

Applying the New Provisions of the California Existing Building Code (CEBC)



ICC
INTERNATIONAL
CODE COUNCIL®

Description


- One of the greatest challenges for building officials is verifying code compliance when an existing commercial building is undergoing renovation, repair, or a change of occupancy such as adaptive reuse. The State of California has adopted several new chapters in the CEBC.
- Beginning in July 2024, designers will have the option to use the Work Area compliance path in addition to the Prescriptive method of compliance.
- Building Officials will also get a glimpse of the Performance Method which has not yet been adopted by the State.

2

Applying the New Provisions of the CEBC

INSTRUCTOR

Sandra Hyde, PE
Managing Director – Product Development
International Code Council
shyde@iccsafe.org
971-645-8041



3

Applying the New Provisions of the CEBC

Objectives

Upon completion, participants will be better able to:

- Define a work area and how it applies to a change of occupancy.
- Determine an adequate means of egress.
- Identify required fire protection and structural safety.


4

Applying the New Provisions of the CEBC

REALITY CHECK


Which construction sector do you work in?

- a) Building/Fire Department
- b) Architect
- c) Engineer
- d) General Contractor
- e) Manufacturer



5 Applying the New Provisions of the CEBC

History and Scope



6 Applying the New Provisions of the CEBC

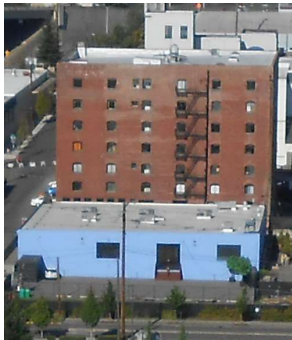
History

- Uniform Code for Building Conservation ~ ICBO (Approved 1986)
- NJ Rehab Code ~based on UCBC
- Nationally Applicable Recommended Rehab Provisions (NARRP)
- IBC Chapter 34 (2000 IBC – 2012 IBC)
 - Contained what is now prescriptive and performance methods
- 2003 IEBC first edition

7 Applying the New Provisions of the CEBC

CEBC Scope

101.2 Scope.
The provisions of this code shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings.



8 Applying the New Provisions of the CEBC

Fire Code Applicability


101.2.1 Application of fire code.
Where work regulated by this code is also regulated by the construction requirements for existing buildings in CFC Chapter 11, such work shall comply with applicable requirements in both codes.

← Interface with Retroactive Requirements

9 Applying the New Provisions of the CEBC

CEBC Purpose

- Provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements
- Provide a reasonable level of safety, health, property protection and general welfare
- Repair, alteration, change of occupancy, addition and relocation



10 Applying the New Provisions of the CEBC

CEBC Applicability

101.4 Applicability

- Compliance required for any repair, alteration, change of occupancy, addition & relocation
- Does not apply to:
 - Buildings not previously occupied
 - Buildings previously occupied and continuing without change

Not retroactive

11 Applying the New Provisions of the CEBC

Repairs/Alteration/New

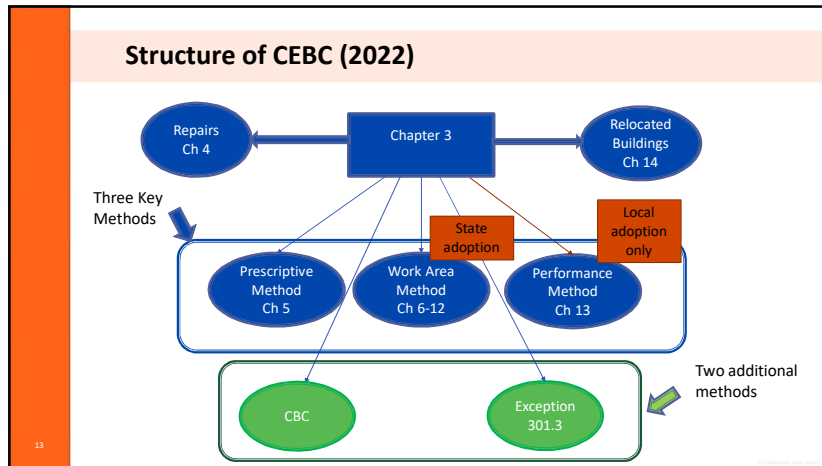
KEY POINTS



Not specifically addressed

- When is a repair is no longer a repair?

