13)
- S1:** Buildings a maximum of one story above grade plane and equipped throughout with an automatic sprinkler system installed in accordance with 903.3.1.1 (NFPA 13)
- SM:** Buildings two or more stories above grade plane equipped throughout with an automatic sprinkler system installed in accordance with 903.3.1.1 (NFPA 13)
- S13R:** Buildings equipped throughout with an automatic sprinkler system installed in accordance with 903.3.1.2 [NFPA 13R sprinkler systems in Group R occupancies up to and including four stories in height in buildings not exceeding 60 feet in height above grade plane]

Ch. 5-Heights & Areas New Equations: 5-1

506.2.1 Single-occupancy, one-story buildings. The allowable area of a single-occupancy building with no more than one story above grade plane shall be determined in accordance with

Equation 5-1:

$$A_o = A_t + (NS \times I_f)$$

where:

A_o = Allowable area (square feet).

A_t = Tabular allowable area factor (NS, S1, or S13R value, as applicable) in accordance with Table 506.2.

NS = Tabular allowable area factor in accordance with Table 506.2 for nonsprinklered building (regardless of whether the building is sprinklered).

I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.

Ch. 5-Heights & Areas New Equations: 5-2

506.2.3 Single-occupancy, multistory buildings. The allowable area of a single-occupancy building with more than one story above grade plane shall be determined in accordance with

Equation 5-2:

$$A_o = [A_t + (NS \times I_f)] \times S_o$$

A_o = Allowable area (square feet).

A_t = Tabular allowable area factor (NS, S13R, or SM value, as applicable) in accordance with Table 506.2.

NS = Tabular allowable area factor in accordance with Table 506.2 for nonsprinklered building (regardless of whether the building is sprinklered).

I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.

S_o = For other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, actual number of building stories above grade plane, not to exceed three. For Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, actual number of building stories above grade plane, not to exceed two.

Ch. 5-Heights & Areas New Equations: 5-3

506.2.4 Mixed-occupancy, multistory buildings. Each story of a mixed-occupancy building with more than one story above grade plane shall individually comply with the applicable requirements of Section 508.1. For buildings with more than three stories above grade plane, the total building area shall be such that the aggregate sum of the ratios of the actual area of each story divided by the allowable area of such stories, determined in accordance with Equation 5-3 based on the applicable provisions of Section 508.1, shall not exceed three, provided the aggregate sum of the ratios for portions of mixed-occupancy, multistory buildings containing A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, including any other associated non-separated occupancies, shall not exceed two. **Equation 5-3:**

$$A_o = A_t + (NS \times I_f)$$

where:

A_o = Allowable area (square feet).

A_t = Tabular allowable area factor (NS, S13R or SM value, as applicable) in accordance with Table 506.2.

NS = Tabular allowable area factor in accordance with Table 506.2 for nonsprinklered building (regardless of whether the building is sprinklered).

I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.

Ch. 5-Heights & Areas New Equations: 5-4

506.3 Frontage increase. Every building shall adjoin or have access to a public way to receive an area factor increase based on frontage. Area factor increase shall be determined in accordance with Sections 506.3.1 through 506.3.3.

Equation 5-4:

$$W = (L_1 \times w_1 + L_2 \times w_2 + L_3 \times w_3 \dots) / F$$

W (Width: weighted average)= Calculated width of public way or open space (feet).

L_n = Length of a portion of the exterior perimeter wall.

w_n = Width (≥ 20 feet) of a public way or open space associated with that portion of the exterior perimeter wall.

F = Building perimeter that fronts on a public way or open space having a width of 20 feet (6096 mm) or more.

Ch. 5-Heights & Areas New Equations: 5-5

506.3.3 Amount of increase. The area factor increase based on frontage shall be determined in accordance with

Equation 5-5:

$$I_f = [F/P - 0.25]W/30$$

I_f = Area factor increase due to frontage.

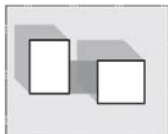
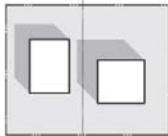
F = Building perimeter that fronts on a public way or open space having minimum distance of 20 feet (6096 mm).

P = Perimeter of entire building (feet).

W = Width of public way or open space (feet) in accordance with Section 506.3.2.

