

# 2018 Code Change Training Virginia Existing Building Code

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Building Code Academy

Department of Housing  
and Community Development



# Agenda

- Legislative Intent of the VEBC
- Development History Supporting 2018 Changes
- 6 Major Revisions of the 2018 VEBC
- Detailed Changes
- Consider the whole module as VA changes



THE



WAY

## Purpose

The General Assembly further declares that (i) there is an urgent need to improve the existing condition of many of the Commonwealth's stock of commercial properties, particularly in older cities; (ii) there are large numbers of older commercial buildings in the Commonwealth, both occupied and vacant, that are in urgent need of rehabilitation and that must be rehabilitated if the citizens of the Commonwealth are to be provided with decent, sound and sanitary work spaces; and (iii) the application of the existing building code to such rehabilitation has sometimes led to the imposition of costly and time-consuming requirements that result in a significant reduction in the amount of rehabilitation activity taking place.



# Rehab Code in VA



1973 BOCA



No  
rehabilitation code



Code official  
reluctance



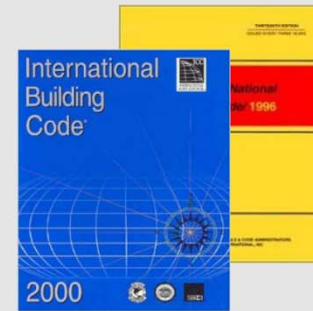
1997  
NJ Rehabilitation  
Code created



Early 2000's  
VA General  
Assembly action

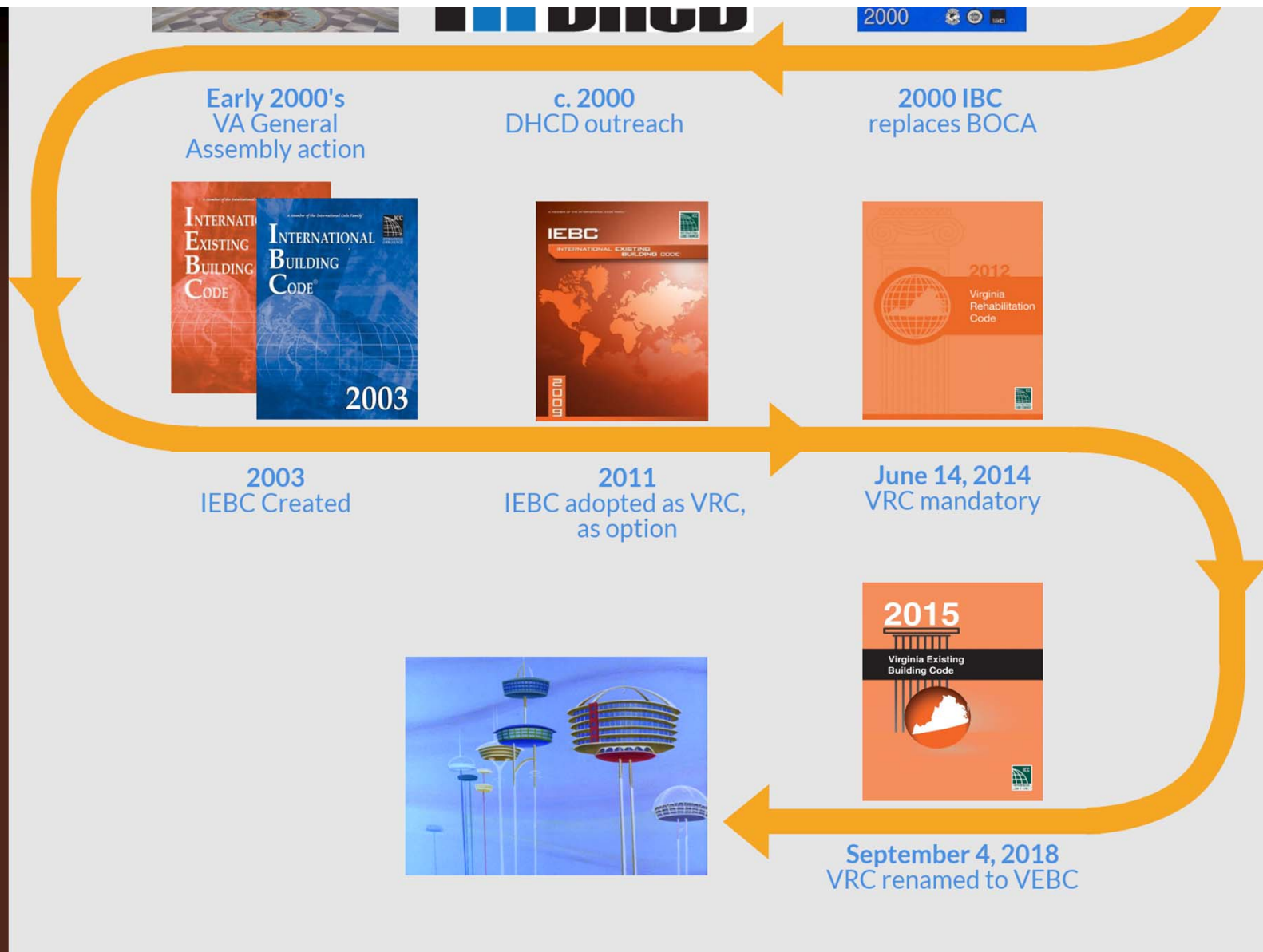


c. 2000  
DHCD outreach



2000 IBC  
replaces BOCA





# VEBC Legislative Intent

1993 and 1996 USBC provisions for change of occupancy, repair, alteration and renovation:

- What was used prior to the legislation
- These are the provisions that caused the perception of
  - Too costly
  - Too time consuming



# VEBC Legislative Intent

1993 and 1996 USBC provisions for C of O,  
Key Points:

- Change of occupancy requirements vague and subject to wide non-uniform interpretation

# VEBC Legislative Intent

1993 and 1996 USBC provisions for alteration,  
Key Points:

- The intended altered element was subject of current code requirements
- Portions of the structure not altered do not need to comply with current code
- Replacements may be like for like

# VEBC Legislative Intent

## 1993 and 1996 USBC, Key Points:

- NO alteration driven retrofit requirements for parts of the building not altered or affected
- Change of occupancy requires compliance with current code but the extent is not specified

## VEBC Legislative Intent

- 36-99.01 A for residential buildings passes in March of 2000
- 36-99.01 B for commercial buildings passes in April of 2002



# VEBC Legislative Intent

36-99.01 C

- Directs DHCD to amend the USBC to reduce the cost and time-consuming requirements

2003 USBC effective 11-16-05 adopts the 2003 ICC IEBC to accomplish this

- Does it?

