Office of Education and Data Management
Fall 2018 Career Development Seminar

December 2018

2015 IEBC and Significant Changes

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Course Objective

The objective of this course is to provide the fire code official with a basic understanding of the 2015 International Existing Building Code (IEBC), its relationship to the Connecticut Fire Safety Code, and significant changes in the 2015 edition.

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Why does the fire marshal care about the IEBC?

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What is the overall concept regarding code compliance in existing buildings?

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Intent of the IEBC

To provide flexibility and permits alternative approaches …….

…….while safeguarding public health, safety, and welfare.

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What does the IEBC apply to?

- Repair
- Alteration
- Change of Occupancy
- Relocation

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Who determines when to use the IEBC?

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CFSC Abatement Orders

- Where conflicts occur, the CFSC abatement takes precedence
  - Except
    - Fire protection systems must comply with Chapter 9
    - Electrical work must comply with the NEC
    - Structural, plumbing and mechanical must conform to the respective mechanical codes.

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Important Code Application

- Means of Egress
  - Must comply with Part IV of the CFSC
  - If change of use
    - Must comply with Part IV requirements for means of egress for the proposed use.

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What jurisdiction does the fire code official have over the IEBC?

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Progress Check

- *What does the IEBC apply to?*
- *When can the IEBC be used?*
- *Can the IEBC be used to address cited fire code violations?*
- *What jurisdiction does the fire code official have in the IEBC?*
- *Does the IEBC take precedence over the entire CFSC?*

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Important Takeaway

Compliance with the IEBC is an acceptable alternative to the CFSC EXCEPT ……

…….that the means of egress must always comply with the Part IV requirements of the CFSC.

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Important Definitions

- Existing Building
  - Connecticut amended the definition to include all buildings built prior to 10/1/1970, regardless of legal permit or C/O
- Technically Infeasible
  - Alteration can not be accomplished due to structural or other considerations.
- Work Area
  - the area of all reconfigured spaces where work is expected to occur within the scope of a project.

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IEBC Core Methods

- 3 Options available
  - Prescriptive Method
  - Work Area Method
  - Performance Method

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What do these methods have in common?

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Remember the Means of Egress Rule!

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Prescriptive Requirements (Chapter 4)

- Allows 3 other compliance options:

1. Repairs and alterations can comply with the requirements of the code at the time of construction.
2. Repairs, alterations, additions and changes of use can comply with the proportional approach of Chapters 5-13.
3. Repairs, alterations, additions and changes of use can comply with performance design per Ch. 14.

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Prescriptive Requirements

- Materials
  - Existing Materials (401.1)
  - New and Replacement Materials (401.2)
  - Dangerous Conditions (401.3)

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Prescriptive Requirements

- Additions (402)
  - Comply with the Building Code for new construction
  - R and I-1 Additions: Smoke alarm
- Alterations (403)
  - Comply with the requirements of the code for new construction
  - Mostly structural loading provisions
  - References to the Fire Code

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Prescriptive Requirements

- Repairs (404)
  - Establishes thresholds based upon extent of damage
    - **Substantial Structural Damage to vertical elements**
    - **Substantial Structural Damage to Gravity Load carrying components**
    - **Less than Substantial Structural Damage**

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Prescriptive Requirements

- Fire Escapes (405)
  - Existing Buildings Only
  - New Fire Escapes on Existing Buildings
  - Limited to 50% of the egress capacity or number.
  - Dimensions
    - 22 inches wide
    - 8 inch tread
    - 8 inch tread
  - ¾ hour opening protectives

Part IV CFSC Applies

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Prescriptive Requirements

- Replacement Windows (406)
  - Emergency Escape and Rescue Openings
    - Largest standard size window that will fit into the existing frame or rough opening.
    - Replacement may of the same operating style or one that provides equal or greater opening area.
    - Replacement window is not part of a change of occupancy

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Prescriptive Requirements

- Change of Occupancy (407)
  - Comply with provisions of the Building & Fire Code for the new use.
  - Flexibility is provided where the new use is less hazardous than the previous use.
  - Change is the character of the use.
  - Certificate of Occupancy

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Prescriptive Requirements

- Historic Buildings (408)
  - Must comply with code when the Building Official determines the building to be a life safety hazard.