Ch. 5-Heights & Areas - 1

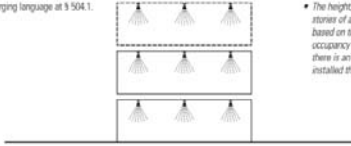
• **Step 1:** Read changing language at 5 503.1.



• Determine the height and area of the proposed building and whether multiple buildings on a single lot are to be treated as a single building or as multiple buildings with assumed lines between them.

Ch. 5-Heights & Areas - 2

• **Step 2:** Read charging language at 5 504.1.



• The height, in feet, and the number of stories of a building shall be determined based on the type of construction, occupancy classification, and whether there is an automatic sprinkler system installed throughout the building.

Ch. 5-Heights & Areas - 3

• **Step 3:** Read 5 504.1 through 504.3 and determine allowable building height in feet.

From Table 504.3			
Occupancy Classification	Sprinklers	Type III	
		A	B
A, B, E, F, M, S, U	NS	60 (19.8 m)	50 (16.8 m)
	S	85 (25.9 m)	75 (22.9 m)

• Determine the height in feet of the proposed building using Table 504.3

Ch. 5-Heights & Areas - 4

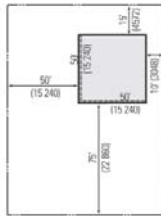
• **Step 4:** Read 5 504.4 and determine allowable building height in stories.

From Table 504.4			
Occupancy Classification	Sprinklers	Type III	
		A	B
B	See footnotes		
	NS	5/28,500	3/19,000
	S1	1/14,000	1/76,000
	SM	6/95,500	4/57,000

• Determine the height in stories of the proposed building using Table 504.4

Ch. 5-Heights & Areas - 5

• **Step 5:** Read § 506.1 through 506.2.3 and determine the values required for determining maximum building floor area in Equation 5-2. If need be, go to § 506.3. (See Step 6).



• Determine what height increases are available for the proposed building based on its location on property.

----- Perimeter meeting criteria for height increase per Equation 5-5.

Ch. 5-Heights & Areas - 6

• **Step 6:** Read § 506.3 through 506.3.3 and determine applicable allowable area height increase from Equations 5-2 and 5-3.

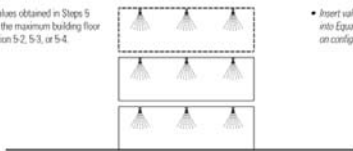


• Determine if weighted averages are necessary for height per Equation 5-4 or whether basic height increase formula can be used per Equation 5-5.

----- Perimeter meeting criteria for height increase as per Equation 5-2.

Ch. 5-Heights & Areas - 7

• **Step 7:** Using values obtained in Steps 5 and 6 determine the maximum building floor area using Equation 5-2, 5-3, or 5-4.



• Insert values from Equations 5-4 and 5-5 into Equations 5-1, 5-2, or 5-3, depending on configuration of the building.

Ch. 5-Heights & Areas - 8

- **Step 8** Determine maximum allowable area per story for the building using Equation 5-2, 5-3, or 5-4.
- Multiply allowable area by number of stories based on allowable increases for unsprinklered or sprinklered buildings.

The diagram illustrates the process of determining the maximum allowable area per story. It shows three separate boxes, each containing three sprinkler icons, with a plus sign between them. Below this, an equals sign is followed by a single larger box containing nine sprinkler icons, representing the total allowable area for that story.

- Finished.

510 – Special Provisions for Mixed Construction Types

This section, as before, is for “podium buildings” of one type of construction over Type IA construction.

The restriction on the Type IA building being only a single story above grade has been removed.

The height limitations are still based on the limits from grade plane.

The diagram shows a cross-section of a building with two distinct construction types. The lower portion is labeled 'BUILDING A Type 1-A construction' and contains a car. The upper portion is labeled 'BUILDING B' and contains a house-like structure. A '3-Hour Horizontal Assembly at interface level' is shown between the two buildings. A vertical line indicates the 'grade plane'.

Table 601 – No more badly footnoted 1-hour sprinkler substitution is allowed

The never available for use “Footnote d” allowing sprinkler substitutions for 1-hour construction has been removed from Table 601. Since the footnote said “~~provided such system is not otherwise required by other provisions of the code~~ or used for an allowable area increase in accordance with Section 506.2 or an allowable height increase in accordance with Section 504.2”. Sprinklers are essentially always required. This removes the temptation to incorrectly use a non-applicable footnote.