# VEBC Legislative Intent

Prior USBC did not provide guidance or exceptions to full compliance for change of occupancy

- IEBC does
  - Less costly
  - Less time consuming
  - Less ambiguity
  - Consistent with legislative intent

# VEBC Legislative Intent

Prior USBC did not require retrofit or building upgrades to portions of the building not altered

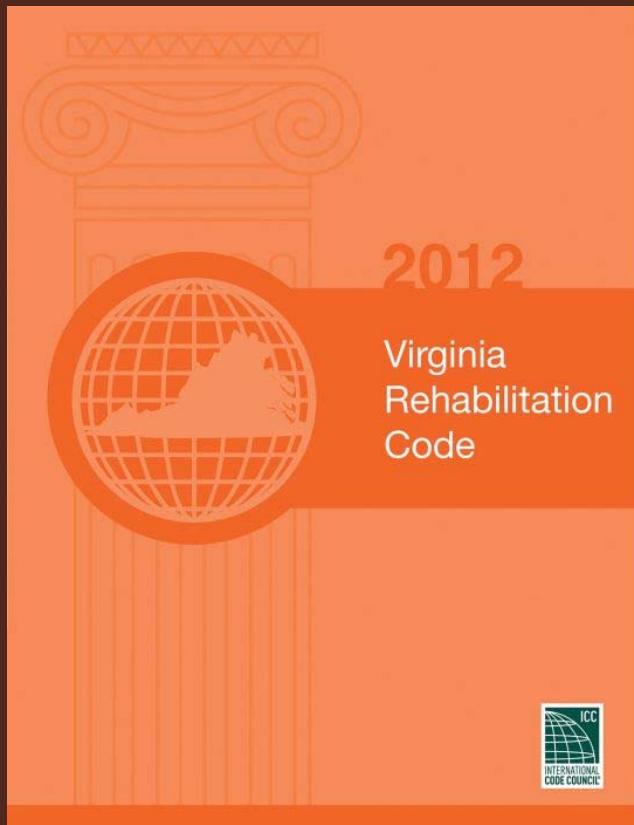
- IEBC does
  - More costly
  - More time consuming
  - Not consistent with legislative intent

# VEBC Legislative Intent

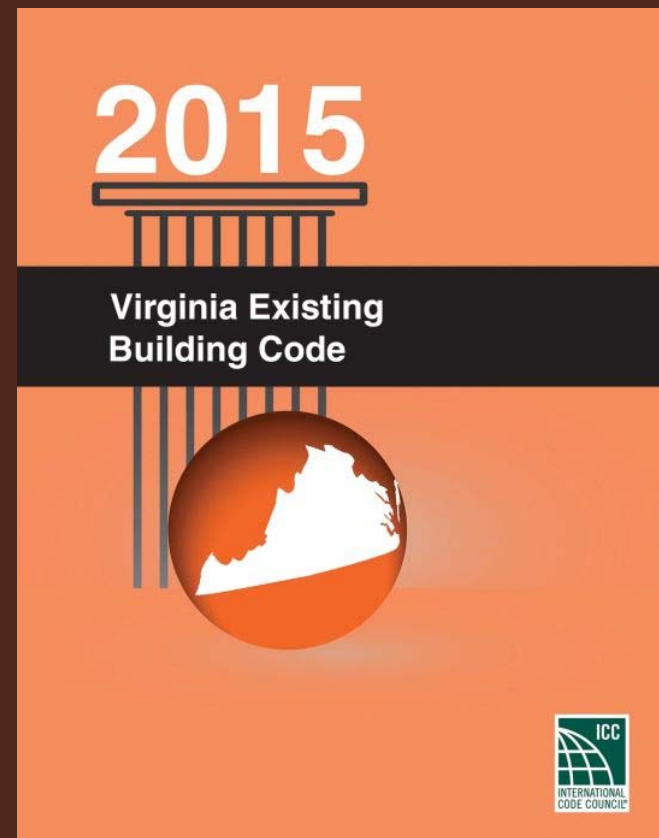
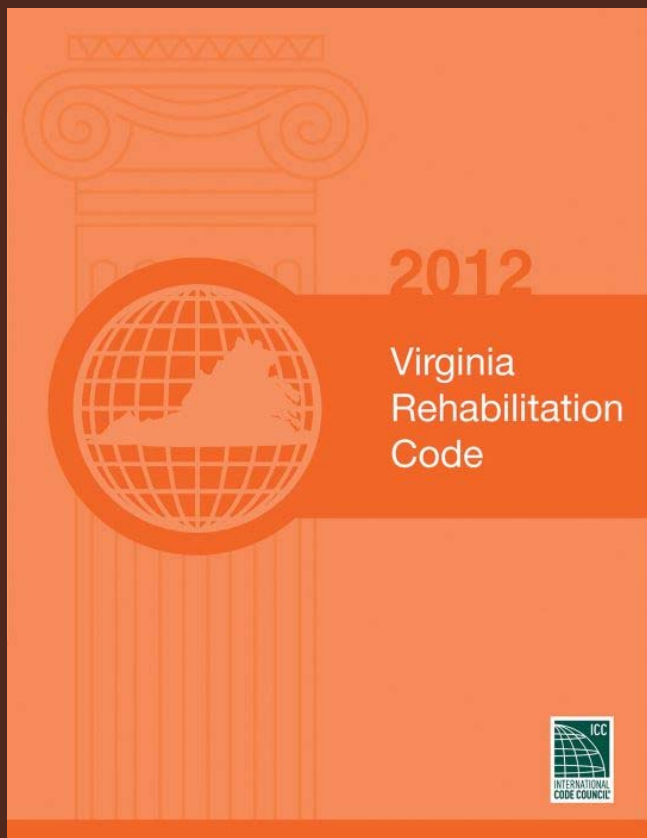
By removing the work area/alteration driven retrofit requirements