12 Applying the New Provisions of the CEBC



Performance Method (Ch 13)

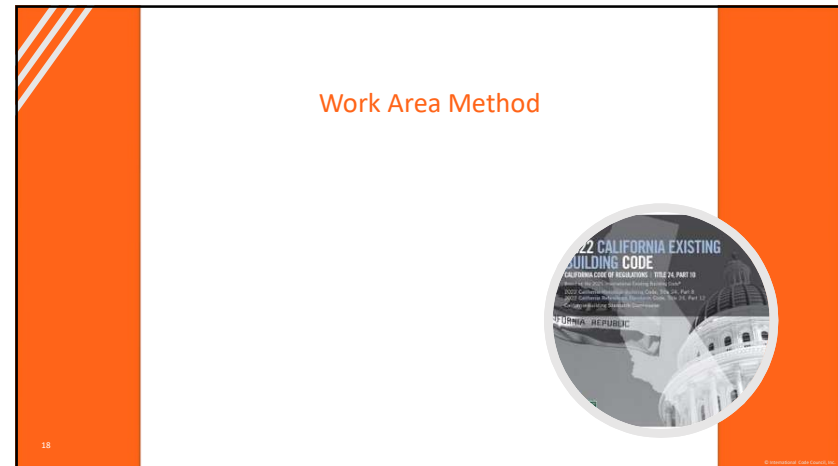
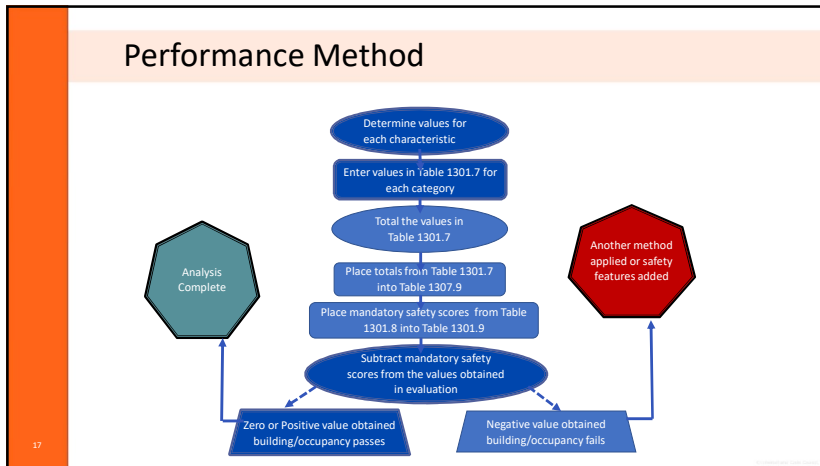
- Origin - IBC Section 3412
- Scoring method with a focus on nonstructural issues
- Meeting a minimum scores demonstrates compliance
- Evaluation Characteristics can be broken down into
 - Passive Fire protection
 - Active Fire protection
 - Means of Egress/rescue
 - Occupancy based risks

Performance Method

- Focus is on fire and life-safety from nonstructural perspective
- 21 safety parameters
- Holistic approach
- Scoring method *versus* Performance
 - Passing score ~ **Building passes**
 - Failing score ~ **Building fails** and improvements needed or comply with work area method

