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# **2018 International Existing Building Code (IEBC)**

## **Self-Certification Program**

**Rost Sapon**

**Structural Plans Engineer**

# 2018 IEBC

## Chapter 1 Amended

### Chapter 1 Administration –

- Section 101.1 – Title
- Section 101.2 – Scope
- Section 101.3 – Intent
  
- Section 101.4 through the end of chapter 1 deleted and amendment with reference to amended IBC sections.



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# Core Definitions

- The IEBC has far fewer definitions than the IBC.
- The definitions that do exist matter much more. We will go over many core definitions.
- The wording of the definitions is very important.
- Reading them one time may cause errors of application. Read them a few times.



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# Core Definitions

**ADDITION** – An increase in floor area, number of stories, or height of a building or structure

**ALTERATION** – Any construction or renovation to an existing structure other than a repair or addition

Note! A change of occupancy is also an alteration if any work is done.

**REPAIR** – The reconstruction, replacement, or renewal of any part of an existing building for the purpose of its maintenance or to correct damage



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# Core Definitions Continued

**CHANGE OF OCCUPANCY.** A change in the use of a building or portion of a building that results in any of the following:

1. A change of occupancy classification. (A, B, F, M)
2. A change from one group to another group within an occupancy classification (A-3, A-2)
3. Any change in use within a group for which there is a change in application of the requirements of this code.

Nursing home (I-2) changed to psychiatric care (I-2) is a change of occupancy because it changes the use for which there are additional or differing code requirements.



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# **Chapter 3**

## **Compliance Methods**

This chapter outlines three options for alterations, additions, or change of occupancy. You can use **ONLY** one method. No mixing methods.

### **1. Prescriptive compliance method**

Chapter 5

### **2. Work area compliance method**

Chapters 6 through 12

Depends on the definition of work area

### **3. Performance compliance method**

Chapter 13



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# Chapter 3

## General Provisions and Accessibility

This chapter also contains all the accessibility provisions that apply to all 3 methods of compliance.

CANNOT reduce existing accessibility and existing accessible features below the minimum required by the IBC for new buildings.

Accessible means of egress is not required in alterations of existing buildings.



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# Core Definitions

**PRIMARY FUNCTION** – A major activity for which the facility is intended

Examples: Customer services lobby in a bank, office area in a bank, dining area in a cafeteria, and office areas in office building.

Examples that are not: Mechanical rooms, supply storage rooms, employee lounges, and janitorial closets.

**TECHNICALLY INFEASIBLE** – ...existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame... site constraints prohibit modification or addition of elements, spaces or features...



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# Chapter 4

## Repairs

Repairs are separate from the 3 compliance methods.

Glazing in hazardous areas shall comply with the safety glazing requirements of the IBC or IRC.

Repairs shall maintain the level of fire protection provided.

Repairs shall maintain the level of protection for the means of egress.



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# Core Definition

**SUBSTANTIAL STRUCTURAL DAMAGE** – A condition where any of the following apply:

1. The vertical elements of the lateral-force-resisting system have suffered damage such that the lateral load carrying capacity of any story in any horizontal direction has been reduced by more than 33 percent from its pre-damaged condition.

2. The capacity of any vertical component carrying gravity load, or any group of such components, that has a tributary area more than 30 percent of the total area of the structure's floor(s) and roof(s) has been reduced more than 20 percent from its pre-damaged condition, and the remaining capacity with respect to dead, and live loads is less than 75 percent of that required by the IBC...



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# Chapter 5

## Prescriptive Compliance Method

This is the most conservative method.

Additions shall comply with the IBC.

- Existing building in combination with the addition shall not be less compliant with the IBC than before the addition.
- Structural gravity load increased on structural element by more than 5 percent shall be analyzed for the new loads.
- Existing gravity resisting structural element whose capacity is reduced shall be analyzed for the new loads.
- Existing lateral load resisting elements shall be analyzed for existing and new demand to capacity ratio.



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# Chapter 5

## Prescriptive Compliance Method

Alterations shall comply with the IBC except:

- Existing materials already in use and approved at the time of their erection may remain unless deemed unsafe by the building official.
- Replacement materials for repairs and alterations may be like existing materials if not deemed unsafe by the building official.
- Structural gravity load increased on structural element by more than 5 percent shall be analyzed for the new loads.
- Existing gravity resisting structural element whose capacity is reduced shall be analyzed for the new loads.
- Existing lateral load resisting elements shall be analyzed for existing and new demand / capacity ratio.



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# Chapter 5

## Prescriptive Compliance Method

Fire escapes:

- Existing fire escape can continue as a component of not more than 50% of the means of egress.
- New fire escape is limited on existing buildings.
- New fire escape not allowed on additions.

Windows and emergency escape windows:

- Glass and glazing shall comply with IBC Chapter 24.
- Provisions provided for replacement window control devices, and for emergency escape and rescue openings for R-2 and R-3.



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# Chapter 5

## Prescriptive Compliance Method

Change of occupancy:

- Provisions of the IBC required for the new occupancy in the portion of the building with the change.