Table 602.4 Heavy Timber Member Sizes

Table 602.4 has been reformatted to include structural composite lumber sizes along with sawn lumber and glued-laminated members.

**TABLE 602.4
WOOD MEMBER SIZE EQUIVALENCIES**

MINIMUM NOMINAL SOLID SAWN SIZE		MINIMUM GLUED-LAMINATED NET SIZE		MINIMUM STRUCTURAL COMPOSITE LUMBER NET SIZE	
Width, inch	Depth, inch	Width, inch	Depth, inch	Width, inch	Depth, inch
8	8	6 1/2	8 1/4	7	7 1/2
6	10	5	10 1/2	5 1/2	9 1/2
6	8	5	8 1/4	5 1/2	7 1/2
6	6	5	6	5 1/2	5 1/2
4	6	3	6 1/4	3 1/2	5 1/2

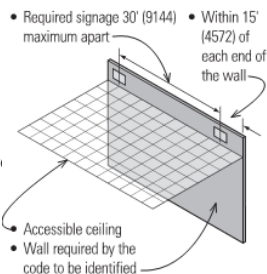
602.4.2 Cross-Laminated Timber in Type IV Exterior Walls

Cross laminated timber (CLT) is allowed in exterior walls of less than 2-hour rating in Type IV construction when exterior surface of the CLT is protected by **one of the following**:

1. *Fire-retardant-treated wood* sheathing complying with Section 2303.2 and not less than 15/32 inch (12 mm) thick;
2. *Gypsum board* not less than 1/2 inch (12.7 mm) thick; or
3. A noncombustible material.

703.7 Marking of Fire and Smoke Barriers Above Ceilings

Per 703.7 any wall that requires protected openings or penetrations is to be identified with a permanent sign or stencil marking. The markings are required in concealed areas where access is possible. If there is no access to a concealed space, or if there is no ceiling to form concealed spaces, then markings are not required.



704.4 - Protection of Secondary Structure – reworded to clarify the same requirements

2013 CBC
704.4 Protection of secondary members. Secondary members that are required to have a fire-resistance rating shall be protected by individual encasement protection, by the membrane or ceiling of a horizontal assembly in accordance with Section 711, or by a combination of both.

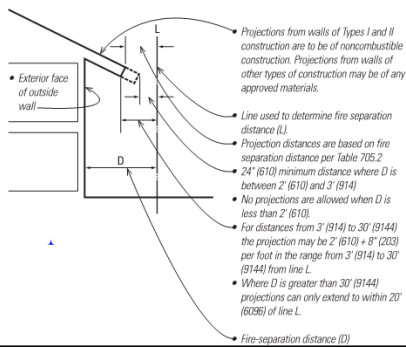
704.4.1 Light-frame construction. King studs and boundary elements that are integral elements in load-bearing walls of light-frame construction shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the load-bearing wall.

2016 CBC
704.4 Protection of secondary members. Secondary members that are required to have protection to achieve a fire resistance rating shall be protected by individual encasement protection.

704.4.1 Light-frame construction. Studs and boundary elements that are integral elements in load-bearing walls of light-frame construction shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the load-bearing wall.

704.4.2 Horizontal assemblies. Horizontal assemblies are permitted to be protected with a membrane or ceiling where the membrane or ceiling provides the required fire resistance rating and is installed in accordance with Section 711.

705.2 – Noncombustible Projections



705.2 - Projections

Projection requirements have been changed dramatically. Not limited to combustible projections. See examples below taken from Table 705.2.

Fire Sep. Distance to Ext. Wall	2013 Min. Projection Dist. To PL	2013 Balcony projection from wall	2016 Min. Projection Dist. To PL	2016 Balcony projection from wall
0-2'	0 = NP	0 = NP	0 = NP	0 = NP
2-3'	24"	36" - 24" = 12"	24"	36" - 24" = 12"
3-4'	24"	48" - 24" = 24"	24" + 1(8) = 32"	48" - 32" = 16"
4-5'	24"	60" - 24" = 36"	24" + 2(8) = 40"	60" - 40" = 20"
5-6'	40"	72" - 40" = 32"	24" + 3(8) = 48"	72" - 48" = 24"
7-8'	40"	96" - 40" = 56"	24" + 4(8) = 56"	96" - 56" = 40"
8-9'	40"	108" - 40" = 68"	24" + 5(8) = 64"	108" - 64" = 44"

705.2.3 – Combustible Projections- revised with small impact – can be read as no projections < 5' from property line.