| SAFETY PARAMETERS | FIRE SAFETY (FS) | MEANS OF EGRESS (ME) | GENERAL SAFETY (GS) |
|---|------------------|----------------------|---------------------|
| 1401.6.1 Building Height | | | |
| 1401.6.2 Building Area | | | |
| 1401.6.3 Compartmentation | | | |
| 1401.6.4 Tenant and Dwelling Unit Separations | | | |
| 1401.6.5 Corridor Walls | | | |
| 1401.6.6 Vertical Openings | | | |
| 1401.6.7 HVAC Systems | | | |
| 1401.6.8 Automatic Fire Detection | | | |
| 1401.6.9 Fire Alarm System | | | |
| 1401.6.10 Smoke control | **** | | |
| 1401.6.11 Means of Egress | **** | | |
| 1401.6.12 Dead ends | **** | | |
| 1401.6.13 Maximum Exit Access Travel Distance | **** | | |
| 1401.6.14 Elevator Control | | | |
| 1401.6.15 Means of Egress Emergency Lighting | **** | | |
| 1401.6.16 Mixed Occupancies | | **** | |
| 1401.6.17 Automatic Sprinklers | | ±2 = | |
| 1401.6.18 Standpipes | | | |
| 1401.6.19 Incidental Use | | | |
| 1401.6.20 Smoke compartmentation | | | |
| 1401.6.21.1 Patient ability for self-preservation | **** | | |
| 1401.6.21.2 Patient concentration | **** | | |
| 1401.6.21.3 Attendant-to-patient Ratio | **** | | |
| Building score—total value | | | |

*** No applicable value to be inserted.



WORK AREA

Portion of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes:

- Other portions of the building where incidental work entailed by the intended work must be performed
- Portions of the building where work not initially intended by the owner is required by code

Chapter 7 – Alteration Level 1

Level 1 alterations include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose.

NO WORK AREA

Alteration Level 1

- Building Elements & Materials
 - Interior finishes
 - Window opening control devices
- Fire protection levels maintained
- Means of egress maintained
- Reroofing
- Energy Conservation

21

Applying the New Provisions of the CEBC

Alteration Level 1

- Similar to repairs
- Difference -- choice is made to make improvements vs. simply repairing damage
- Triggers accessibility ~ repairs do not

22

Applying the New Provisions of the CEBC

Chapter 8 – Alteration Level 2

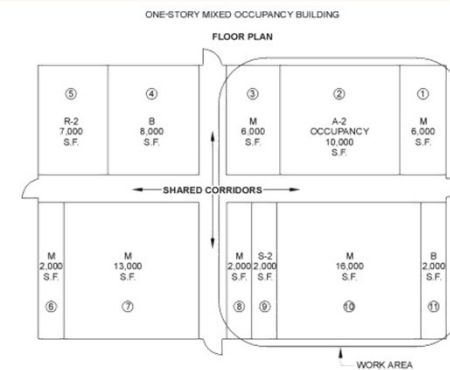
Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.



23

Applying the New Provisions of the CEBC

Alteration Level 2



24

Applying the New Provisions of the CEBC

Chapter 9 – Alteration Level 3

Level 3 alterations apply where the work area > 50 percent of the aggregate area of the building

Level 2 Alteration with a larger work area

25

Applying the New Provisions of the CEBC

Chapter 11 – Additions

- Compliance with CBC is required
- Existing building no less compliant due to addition
 - Egress
 - Height and area



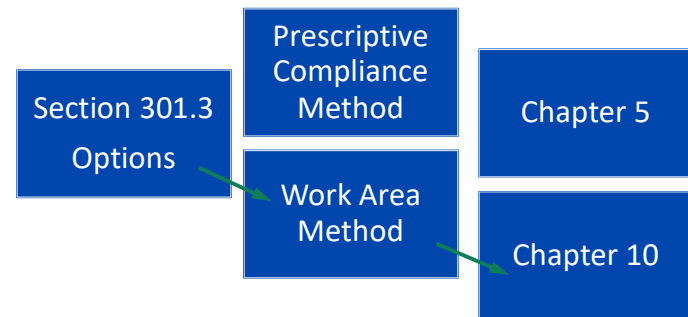
26

Change of Occupancy – Chapter 10



27

Path to a Change of Occupancy




28

Applying the New Provisions of the CEBC

Chapter 10

Change of Occupancy (Ch 10)