- VEBC is
  - Less costly
  - Less time consuming
  - Consistent with legislative intent





- 3 compliance methods
  - 3 different ways to address the same thing
- Work area
  - Reconfigured spaces
- Supplemental requirements
  - Work Area > 50% floor
- Level 3 alterations
  - Work Area > 50% building
- Change of occupancy
  - Complicated!
- Accessibility
  - 8 chapters, 16 sections







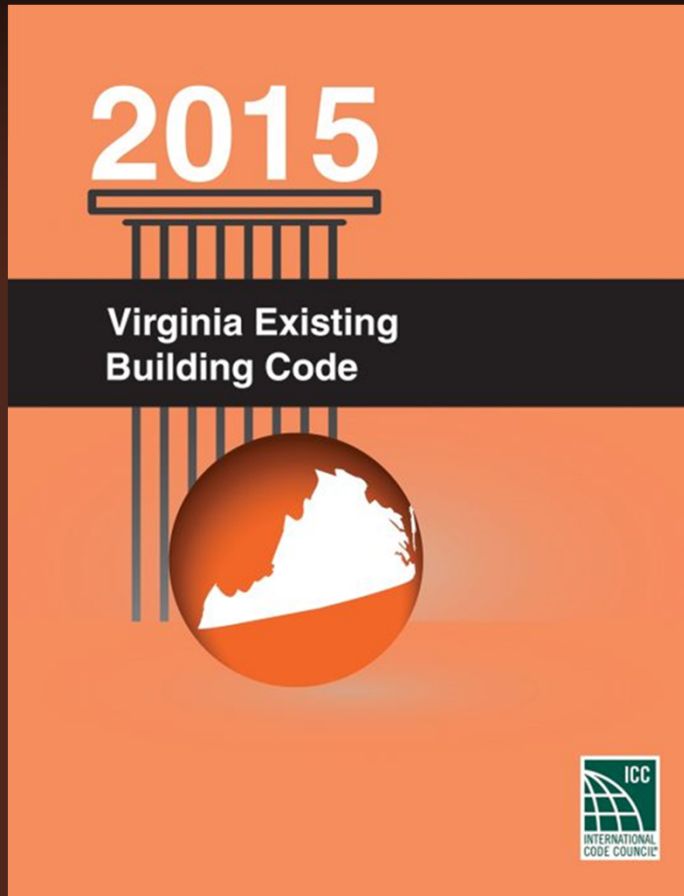




3



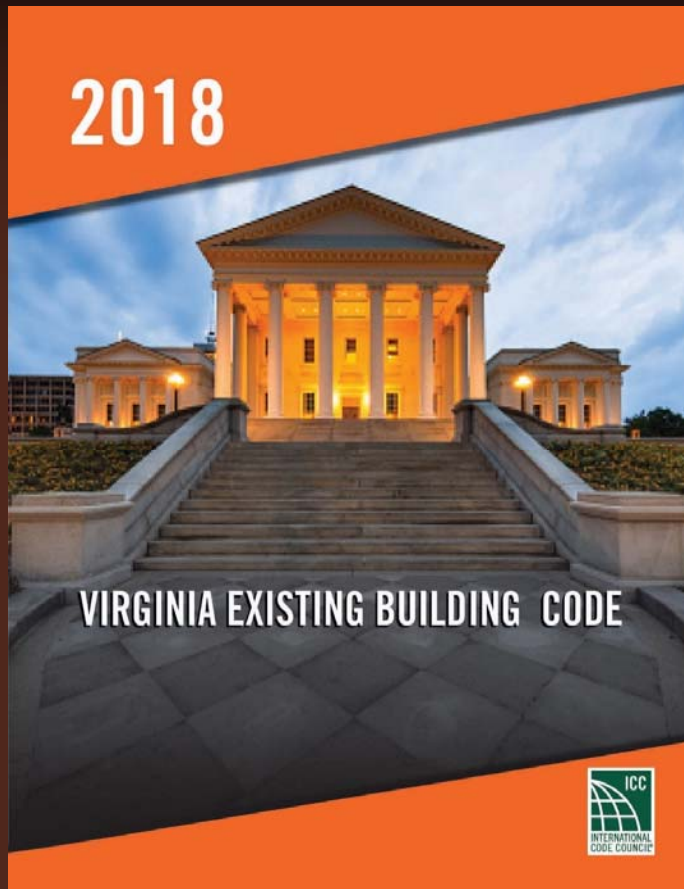




Easier to understand  
Easier to apply  
Easier to interpret  
Easier to review  
Easier to enforce







Easier to understand  
Easier to apply  
Easier to interpret  
Easier to review  
Easier to enforce