2013 CBC
705.2.3 Combustible projections.
 Combustible projections extending to within 5 feet (1524 mm) of the line used to determine the fire separation distance, or located where openings are not permitted, or where protection of some openings is required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as required by Section 1406.3.
Exception: Type VB construction shall be allowed for combustible projections in Group R-3 and U occupancies with a fire separation distance greater than or equal to 5 feet (1524 mm).

2016 CBC
705.2.3 Combustible projections.
 Combustible projections extending to within 5 feet (1524 mm) of the line used to determine the *fire separation distance* shall be of not less than 1-hour *fire-resistance-rated* construction, Type IV construction, *fire-retardant-treated wood* or as required by Section 1406.3.
Exception: Type VB construction shall be allowed for combustible projections in Group R-3 and U occupancies with a fire separation distance greater than or equal to 5 feet (1524 mm).

706.2 – Fire Walls & NFPA 221

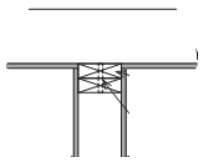
The code now recognizes all of the potential design elements contained in NFPA Standard 221 “*Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls*”. The prior code only allowed double fire walls per this standard, now tied or cantilevered walls designed to the standard will be “deemed to comply” with the code. The criteria that fire walls remain in place after collapse of buildings on either of the fire wall still remains.

Sections 711 & 712 Reorganization

The reorganization of Sections 711 and 712 has been continued such that Section 711 now deals more clearly with horizontal floor/ceiling and roof ceiling assemblies and Section 712 addresses vertical openings through those assemblies. Items have moved and been reworded, but the **intent of the revisions is editorial**. Such changes may still have interpretive impacts.

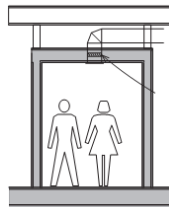
714.4.2 – Membrane at Double Top Plate

714.4.2 Exception 7 now clearly allows a double top plate to interrupt a 1 or 2 hour horizontal assembly when detailed conditions are met for sealing penetrations and having materials tight to the plates.



717.5.4.1 – Tunnel Corridor Dampers

At “tunnel corridors” provided per Exception 3 to Section 708.4, if air is supplied to the corridor, a “corridor damper” is now specifically required to be provided at the duct penetration in the ceiling per Section 717.5.4.1.



706A.2 and 706A.3 – Exterior Vent Test Standard

ASTM E2886, “Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct Flame Impingement” is now an allowable test standard for exterior vent protection from ember penetration in Chapter 7A, which is to be used in exterior wildfire exposures located in designated “Wildland/Urban Interface Fire Areas”.

707A.5 thru 707A.9 –Eave & Soffit Protection Standard

ASTM E2957, “Standard Test Method for Flammability and Resistance to Wildfire Penetrations of Eaves, Soffits and Other Projections” is now an allowable test standard in Chapter 7A.

806 – Decorative Materials and Trim

806 regulates the flame-resistance of combustible decorative materials. This section was extensively revised in the 2015 IBC. Many of the references in this section are taken from the International Fire Code (IFC) and there are references to IFC code sections in this IBC section. Decorative materials, such as curtains, draperies, and hangings, must be flame-resistant per NFPA 701, NFPA 289, or be noncombustible. In I-3 occupancies, all combustible decorations are prohibited.

915 – Carbon Monoxide Detection

The provisions for CO detection have been gathered together into a new section, 915. I-3 occupancies have been excluded and E occupancies added. The new section combines requirements from the State Fire Marshal, Housing and Community Development, State Law, prior 2013 CBC amendments and 2015 IBC and IFC revisions.

Chapter 10 – Means of Egress

Once again in the 2016 CBC, based on changes in the 2015 IBC, Chapter 10 has been extensively reorganized. The **INTENT** of the revisions is to clarify the use of the code and is meant to be editorial. Familiar items may seem to be gone, they have in most all cases just been relocated. This will still likely lead to interpretive discussions with the AHJ as everyone becomes familiar with the new organization.