Historic buildings:

- Provisions related to existing condition of building.
- Improvements required if deemed by the building official as a life safety hazard.
- All structural damage allowed to be restored to predamage condition.



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# Work Area Chapter 6 Classification of Work

Depends on the work area. The work area shall be clearly identified on the construction documents.

Provides various levels of work and types of work

- Alterations Level 1, Level 2, and Level 3
- Change of Occupancy
- Additions
- Historic Buildings



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# Core Definitions

**WORK AREA** – That portion or portions 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 and portions of the building where work not initially intended by the owner is specifically required by this code.



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# Work Area

## Three Levels of Alterations



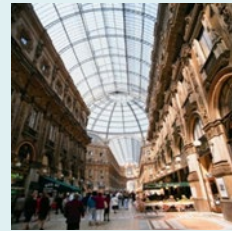
### Level 1 – Section 602 & Chapter 7

- Replace/remove equipment/fixtures
- Replace or cover wall/roof coverings
- Reroof permits



### Level 2 – Section 603 & Chapters 7-8

- Reconfigure space/systems
- Add/eliminate doors or windows
- Add equipment



### Level 3 - Section 604 & Chapters 7-8- 9

- Based on defined work area
- Applies where work area exceeds 50% of aggregate building area



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# Work Area Chapter 7

## Alterations – Level 1

Level 1 *alterations* include interior finishes, interior trim, and roof covering.

Special mention of emergency escape and rescue openings.

- If you replace a window you may need to consider this.

Mostly requires compliance with the IBC for the new finishes, trim, and new work. Like materials allowed if they don't create unsafe condition per 302.4 and

Structural gravity load 5 percent rule.



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# **Work Area Chapter 7 Alterations – Level 1**

Alteration shall maintain the level of fire protection provided.

Alteration shall maintain the level of protection for the means of egress.



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# Work Area Chapter 8

## Alterations – Level 2



Involves space reconfiguration that does not exceed 50% of the building area.

Requires compliance with level 1 provisions.

Structural lateral demand / capacity ratio 10 percent rule

All new construction elements, components, systems, and spaces shall comply with IBC requirements, with 6 exceptions...



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# Work Area Chapter 8 Alterations – Level 2



Requires existing openings between stories to be closed and rated, with 14 detailed exceptions...

Intricate and detailed means of egress requirements for alternatives to full IBC compliance



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# Work Area Chapter 9 Alterations – Level 3

Involves alterations that cover 50% or more of the aggregate area of the building.

Additional building features are triggered beyond the actual work area and other parts of the building where no alterations are planned.

Basic principle is that Level 3 alterations will comply with the IBC, but with specific alternative options.

Must comply with alteration Level 2 provisions.



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# Work Area Chapter 10

## Change of Occupancy

The requirements of Chapter 10 are in addition to the requirements of Chapters 7, 8, and 9 (incremental approach).

Sections 1002 – 1010

- Change of use by reconfiguring a space within the same occupancy classification where there is a change in application of the requirements of this code.
- Requires compliance with IBC chapter 4 when specific categories are created. Examples are atriums, stages, hazardous materials, I-2, and ambulatory care.



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# Work Area Chapter 10

## Change of Occupancy

Section 1011

– Change of occupancy classification.



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# Work Area

## Chapter 11 Additions

Additions are required to comply with current codes for new construction except as modified by this chapter.

The existing building can remain without any alteration provided the addition does not impact the existing building.

Example: Existing means of egress passes thru new addition and may require additional exit in existing building due to travel distance.



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# Work Area Chapter 12

## Historic Buildings

Do not forget the Phoenix amendments to the IEBC. Most deal with historic buildings.

Other considerations for a historical building include the structural condition of the building, its proposed use, its impact on life safety and how the intent of the code will be achieved.



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# Chapter 13

## Performance Compliance Method

Chapter 13 emphasizes 19 important safety parameters to be evaluated in determining the level of safety for an existing building.

Requires a structural analysis.



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# Performance Compliance

## 19 Safety Parameters

- Building Height
- Building Area
- Compartmentation
- Tenant and Dwelling Separations
- Corridor Walls
- Vertical Openings
- HVAC Systems
- Automatic Fire Detection
- Fire Alarm System
- Smoke Control
- Means of Egress
- Dead ends
- Max Exit Travel Distance
- Elevator Control
- Means of Egress Emergency Lighting
- Mixed Occupancies
- Automatic Sprinklers
- Standpipes
- Incidental Use



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# Performance Compliance Method Table 1301.7 Summary Sheet

The 19 safety parameters are evaluated and entered in the Summary Sheet

Three categories are totaled:

- Fire Safety
- Means of Egress
- General Safety

The scores are tallied in Table 1301.9 and if any of the 3 categories fail, the building doesn't comply, and adjustments shall be made until all 3 categories pass.



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# **Chapter 14**

## **Relocated or Moved Buildings**

Any structure that is moved to a different lot or a new location on the same lot falls within the scope of Chapter 14



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Questions?