# 6 Major Conceptual Revisions for 2018



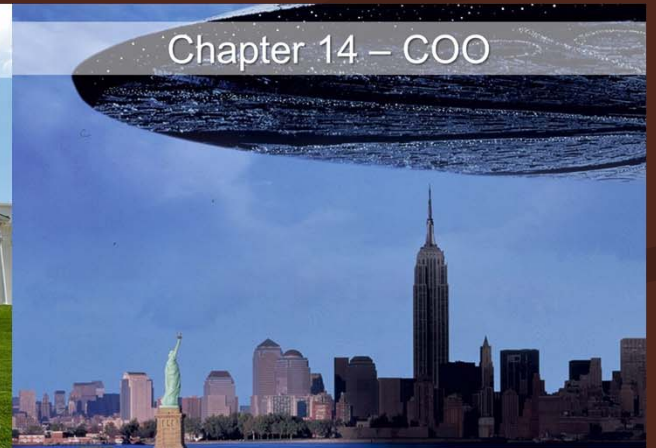
Level 3 Alterations



Level 2 Alterations



Historic buildings



Chapter 14 – COO









## Supplemental Requirements

2

Apply when the area exceeds 50% of the floor area of the room

- Lift enclosures
- Floor opening enclosures
- Stairways
- Interior niches
- Sprinkler system
- Fire alarm system
- Door swings, door closing device hardware
- Corridor openings
- Signs of egress lighting
- Exit doors

## Level 3 Alterations

3

Apply where the work area exceeds 50 percent of the building area. Level 3 alterations shall comply with the applicable provisions of Sections 602, 603, and 604.