Chapter 10 Reformat

<p><small>2013 CBC</small></p> <p>SECTION 1015 EXIT AND EXIT ACCESS DOORWAYS</p> <p>SECTION 1021 NUMBER OF EXITS</p> <p>1009.3 Exit Access Stairways</p>	<p><small>2016 CBC</small></p> <p>SECTION 1006 NUMBER OF EXITS AND EXIT ACCESS DOORWAYS</p> <p>SECTION 1007 EXIT AND EXIT ACCESS DOORWAY CONFIGURATION</p> <p>SECTION 1019 EXIT ACCESS STAIRWAYS AND RAMPS</p>
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Chapter 10 Retail Occupant Load Factors

<p><small>2013 CBC</small></p> <p>Under the previous code retail spaces had an occupant load factor of 30/sf/occupant for basement and ground floor spaces and 60/sf/occupant for other floors</p>	<p><small>2016 CBC</small></p> <p>Based on new use patterns for retail and the changes from single owner multi-story department stores to other models the new occupant load factor for retail is now to be <u>60/sf/occupant for all levels.</u></p>
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Chapter 10 – 1011.16 Ladder access criteria

Section 1011.12 now allows access to unoccupied roofs by an alternating tread device, ships ladder or **permanent ladder**. 1011.16 lists a set of spaces where permanent ladders are allowed for access to normally non-occupied spaces: **1011.16 Ladders**. Permanent ladders shall not serve as a part of the means of egress from occupied spaces within a building. Permanent ladders shall be permitted to provide access to the following areas:

1. Spaces frequented only by personnel for maintenance, repair or monitoring of equipment.
2. Nonoccupiable spaces accessed only by catwalks, crawl spaces, freight elevators or very narrow passageways.
3. Raised areas used primarily for purposes of security, life safety or fire safety including, but not limited to, observation galleries, prison guard towers, fire towers or lifeguard stands.
4. Elevated levels in Group U not open to the general public.
5. Nonoccupied roofs that are not required to have stairway access in accordance with Section 1011.12.1.
6. Ladders shall be constructed in accordance with Section 306.5 of the *California Mechanical Code*.

Chapter 10 – 1015.8 Guard at R-1 Windows

The CBC now includes R-1 (hotel/motel) occupancies in the list of occupancies where fall protection guards are required at windows. The criteria apply to windows with sills lower than 36” above the floor and located more than 72” above exterior finished grade. The criteria provide a choice of window opening control options.

Chapter 10 – 1016.2.1- Egress at Elevator Lobbies

The CBC clarifies that one of the two required means of egress can lead through an elevator lobby if the second egress does not go through the lobby. The level of protection need not necessarily be as for corridors: **1016.2.1**. Exit access through an enclosed elevator lobby is permitted *in other than a Group 1-2 and 1-2.1*. Access to not less than one of the required exits shall be provided without travel through the enclosed elevator lobbies required by Section 3006. Where the path of exit access travel passes through an enclosed elevator lobby, the level of protection required for the enclosed elevator lobby is not required to be extended to the exit unless direct access to an exit is required by other sections of this code.

Chapter 10 – 1006.3 & 1019.3

There is new language in Section 1006.3 that restricts egress travel to one adjacent story: **1006.3 Egress from stories or occupied roofs.** The means of egress system serving any story or occupied roof shall be provided with the number of exits or access to exits based on the aggregate occupant load served in accordance with this section. The path of egress travel to an exit shall not pass through more than one adjacent story.

This may be interpreted as a conflict with allowances in Section 1019.3 for open exit-access stairs that comply with the “Conditions” of this section. Condition 4 allows open exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or ramp and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.

Chapter 10-1023.3.1 - Door at Exit Passageway

2013 CBC

1022.3.1 Extension. Where interior exit stairways and ramps are extended to an exit discharge or a public way by an exit passageway, a fire door assembly complying with Section 716.5 shall be installed in the fire barrier to provide a means of egress from the interior exit stairway and ramp to the exit passageway.

Exception: Penetrations of the fire barrier in accordance with Section 1022.5 shall be permitted.

2016 CBC

1023.3.1 Extension. Where interior exit stairways and ramps are extended to an exit discharge or a public way by an exit passageway, a fire door assembly complying with Section 716.5 shall be installed in the fire barrier to provide a means of egress from the interior exit stairway and ramp to the exit passageway.

Exceptions:

1. Penetrations of the fire barrier in accordance with Section 1023.5 shall be permitted.

2. Separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where there are no openings into the exit passageway extension.