- A change in the occupancy of a building triggers a check for the safety of the building under its new use.
 - Fire Safety – Passive and Active Systems
 - Life Safety – Means of Egress
 - Structural Safety – LFRS, Loads, Components
 - Accessibility



29 Applying the New Provisions of the CEBC

Change of Occupancy

- New Certificate of Occupancy
- Different fire protection requirements – must meet CBC Chapter 9
- Means of Egress – updated to CBC if hazard increases



Sections 1001-1005

30 Applying the New Provisions of the CEBC


Change of Occupancy

Structural Requirements

- When change is from a **Group S to other occupancy**, comply with CBC Section 1613

Exception

- If **Group S to Group R** occupancy in **RC II**, then reduced seismic forces may be used



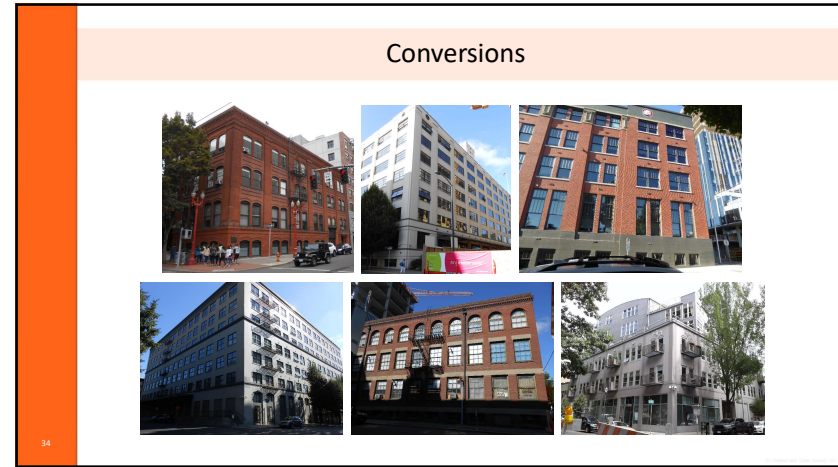
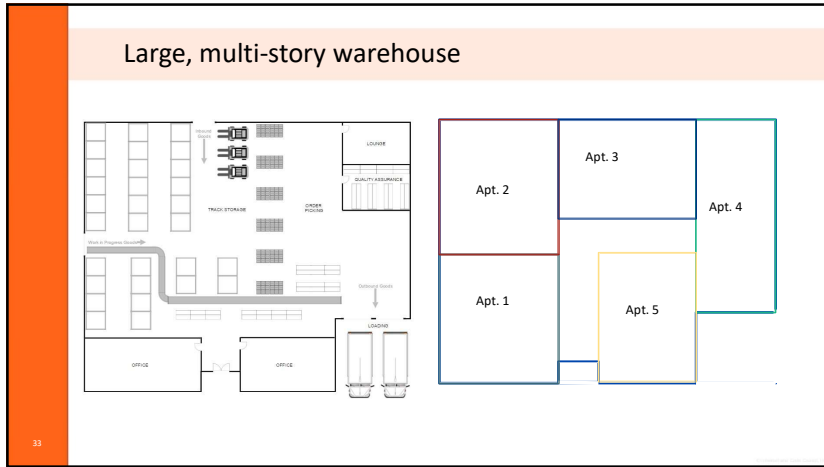
Section 1006

31 Applying the New Provisions of the CEBC

Warehouse to Apartments



32



Fire Alarm and Detection – Change of Occupancy

Section 1011.2.2

- Different threshold for the new occupancy in CBC for fire alarm and detection systems – system is provided throughout the area
- New system must meet CFC Chapter 11 and CBC Section 907

The photograph shows a fire alarm control panel mounted on a wall. It includes several red fire alarm pull stations and a central control unit with a digital display and various buttons. The panel is connected to a network of pipes and conduits.