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Prescriptive Requirements

What does this mean for to the Fire Marshal?

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Classification of Work (Chapter 5)

- Provides overview of process for work in existing buildings:
  - Repair
  - Alterations
  - Restoration
- Provides pointers to Chapters 6-13 based upon work classification.

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Basic Premise

No repairs or alterations are permitted that will make the building less safe.

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Repairs (Chapter 6)

- REPAIR. The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.
- Shall not make the building less conforming
- Materials: Similar to the requirements in Prescriptive Requirements of Chapter 4.

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Repairs

- Fire Protection (603)
  - Maintain the level of protection provided
- Means of Egress (604)
  - Maintain the level of protection provided
- Accessibility
  - Maintain the level of accessibility provided
- Structural
  - Extent of repairs contingent upon elements damaged

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Repairs

- Mechanical Systems
  - Electrical
  - HVAC
  - Plumbing
- Systems may be repaired with like materials that do not make existing systems less safe.

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Level 1 Alterations (Chapter 7)

- Replacement or covering of existing materials
- Replacement of equipment or fixtures.
- Does not include space reconfiguration

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Level 1 Alterations

- Interior Finishes (702): Comply with Chapter 8 of Building and Fire Code.
- Materials & Methods (702.6): NEW must comply with the appropriate code (ie: IBC, IMC, IPC)
- Fuel Gases (702.6.1: Must comply with NFPA 54 or 58 (CT Amendment)
- Fire Protection (703): Maintain the level
- Means of Egress (704): See Section 101.10 (CT)

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Level 1 Alterations

- Accessibility (705): Any building constructed or altered to be accessible shall be maintained accessible during occupancy.
  - FM Concerns?

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Progress Check

- What do Level I Alterations include?
- True or False: Replacement interior finishes need only comply with the requirements that were in place when the building was built.
- Are the means of egress in an existing building undergoing a Level I Alteration required to be upgraded?
- What should the Fire Marshal expect for permit documents in a Level 1 Alteration?

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Level 2 Alterations (Chapter 8)

- Reconfiguration of space
- Installation of additional equipment
- Addition or elimination of doors and windows
- Less than 50% of floor

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Level 2 Alterations

- Basic Concepts
  - All new work shall comply with the building and fire codes (801.3).
  - Special Use and Occupancy Provisions of Chapter 4 of the Building Code apply (802)
  - The means of egress must comply with Part IV of the CFSC (110.10)
  - Many of the requirements of Chapter 8 apply only to the work area

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Level 2 Alterations

There are differences between the IEBC requirements for Level 2 and those of the CFSC. The Fire Marshal must be aware and keep good notes in the file.

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Level 2 Alterations

- Existing Vertical Openings (803)
  - General Rule: 1 hour unless the opening is not required to be enclosed by the Building or Fire Codes.
  - Other than stairs: Blocked at the floor and ceiling of work area by 2" of solid wood or equivalent.
  - Vertical openings complying with the what Fire Marshals recognize as the "mini atrium" concept of Part IV of the CFSC.

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Level 2 Alterations

- Vertical Opening Provisions based on Occupancy
  - General Rule: 3 stories or less – 30 minutes
  - Group A: Max 3 stories – 30 minutes
  - Group B: Non-sprinkler protected, greater than 3,000 s.f.
  - Group E: Not required when not exceeding 3 stories with sprinklers.
  - Group F: Not required when 3 stories or less or the building is sprinkler protected.
  - Group H: Max 3 stories where each level has 2 exits

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Level 2 Alterations

- Group M: 2-3 stories – 30 minutes not required in sprinkler protected buildings.
- Group R-1: Max 3 stories- not requirement under certain conditions including:
  - Sprinkler protected buildings
  - Less than 25 dwelling units where every sleeping room has direct access to fire escape or other approved second exit
- Group R-2: Max 3 stories in buildings meeting the single exit exception.
- Group S: Exception for 2 stories or 3 stories with sprinklers.

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Do these vertical opening provisions apply to vertical openings in the means of egress?