Chapter 11A Multifamily Access , 1124A.3.2 Elevators

A new table has been added, 1124.A.3.2, which shows dimensions of elevator cabs. Figure 11A-7A is still in the code showing elevator clearance diagrams. More information, but no substantive change.

Chapter 11B Public Access Electric Vehicle Charging

Few changes to Chapter 11B were made for the 2016 CBC. One major scope change was the addition of access provisions for electric vehicle charging stations. The rule making was contentious. Is an EV charging space a “fueling station” or a “parking space”? See 11B-812 for technical requirements. Apply the rules with caution and engage your clients in any decisions about EV parking.

Chapter 11B Public Access 11B-202.4, EX.10, EVCS

2013 CBC

No EVCS regulations

2016 CBC

10. Alterations solely for the purpose of installing electric vehicle charging stations (EVCS) at facilities where vehicle fueling, recharging, parking or storage is a primary function shall comply with Section 11B-202.4 to the maximum extent feasible without exceeding 20 percent of the cost of the work directly associated with the installation of EVCS.

Alterations solely for the purpose of installing EVCS at facilities where vehicle fueling, recharging, parking or storage is not a primary function shall not be required to comply with Section 11B-202.4

Chapter 11B Public Access 11B- EV Point-of-sale Devices

2013 CBC

11B-220.2 Point-of-sale devices. *Where point-of-sale devices are provided, all devices at each location shall comply with Sections 11B-309.4, 11B-707.3, and 11B-707.2.*

11B-309.4 Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.

Exception: Gas pump nozzles shall not be required to provide operable parts that have an activating force of 5 pounds (22.2 N) maximum.

2016 CBC

11B-220.2 Point-of-sale devices. *Where point-of-sale devices are provided, all devices at each location shall comply with Sections 11B-707.3, 11B-707.2, and 11B-707.9.*

11B-309.4 Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.

Exception: Gas pump nozzles and **electric vehicle connectors** shall not be required to provide operable parts that have an activating force of 5 pounds (22.2 N) maximum.

Chapter 11B-228.3.2.1 Public or Common Use EVCS

11B-228.3.2.1 Public use or common use EVCS.
*Where EVCS are provided for public use or common use, EVCS complying with **Section 11B-812** shall be provided in accordance with **Table 11B-228.3.2.1**. Where new EVCS are installed in facilities with existing EVCS, the "Total Number of EVCS at a Facility" in **Table 11B-228.3.2.1** shall include both existing and new EVCS.*

Exception: All drive-up EVCS shall comply with **Section 11B-812**. [EVCS Technical Requirements]

T24 Part 11, CALGreen Residential EVCS Measures

4.106.4.2 New multifamily dwellings. Where 17 or more multifamily dwelling units are constructed 3 percent of the total number of parking spaces provided shall be EV charging spaces capable of supporting future EVSE.

4.106.4.2.1 Electric vehicle charging space (EV space) locations. At least one EV space shall be located in common use areas and available for use by all residents.

4.106.4.2.2 & 3 Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. The raceway shall not be less than nominal 1-inch inside diameter). Plan design shall be based upon a 40-ampere minimum branch circuit. Raceways and related components that are planned to be in concealed areas and spaces shall be installed at the time of original construction.

T24 Part 11, CALGreen Nonresidential EVCS Measures

5.106.5.3 Electric vehicle (EV) charging. [N] Construction shall facilitate future installation of electric vehicle supply equipment (EVSE).

Charging space requirements.

A raceway is required to be installed at the time of construction with listed raceway capable of accommodating a 208/240-volt dedicated branch circuit with a raceway not be less than trade size 1." The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40- ampere dedicated branch circuit for the future installation of the EVSE. Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.

Chapter 11B- 11B-404.2.9 Door Opening Force

2013 CBC

11B-404.2.9 Door and gate opening force. The force for pushing or pulling open a door or gate other than fire doors shall be as follows:

Exceptions:

~~1. Exterior doors to machinery spaces including, but not limited to, elevator pits or elevator penthouses; mechanical electrical or communications equipment rooms; piping or equipment catwalks; electric substations and transformer vaults; and highway and tunnel utility facilities.~~

2016 CBC

Exception 1 deleted in 2016 CBC

Chapter 11B Public Access 11B-603.2.3 – Door at WC

2013 CBC

11B-603.2.3 Door swing. Doors shall not swing into the clear floor space or clearance required for any fixture.