Fire Protection Systems – Change of Occupancy

Section 1011.2

- Building must comply with the fire protection thresholds for the new occupancy per CBC Chapter 9
- Install throughout the new occupancy



37 Applying the New Provisions of the CEBC

Fire Wall Alternative

Section 1011.6.1.1

- Fire barriers and horizontal assemblies constructed per CBC Sections 707 and 711 permitted in lieu of a structurally independent fire walls if:
 - Building completely sprinkler protected per NFPA 13
 - Maximum areas between rated fire barriers or horizontal assemblies \leq allowable area of CBC for **buildings without sprinklers**
 - Fire resistance ratings of fire barriers and horizontal assemblies \geq Table 706.4

Not allowed in H, F-1 or S-1 occupancies

38 Applying the New Provisions of the CEBC

Fire Barriers

- Fire Barriers in separated mixed occupancies must comply with CBC fire resistance requirements
- When 1-hour rating required, existing wood lath and plaster, in good condition, or existing ½-inch thick gypsum board permitted



Section 1011.6.3

39 Applying the New Provisions of the CEBC

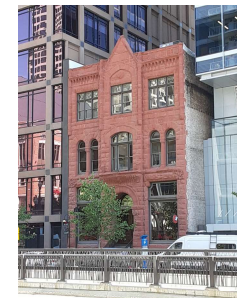
Exterior Wall Rating

Higher Hazard

- Exterior wall fire-resistance rating requirements for the new occupancy must comply with CBC
- Including openings in exterior walls

Equal or Lower Hazard

- Existing exterior walls, including openings within those walls, considered code compliant



Section 1011.7

40 Applying the New Provisions of the CEBC

Exposure of Exterior Walls Hazard Category

| Relative Hazard | Occupancy Classification |
|--------------------|--------------------------|
| 1 (Highest Hazard) | H |
| 2 | F-1, M, S-1 |
| 3 | A, B, E, I, R |
| 4 (Lowest Hazard) | F-2, S-2 |


Table 1011.7

41 Applying the New Provisions of the CEBC

Opening Protectives – Openings in Exterior Walls

Section 1011.7.3

- Shall be protected per CBC Section 705.8 when there is with higher hazard
- With short fire separation distance, total opening areas \leq 50% of wall area on each story



42 Applying the New Provisions of the CEBC

Opening Protectives

Section 1011.7.3 - Exceptions

- Where CBC Table 705.8 allows openings > 50%, may match percentage of protected openings
- In Group R buildings, max. 3 stories and min. 3 feet from a lot line
- In buildings with NFPA 13 sprinkler system
- When an equal or lower hazard classification


43 Applying the New Provisions of the CEBC

CBC Table 705.8 – Max. Area of Exterior Wall Openings

| Fire Separation Distance (feet) | Degree of Opening Protection | Allowable Area |
|---------------------------------|---|----------------|
| 0 to less than 3 | Unprotected, Nonsprinklered (UP, NS) | Not Permitted |
| | Unprotected, Sprinklered (UP, S); Protected (P) | |
| 3 to less than 5 | Unprotected, Nonsprinklered (UP, NS) | Not Permitted |
| | Unprotected, Sprinklered (UP, S); Protected (P) | |
| 5 to less than 10 | Unprotected, Nonsprinklered (UP, NS) | 10% |
| | Unprotected, Sprinklered (UP, S); Protected (P) | 25% |
| 10 to less than 15 | Unprotected, Nonsprinklered (UP, NS) | 15% |
| | Unprotected, Sprinklered (UP, S); Protected (P) | 45% |
| 15 to less than 20 | Unprotected, Nonsprinklered (UP, NS) | 25% |
| | Unprotected, Sprinklered (UP, S); Protected (P) | 75% |
| 20 to less than 25 | Unprotected, Nonsprinklered (UP, NS) | 45% |
| | Unprotected, Sprinklered (UP, S); Protected (P) | No Limit |
| 25 to less than 30 | Unprotected, Nonsprinklered (UP, NS) | 70% |
| | Unprotected, Sprinklered (UP, S); Protected (P) | No Limit |