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Level 2 Alterations

- Supplemental shafts and floor openings (803.2.2)
  - Where work area exceeds 50% of floor, applies to all openings on floor.
- Supplemental Stairs (803.2.3)
  - Where work area exceeds 50% of floor, applies to all openings on floor.
- Smoke Compartments (803.3)
  - I-2 occupancies if work area is on floor with more than 30 patients-at least 2 compartments.

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Level 2 Alterations

- Interior Finish (803.4)
  - In work area: must comply with Building and Fire Code
  - Existing, non-complying finishes may be treated.
  - Where work area exceeds 50% of floor, also applies to corridors and stair enclosures
- Guards (803.5)
  - Required where elevation change is more than 30”

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Level 2 Alterations

- Fire Protection (804)
  - Corridor ratings: Exit access corridors comply with Part IV CFSC.

Remember that the means of egress provision is found in Section 110.10 and applies to the entire document.

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Level 2 Alterations

- Sprinkler Protection Requirements (804.2)
  - General Rule: Where required by the Building Code, sprinkler protection is required in the work area of a Level 2 Alteration.
  - TAKE CARE: Some sprinkler requirements only apply in there is a sufficient water supply:
  - IE: Windowless Stories (804.2.3): Work area shall be sprinkler protected in accordance with Building Code where there is sufficient municipal water supply.

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Level 2 Alterations

- Standpipes (804.3)
  - Required where work area contains shared exit access corridors are located more than 50' above or below the lowest level of FD access.
  - Fire pumps are not required for a manual standpipe system capable of accepting FD delivery of 250 gpm @ 65 psi

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Level 2 Alterations

- Fire Alarm and Detection (804.4) required:
  - Group E
  - Group I-1
  - Group I-2
  - Group I-3
  - Group R-1
  - Group R-2
  - Group R-4
- The intent of this section is to require fire alarms throughout the building where required by CFSC

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Level 2 Alterations

- Means of Egress (805)

(Add) **101.10 Means of egress.** In addition to the requirements of this code, means of egress in existing buildings shall meet the requirements of the provisions of Part IV of the Connecticut State Fire Safety Code for the proposed occupancy.

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Progress Check

- As a general rule, when is sprinkler protection required in a Level 2 Work Area?
- What code applies to new interior finishes being installed in a Level 2 work area?
- What code determines the required rating of an exit stair in a Level 2 Alteration?

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Level 3 Alterations (Chapter 9)

- Greater than 50% of the floor area,
- Space re-configuration
- Improves safety in certain building features beyond the work area.
- Must also comply with Chapters 7 and 8.

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Level 3 Alterations

- High-Rise (902.1)
  - Smoke & Heat devices per IMC for shut down of recirculating HVAC where capacity exceeds 15,000 s.f.
  - Elevators (902.1.2) At least one elevator must be provided with emergency operation.
  - Boiler & Furnace Rooms (902.2) in I-1, I-2, I-4, R-1, R-2 shall be enclosed in 1-hour construction. Exceptions apply.
    - Less that 400,000 BTU input rating
    - Steam boilers less than 15 psi
    - Hot water boilers less than170 psig
    - Sprinkler protected rooms.

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Level 3 Alterations

- Fire Protection (904):
  - Similar to Level 2 except:
    - Rubbish & Linen Chutes per the Building Code
    - Upholstered Furniture or Mattresses
      - F-1 exceeding 2,500 s.f.
      - M exceeding 5,000 s.f.

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Level 3 Alterations

- Fire Alarm & Detection (904.2): As required by the Building Code if the project were new construction.
- Manual Fire Alarms are required throughout the work area where they are required by Building Code.
- Automatic Fire Detection: Required throughout the work area where required by the Building Code.