Other than the door to the accessible water closet compartment, a door in any position, may encroach into the turning space by 12 inches (305 mm) maximum.

2016 CBC

11B-603.2.3 Door swing. Doors shall not swing into the clear floor space or clearance required for any fixture.

Doors to accessible water closet compartments shall be permitted to encroach into the turning space without limitation.

Other than doors to accessible water closet compartments, a door, in any position, shall be permitted to encroach into the turning space by 12 inches (305 mm) maximum.

Chapter 12 – 1203.2 & 1203.3 - Attic Ventilation

There are significant changes to ventilated and unventilated attic requirements in CBC Sections 1203.2 and 1203.3. Review the new conditions based on the attic ventilation design, climate zone, insulation design and Energy Code requirements.

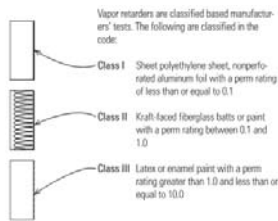
Chapter 14 – 1403.5 Combustibles in Ext. Walls

Walls greater than 40' above grade plane in Types I, II, III and IV buildings that have combustible water-resistive barriers are to comply with NFPA 285 (*Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*).

There is now exceptions if the barrier is the only combustible component and it is covered with noncombustible materials like brick, concrete, steel, etc. or has a low tested heat release rate

Chapter 14 – 1405.3 Vapor Retarders

There are significant changes to vapor retarder requirements in 1405.3. Review the new conditions based on the wall material design, proposed vapor retarder materials and locations in the wall assembly, climate zone, insulation design and Energy Code requirements. Goal is to avoid creating double vapor barriers that can trap moisture or condensation in wall assemblies



Chapter 16 – 1604.5 Risk Categories

Risk categories are taken from ASCE 7-10 (*Minimum Design Loads for Buildings and Other Structures*)

Per 1604.5 when a referenced standard refers to ASCE 7 and there is a conflict with the CBC then Table 1604.5 is to govern. Examples to note in Category III in the table are:

- Assembly with > 300 occupants (i.e. multi-screen cinemas)
- E occupancies with > 250 occupants (A-3 in E = Gym)
- Education above 12th Grade (B occupancy) with >500 occupants

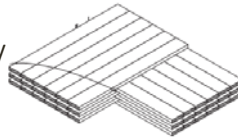
Impacts can occur on Seismic Design Category

Wood- 2303.1.4 – Cross Laminated Timber

2303.1.4 addresses Structural Glued Cross Laminated Timber.

This material is new to the United States, but is widely used in other countries.

Cross-laminated timber materials are made of large boards cross-laminated into larger members and are used as large timbers.



Wood- 2308 – Conventional Framing

2308 contains the conventional framing provisions of the IBC. There are new exterior sheathing and wall bracing provisions with illustrations, similar to the CRC.

Table 2308.4.1 Wall Bracing Requirements

Seismic Design Category	Story Condition (See 6.2.2.3)	Maximum Spacing of Braced Wall Lines	
A and B		30 ft (9.1 m)	Each end ± 25 ft (7.6 m)
		30 ft	Each end ± 25 ft (7.6 m)



Table 2308.4.2 (1) Bracing Methods

Methods, Materials	Minimum Thickness
LBR Let-in-bracing	1" x 4" wood or approved metal strap attached on 40" x 160" plates to studs at maximum of 16" o.c.
DBR Diagonal braced wood boards	1 1/2" thick 2" nominal x 4" minimum width to studs at maximum of 24" o.c.



Chapter 30 Elevator Lobbies & Hoistway Opening Protection

The requirements for elevator lobbies that previously appeared in Chapter 7 at Section 713.14.1 have been moved to Section 3006 and reorganized. This places all elevator requirements together rather than having them split up as in the past. There are not really significant changes, once you are able to find the new location.

Chapter 34 — Existing Buildings

The requirements for existing buildings, which previously were located in Chapter 34 of the IBC, have been removed. Existing buildings are now addressed by a separate code, the California Existing Building Code, Title 24, Part 10. There are no longer any existing building provisions contained in the base CBC.

Title 24- Part 10 – California Existing Building Code

The CEBC is based upon a portion of the *International Existing Building Code* (IEBC). California adopts only the Prescriptive Compliance Method portion of the IEBC. The text is found at the back of the Volume 2 of the CBC along with the State Historical Building Code in Part 8.