44

Enclosure of Shafts

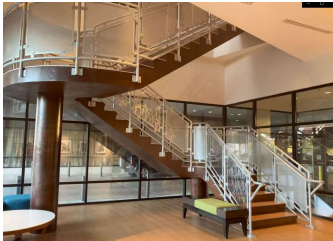


45

Enclosure of Vertical Shafts

Higher Hazard

- Vertical shafts designed to CBC Section 404 atrium requirements or CEBC Section 1011.8
- Interior stairways – enclosed with higher hazard, Section 1011.8.2
- Other shafts – enclosed with higher hazard, Section 1011.8.3



45

Section 1011.8

Applying the New Provisions of the CEBC

Means of Egress Hazard Category

| Relative Hazard | Occupancy Classification |
|--------------------|-----------------------------|
| 1 (Highest Hazard) | H (Not allowed) |
| 2 | I-2, I-3, I-4 (Not allowed) |
| 3 | A, E, M, R-1, R-2, R-4 |
| 4 | B, F-1, R-3, R-4, S-1 |
| 5 (Lowest Hazard) | F-2, S-2, U |

47

Work Area Method

Interior Stairways – Change of Occupancy

Section 1011.8.2 - Exceptions

- When connecting to a mezzanine or one other floor – no enclosure required
- Existing unenclosed stairways – no enclosure required if all are true:
 - Each story of the building is separated from other stories by min. 1-hour fire-resistance rated construction
 - All exit access corridors are sprinkler protected.
 - Openings between corridor and occupant spaces (transoms) must have a sprinkler head above each opening on the unit side
- Existing penetrations of stairway enclosures can remain if protected per CBC Section 714

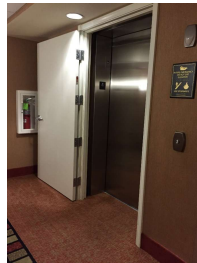
48

Applying the New Provisions of the CEBC

Other Vertical Shafts – Change of Occupancy

Section 1011.8.3

- Vertical shafts such as elevator hoistways, and utility shafts shall be enclosed per CBC
- An existing vertical opening connecting ≤ 5 stories, does not require enclosure if NFPA 13 sprinklers installed (doesn't apply to Group I)
- Existing 1-hour fire-resistance rated shaft enclosures are allowed to remain as is



Applying the New Provisions of the CEBC

Egress



Other Corridor Openings

- Sash, grille, transom or other opening in a corridor
- Seal with materials consistent with the corridor construction



Corridor Wall Openings

Section 804.6

- Existing doors shall not be constructed of hollow core wood or contain louvers
- Existing doors to dwelling units and sleeping units in Groups R-1 and R-2 must be min. 1 3/8-inch-thick solid wood core door or equivalent construction
- Glazing must be approved glazing or wired glass in metal frames
- Doors must be self closing
- Some exceptions



Applying the New Provisions of the CEBC

Applying the New Provisions of the CEBC


Dead ends

Section 804.7

- Cannot exceed 35 feet unless permitted by CBC

Exceptions:

- CBC allows greater length
- Existing dead-end corridor –
 - Max. 50 ft if building has automatic fire alarm system installed per CBC
 - Max. 70 ft if building has sprinkler system installed per CBC
- Newly constructed or extended dead end \leq 50 feet with sprinkler system per CBC




53 Applying the New Provisions of the CEBC

Means of Egress – Change of Occupancy

Section 1011.5

- Occupancy classifications grouped based on their relative risk and must comply with Table 1011.5
- Occupancies with hazardous materials and defend-in-place protocols are the greatest risk
- Meet or exceed the calculated occupant load (CBC) of the new occupancy



54 Applying the New Provisions of the CEBC

Means of Egress Hazard Category

| Relative Hazard | Occupancy Classification |
|--------------------|-----------------------------|
| 1 (Highest Hazard) | H (Not allowed) |
| 2 | I-2, I-3, I-4 (Not allowed) |
| 3 | A, E, M, R-1, R-2, R-4 |
| 4 | B, F-1, R-3, R-4, S-1 |
| 5 (Lowest Hazard) | F-2, S-2, U |