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Level 3 Alterations

Means of Egress per Part IV of the CFSC

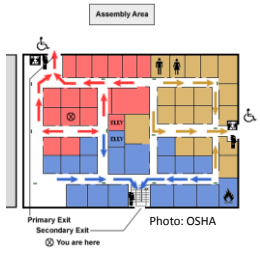

Photo: OSHA

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Change of Occupancy (Chapter 10)

CHANGE OF OCCUPANCY. *A change in the use of the building or a portion of a building. A change of occupancy shall include any change of occupancy classification, any change from one group to another group within an occupancy classification or any change in use within a group for a specific occupancy classification.*

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Change of Occupancy

- General Provisions (1001):
  - Certificate of Occupancy Required.
  - Change of use with no Occupancy Change must comply with 1002 – 1011
  - Change of occupancy classification or group must comply with Sections 1002 – 1012
  - Partial Occupancy Change Section 1012 applies.

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Change of Occupancy

- Special Use and Occupancy (1002): Compliance with Chapter 4 of the Building Code required for:
  - Covered and Open Malls
  - Atriums
  - Motor Vehicle related occupancies
  - Aircraft related occupancies
  - Projection Rooms
  - Stages and Platforms
  - Special Amusements
  - Incidental Use
  - Hazardous Materials
  - Ambulatory Care
  - Group I-2

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Change of Occupancy

- Building Elements (1003: Refer to Section 1012
- Fire Protection (1004): Refer to Section 1012
- Means of Egress (1005): Refer to Part IV CFSC
- Accessibility (1006): Refer to Section 1012.8
- Structural (1007): Refer to Building Code
- Electrical (1008) Refer to NEC when changed to special occupancies.
  - Unsafe Electrical Conditions.

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Change of Occupancy

- Mechanical Systems (1009): Refer to IMC
- Plumbing Systems (1010): Refer to IPC

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Change of Occupancy Classification (Section 1012)

- Comply with provisions for Level 3 Alterations
- Fire protection requirements of the Building Code (Chapter 9) apply to throughout the building where there is no separation.
- Fire protection requirements only apply to the work area where separated occupancy concept of the Building Code is used

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Caution

Other requirements of the Building Code make require the installation of sprinkler protection

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Change of Occupancy

- Fire Alarm and Detection (1012.2.2)
- Interior Finishes (1012.3)
- Means of Egress (110.10)

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Change of Occupancy

- Concept
  - Change of use to a higher hazard
  - Places additional requirements

TABLE 1012.5
HEIGHTS AND AREAS HAZARD CATEGORIES

RELATIVE HAZARD	OCCUPANCY CLASSIFICATIONS
1 (Highest Hazard)	H
2	A-1, A-2, A-3, A-4, I, R-1, R-2, R-4
3	E, F-1, S-1, M
4 (Lowest Hazard)	B, F-2, S-2, A-5, R-3, U

❖ Table 1012.5 groups the relative hazards based on allowable heights and areas given by the IBC.

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Performance Compliance Methods
(Chapter 14)

- System of evaluating proposed work
  - Numerical scoring system analyzing:
    - Fire Safety
    - Means of Egress
    - General Safety
  - Mandatory Safety Scores

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Evaluated Parameters

- Building Height
- Building Area
- Compartmentation
- Tenant Separation
- Corridor Walls
- Vertical Openings
- HVAC
- Fire Detection
- Fire Alarm System
- Smoke Control
- Means of Egress
- Dead-Ends
- Maximum Travel
- Elevator Control
- Emergency Lighting
- Mixed Occupancies
- Sprinklers
- Standpipes
- Incidental Uses
- Smoke Compartmentation
- Patient ability, ratio

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TABLE 1401.6.6(1)
VERTICAL OPENING PROTECTION VALUE

PROTECTION	VALUE
None (unprotected opening)	-2 times number of floors connected
Less than 1 hour	-1 times number of floors connected
1 to less than 2 hours	1
2 hours or more	2

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Required Actions

- Fully investigate the building using on-site inspections and research of available construction documents
- Evaluate the building in accordance with Chapter 14
- Perform required structural analysis
- Determine accessibility compliance
- Submit evaluation report with any proposed compliance alternatives.

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What are the Fire Marshal's responsibility with Performance Compliance Methods?

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Summary

- IEBC is a method of alternative compliance with the CFSC.
- Fire Marshal must work closely with the Building Official during the review process.
- General Rule: Means of egress must comply with Part IV CFSC.
- The Fire Marshal must keep a good record of the project for future inspections.

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Questions?

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Use of OEDM Training Materials

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