## Level 2 Alterations

4







12 pages



3 pages

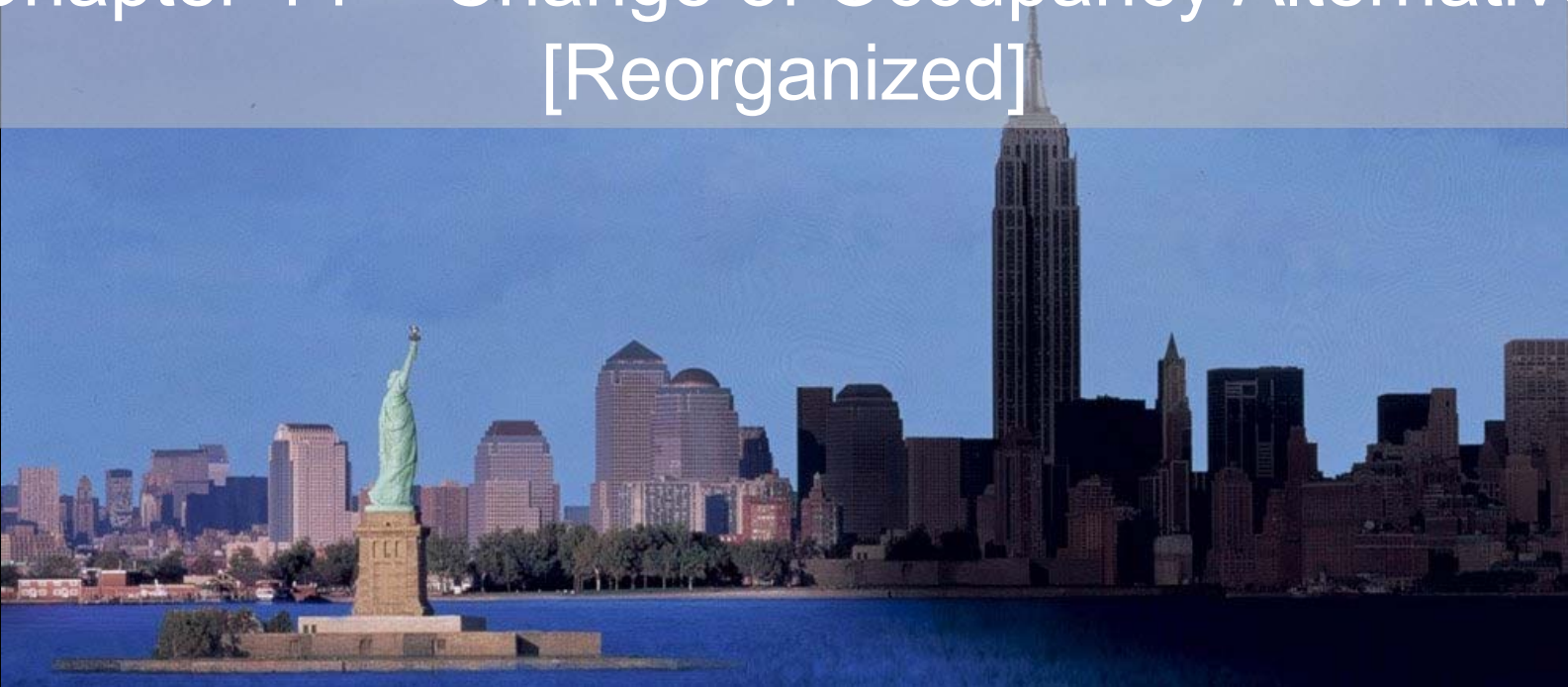
Historic buildings

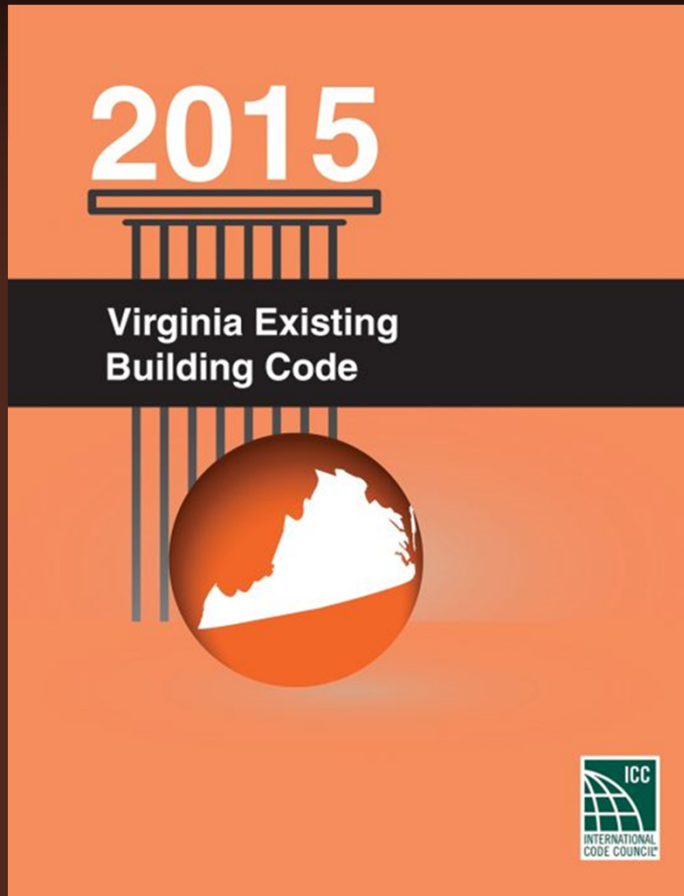
5

SIMPLIFIED



# Chapter 14 – Change of Occupancy Alternative [Reorganized]





Easier to understand  
Easier to apply  
Easier to interpret  
Easier to review  
Easier to enforce



Q&A





# VCC and VEBC - Throughout

- Deleted references to existing buildings in the VCC and relocated them to the VEBC



# Chapter 1 - Administration



## 102.2.3 Additions (new)

- Provides guidance regarding a building connected to another building via fire wall
- Creates separate building, not addition
- Work on one building cannot take the other out of compliance with the code under which it was built



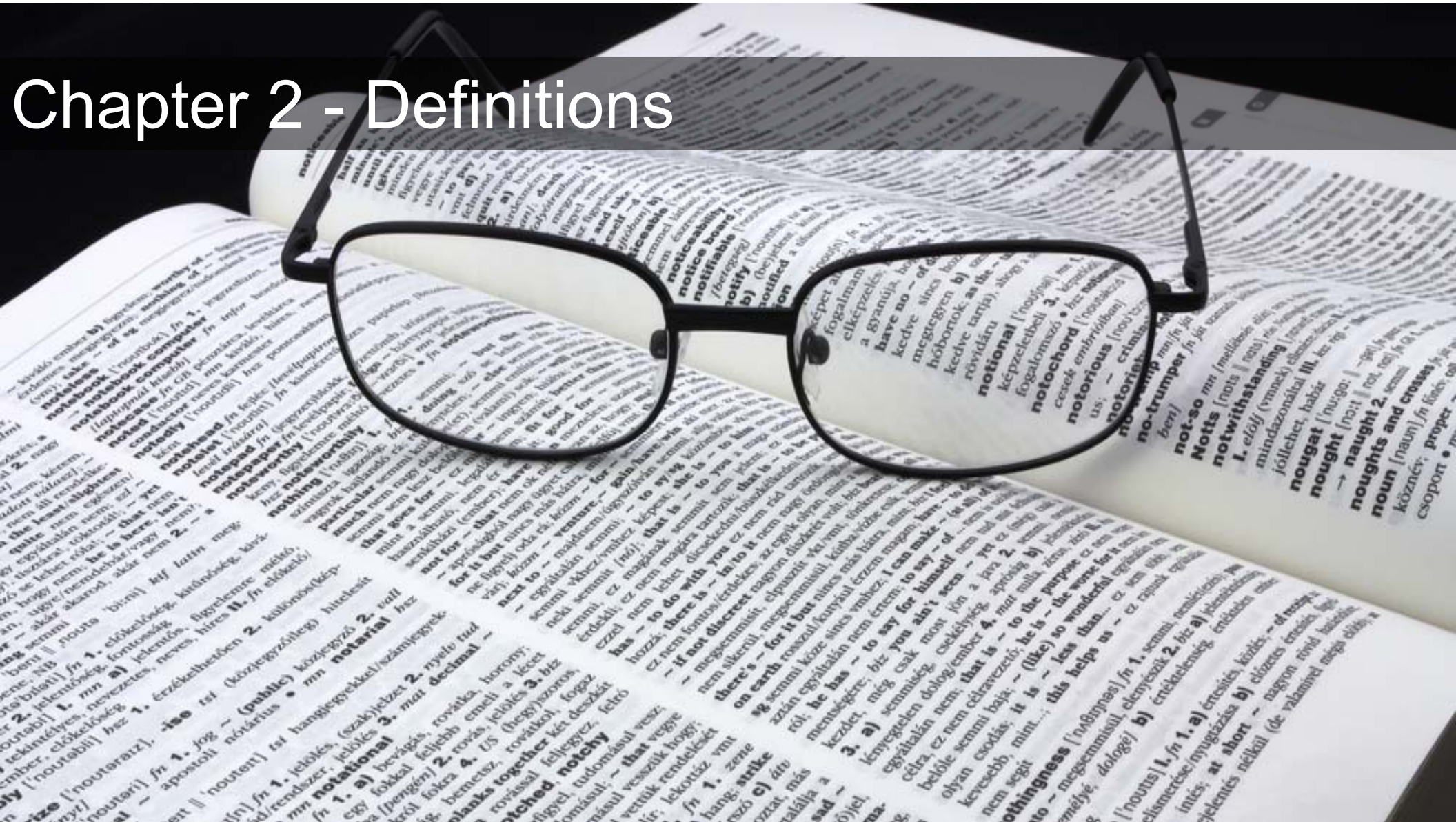
# 103.9 Construction Documents

- Level 3 alterations removed
- Clarifies alteration level is to be 'classified' rather than 'identified'