Table 1011.5
55 Applying the New Provisions of the CEBC

Means of Egress – Higher Hazard

- Comply with CBC Chapter 10 for the new occupancy

Exceptions

- Enclosure of Stairways is permitted to comply CEBC Sect. 903.1 (802.2.1)
- Existing Stairways, including guards and handrails – CEBC Chapter 9, can continue with code official approval
- New stairways slope and pitch, rise and tread, when restricted by existing construction, can remain as previously constructed
- Existing corridor walls of wood lath and plaster can remain or ½-inch gypsum wallboard added
- Existing corridor openings –Section 804.6
- Existing dead-end corridors –Section 804.7
- Operable windows – Section 1011.5.6

Section 1011.5.1
56 Applying the New Provisions of the CEBC

Height and Area – Change of Occupancy

Section 1011.6

- Must comply with CBC Chapter 5 (General Building Heights and Areas) for new occupancy



57

Applying the New Provisions of the CEBC

Heights and Areas Hazard Category

| Relative Hazard | Occupancy Classification |
|--------------------|---------------------------|
| 1 (Highest Hazard) | H |
| 2 | A-1 thru A-4, I, R-1, R-2 |
| 3 | E, M, S-1 |
| 4 (Lowest hazard) | A-5, B, F-2, S-2 |

Table 1011.6

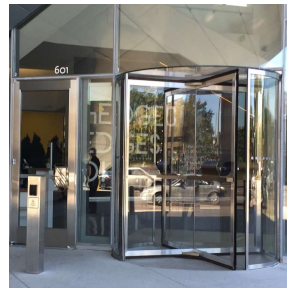
58

Applying the New Provisions of the CEBC

Number of Exits

Section 804.4

- # of Exits in every story with work areas per CBC Chapter 10
- Based on occupancy and occupant load of that story
- Fire escapes are allowed for means of egress when 2 or more exits are required



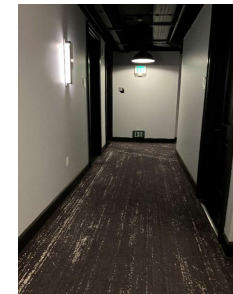
59

Applying the New Provisions of the CEBC

Egress Doorways

Section 804.5

- Requirements apply when two egress doors are required
- Two exits required when work areas include rooms or spaces with an occupant load > 50 people or where the travel distance > 75 ft



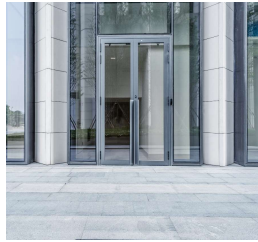
60

Applying the New Provisions of the CEBC

Door Closing

Section 804.5.3

- Doors located in work area and exit enclosure (exit passageway, exit ramp, or exit stairway) must be self-closing or automatic-closing by listed closing devices
- Except where not required by the CBC



61

Applying the New Provisions of the CEBC

Structural Requirements



62

© International Code Council, Inc.

Change of Occupancy

Section 1006

- Live Loads comply with CBC Section 1607 for new occupancy
- Structural elements with demand-capacity ratio for new occupancy increasing < 5% (gravity loads) are allowed to remain
- Structural elements with demand-capacity ratio for new occupancy increasing < 10% (lateral loads) are allowed to remain
- Higher Risk Category – comply with CBC snow, wind and seismic loads (CBC Sections 1608, 1609 and 1613)



Use full seismic forces

Section 1006

63

Applying the New Provisions of the CEBC

Anchorage for Concrete and Masonry Buildings

- Building located in SDC D and E
- Building has a structural system with concrete or reinforced masonry walls with a flexible roof diaphragm
- Installation of anchors at roof and floor lines required



Section 906.4
906.5

64

Applying the New Provisions of the CEBC