Title 24- Part 10 – California Existing Building Code

As with Chapter 34 the IEBC covers additions, alteration and repairs. Additions are to be per the code for new construction. Alterations are to be per 401.2 or the new construction provisions of the CBC. Repairs are to be per 401.2 or 404.

Title 24- Part 10 – 403 Alterations

403.1 General. Except as provided by Section 401.2 or this section, alterations to any building or structure shall comply with the requirements of the *California Building Code* or *California Residential Code*, as applicable, for ne construction.

Alterations shall be such that the existing building or structure is no less conforming to the provisions of the *California Building Code* or *California Residential Code*, as applicable, than the existing building or structure was prior to the alteration.

Title 24- Part 10 - 401.2.1 Existing Materials

401.2.1 Existing materials. Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building official to be unsafe per Section 115.

[HCD 1] Local ordinances or regulations shall permit the replacement, retention and extension of original materials, and the use of original methods of construction, for any building or accessory structure, provided such building or structure complied with the building code provisions in effect at the time of original construction and the building or accessory structure does not become or continue to be a substandard building.

Title 24- Part 10 - 401.2.2 New and Replacement Materials

401.2.2 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for repairs and alterations, provided no hazard to life, health or property is created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

Title 24- Part 10 - 401.2.3 Existing Seismic Systems

401.2.3 Existing seismic force-resisting systems. Where the existing seismic force-resisting system is a type that can be designated ordinary, values of R , Ω_0 and C_d for the existing seismic force-resisting system shall be those specified by the *California Building Code* for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed, intermediate or special system.

Title 24- Part 10 - 404 Repairs

404.1 General. Buildings and structures, and parts thereof, shall be repaired in compliance with Sections 401.2 and 404. Work on nondamaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the requirements for alterations in this chapter. Routine maintenance required by Section 401.2, ordinary repairs exempt from permit in accordance with Section 105.2, and abatement of wear due to normal service conditions shall not be subject to the requirements for repairs in this section.

Exterior Elevated Elements Emergency Code Changes

The Building Standards Commission recently adopted new emergency regulations for "Exterior Elevated Elements" [balconies, exterior walking surface and exterior stair landings]. They are effective as of 1/30/2017 and are now in effect.

Exterior Elevated Elements Emergency Code Changes

107.2.7 Exterior balcony and elevated walking surfaces. Where balcony or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer’s installation instructions.

Exterior Elevated Elements Emergency Code Changes

110.3.8.1 Weather exposed balcony and walking surface waterproofing. Where balcony or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, 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.

Exterior Elevated Elements Emergency Code Changes

Per Table 1607.1 Item 5 balconies and decks live loads are to have a uniform live load of 1.5 times the live load for the area served. The uniform load is not required to exceed 100 psf

Exterior Elevated Elements Emergency Code Changes

2304.12.2.5 Supporting members for permeable floors and roofs. Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.

Exterior Elevated Elements Emergency Code Changes

2304.12.2.6 Ventilation required beneath balcony or elevated walking surfaces. [BSC] Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow, or drainage from irrigation, shall be provided with openings that provide a net free cross ventilation area not less than 1/150 of the area of each separate space.

Exterior Elevated Elements Emergency Code Changes

Part 10 – Existing Building Code

101.8 Maintenance. Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices or safeguards which are required by this code shall be maintained in conformance with the code edition under which installed. The owner or the owner’s designated agent shall be responsible for the maintenance of buildings and structures. To determine compliance with this subsection, the building official shall have the authority to require a building or structure to be reinspected. The requirements of this chapter shall not provide the basis for removal or abrogation of fire protection and safety systems and devices in existing structures.

Exterior Elevated Elements Emergency Code Changes

Part 10 – Existing Building Code

106.2.6 Exterior balcony and elevated walking surfaces. Where the scope of work involves a balcony or other elevated walking surfaces exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer’s installation instructions.

Exterior Elevated Elements Emergency Code Changes

Part 10 – Existing Building Code

109.3.8.1 Weather exposed balcony and walking surface waterproofing. Where the scope of work involves a balcony or other elevated walking surfaces exposed to water from direct or blowing rain, snow, or irrigation, 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.

Thanks for your Time!

Any More
Questions??