# Chapter 2 - Definitions





# 202 Substantial Improvement

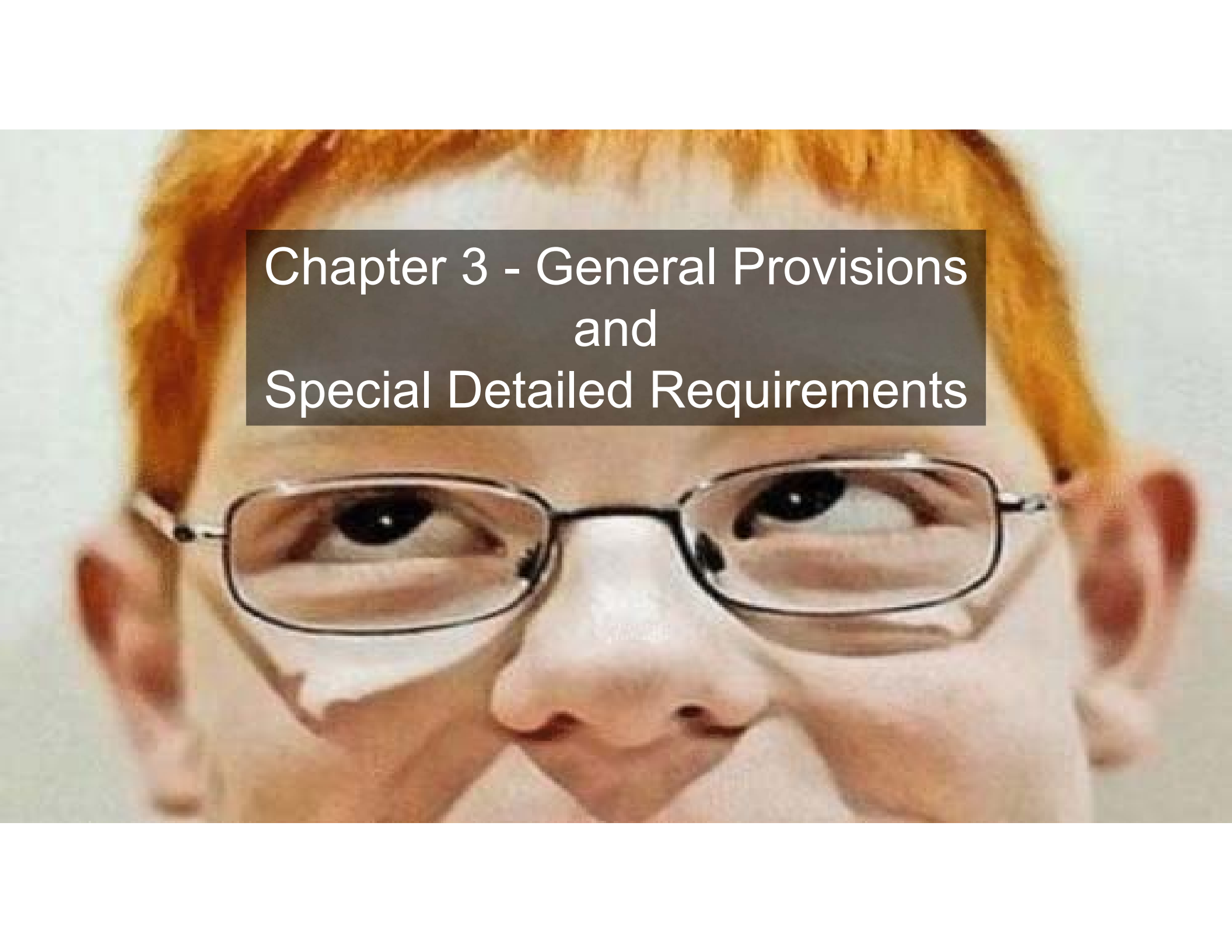
- State amendments removed
- Definition now matches IBC and FEMA



## 202 Work Area

- Deleted without substitution
- Concept eliminated from VEBC



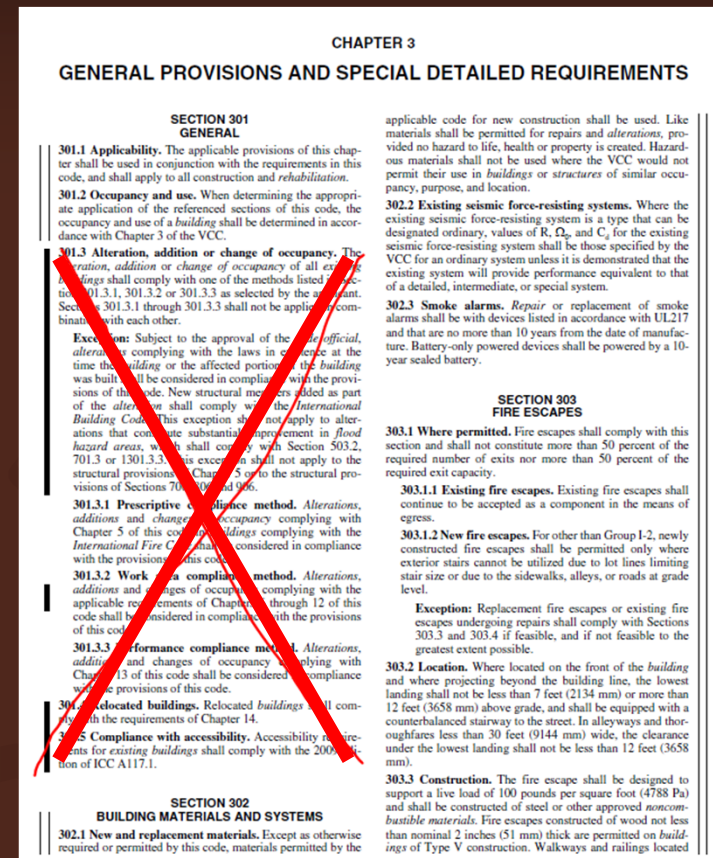


## Chapter 3 - General Provisions and Special Detailed Requirements



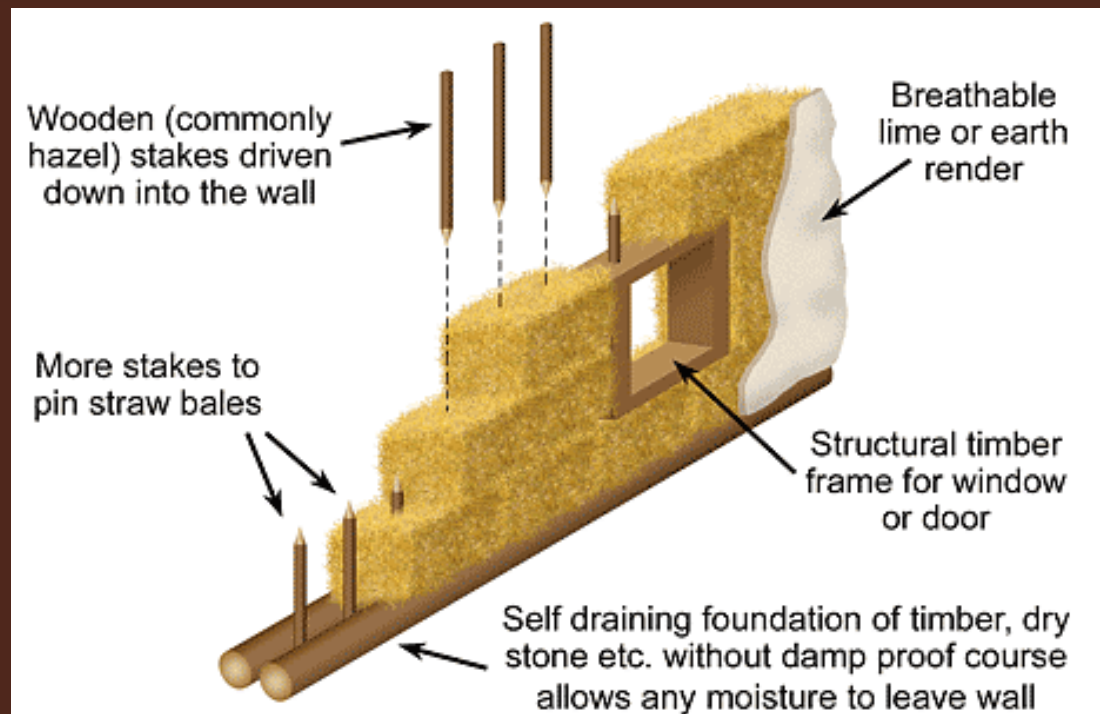
# Note: 2018 VEBC 1st Printing contains deleted sections 301.3 – 301.5

- Sections are not applicable and should be struck out



# (2015 VEBC) 302.1 Existing Materials

- Deleted as retrofit



## 302.3 Smoke Alarms (New)

- new section addresses low-maintenance and low-voltage smoke alarms



# **304.1 Replacement Glass**

## **304.3 Replacement Window EERO**

- Sections simplified and clarified
- Replacement glass to meet VCC
- Replacement glass for R-5 shall comply with R308 or VCC Ch. 24, per VEBC 102.2.2 and VA law

# 306 Higher Education Laboratories

## 306.1.4 Restricted Materials in Storage and Use



- 306 Renamed
- 306.1.4 incorporates existing 2018 IBC section and VA amendments for existing buildings

# ~~307~~ 602.3.2.1.1 and 602.3.2.1.2 Reroofing

- Provisions deleted from Chapter 3 and relocated to Level 1 Alterations







## Chapter 4 - Accessibility

## 402.1 Change of Occupancy

- COO no longer triggers accessibility upgrades by itself
- Such upgrades are triggered by alterations; same as ADA
- 402.2 Partial Change of Occupancy and 402.3 Complete Change of Occupancy deleted





## 404.3 Alterations Affecting an Area Containing a Primary Function

- Language revised to align with ADA standards
- “...contains the area of primary function...” changed to “...affects the usability of...”





# **Chapter 5 – Repairs**

## **No significant changes**



Q&A





# Skill Check 1







## Chapter 6 – Alterations



## 601.2 Levels of Alterations

- Section reformatted to reflect deletion of work areas
- Level 3 alterations deleted as retrofits



## 601.2.1 Level 1 Alterations

- Clarifies removal of materials, elements or fixtures without replacement is Level 1 alteration



## 601.2.2 Level 2 Alterations

- Clarifies installation of materials, elements or fixtures is Level 2 alteration.
- Section revised to keep original scope without work areas





## 601.2.3 et al. Level 3 Alterations

- Deleted as retrofits







# Energy conservation

- Opaque walls
- Ceilings and vented attics
- Fenestration
- Roof replacement
- Lighting
- Ducts

## 601.4 Energy Conservation

- Alterations to conform to VECC for new construction
- Only the alterations themselves are required to conform to applicable requirements

## 601.4.1 Opaque Walls; 601.4.2 Floors; 601.4.3 Ceilings and Vented Attics

- Adds insulation requirements for opaque walls, floors, and ceilings when part of the thermal envelope
- Exceptions when less than 60 sqft of cavity is exposed



## 601.4.4 Fenestration; 601.4.4.1 Converting Fenestration Unit to Opaque Wall

- Provides energy requirements for replacement fenestration, per applicable VECC table
- Fenestration converted to opaque wall to meet requirements of 601.4.1 Opaque Walls







## 601.4.5 Roof Replacement

- Roof replacement shall conform to VECC when meeting the following conditions:
  - Replacement area is 75% of roof area or 30,000 sqft, whichever is less
  - Assembly is part of thermal envelope
  - Roof assembly contains insulation entirely above deck

## 601.4.6 Lighting

- Altered lighting to comply with VECC C405 or R404, as applicable



## 601.4.7 Ducts

- Extension of duct system in R-5 exempt from testing requirements of VECC R403.3.3 if less than 40ft of system is located in unconditioned spaces





# 603 Level 2 Alterations

- ~~603.4 Building Elements and Materials~~
  - Deleted and moved relevant sections and exemptions to 705
- ~~603.5~~ 603.4 Fire Resistance Ratings
  - Retrofit requirements deleted throughout
- ~~603.6 Means of Egress~~
  - Deleted and moved relevant sections and exemptions to 705
- 603.8 Electrical
  - Deleted entirely as retrofits



## SECTION 603 LEVEL 2 ALTERATIONS

**603.1 Scope.** Level 2 alterations as described in Section 601.2.2 shall comply with the requirements of this section.

**Exception:** Buildings in which the alteration is exclusively the result of compliance with the accessibility requirements of Section 404.3 shall be permitted to comply with Section 602.

**603.2 Level 1 alteration compliance.** In addition to the requirements of this section, all alterations shall comply with the applicable requirements of Section 602.

**603.3 Compliance.** All new construction elements, components, systems, and spaces shall comply with the requirements of the VCC.

### Exceptions:

1. Windows may be added without requiring compliance with the light and ventilation requirements of the VCC.
2. Where an approved automatic sprinkler system is installed throughout the story, the required fire-resistance rating for any corridor located on the story shall be permitted to be reduced in accordance with the VCC. In order to be considered for a corridor rating reduction, such system shall provide coverage for the stairway landings serving the floor and the intermediate landings immediately below.
3. In other than Groups A and H occupancies, the maximum length of a newly constructed or extended dead-end corridor shall not exceed 50 feet (15240mm) on floors equipped with an automatic sprinkler system installed in accordance with the VCC.
4. The minimum ceiling height of the newly created habitable and occupiable spaces and corridors shall be 7 feet (2134 mm).
5. Where provided in below-grade transportation stations, new escalators shall be permitted to have a clear width of less than 32 inches (815 mm).

**603.4 Fire-resistance ratings.** Buildings where an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the VCC has been added, and the building is now sprinklered throughout, the required fire-resistance ratings of building elements and materials shall be permitted to meet the requirements of the current building code.

**603.5 Mechanical.** In mechanically ventilated spaces, existing mechanical ventilation systems that are altered, reconfigured, or extended shall provide not less than 5 cubic feet per minute (cfm) (0.0024 m<sup>3</sup>/s) per person of outdoor air and not less than 15 cfm (0.0071 m<sup>3</sup>/s) of ventilation air per person; or not less than the amount of ventilation air determined by the Indoor Air Quality Procedure of ASHRAE 62.

**603.5.1 Local exhaust.** All newly introduced devices, equipment, or operations that produce airborne particulate matter, odors, fumes, vapor, combustion products, gaseous contaminants, pathogenic and allergenic organisms, and microbial contaminants in such quantities as to affect adversely or impair health or cause discomfort to occupants shall be provided with local exhaust.

**603.6 Plumbing.** Where the occupant load of the story is increased by more than 20%, plumbing fixtures for the story shall be provided in quantities specified in the International Plumbing Code based on the increased occupant load.

**603.7 Structural.** Structural elements and systems within buildings undergoing Level 2 alterations shall comply with Sections 603.7.1 through 603.7.6.

**603.7.1 New structural elements.** New structural elements in alterations, including connections and anchorage, shall comply with the VCC.

**603.7.2 Minimum design loads.** The minimum design loads on existing elements of a structure that do not support additional loads as a result of an alteration shall be the loads applicable at the time the building was constructed.

**603.7.3 Existing structural elements carrying gravity loads.** Any existing gravity load-carrying structural element for which an alteration causes an increase in design gravity load of more than 5% shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity load required by the VCC for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the alteration shall be shown to have the capacity to resist the applicable design gravity loads required by the VCC for new structures.

**Exception:** Buildings of Group R occupancy with not more than five dwelling or sleeping units used solely for residential purposes where the existing building and its alteration comply with the conventional light-frame construction methods of the VCC or the provisions of the International Residential Code.

**603.7.3.1 Design live load.** Where the alteration does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads approved prior to the alteration. If the approved live load is less than that required by Section 1607 of the VCC, the area designed for the nonconforming live load shall be posted with placards of approved design indicating the approved live load. Where the alteration does result in increased design live load, the live load required by Section 1607 of the VCC shall be used.

**603.7.4 Existing structural elements resisting lateral loads.** Except as permitted by Section 603.7.5, where the alteration increases design lateral loads in accordance with Section 1609 or 1613 of the VCC, or

where the alteration results in a prohibited structural irregularity as defined in ASCE 7, or where the alteration decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613 of the VCC. For purposes of this section, compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 305.2.2 for the applicable risk category, shall be deemed to meet the requirements of Section 1613 of the VCC.

### Exceptions:

1. Any existing lateral load-carrying structural element whose demand-capacity ratio with the alteration considered is not more than 10% greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with VCC Sections 1609 and 1613. Reduced VCC level seismic forces in accordance with Section 305.2.2 shall be permitted. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.
2. Buildings of Group R occupancy with no more than five dwelling or sleeping units used solely for residential purposes that are altered based on the conventional light-frame construction methods of the VCC or in compliance with the provisions of the IRC.
3. Where such alterations involve only the lowest story of a building and the change of occupancy provisions of Chapter 7 do not apply, only the lateral force-resisting components in and below that story need comply with this section.

**603.7.5 Voluntary lateral force-resisting system alterations.** Alterations of existing structural elements and additions of new structural elements that are initiated for the purpose of increasing the lateral force-resisting strength or stiffness of an existing structure and that are not required by other sections of this code shall not be required to be designed for forces conforming to the VCC, provided that an engineering analysis is submitted to show that:

1. The capacity of existing structural elements required to resist forces is not reduced.

2. The lateral loading to existing structural elements is not increased either beyond its capacity or more than 10 percent.
3. New structural elements are detailed and connected to the existing structural elements as required by the VCC.
4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required by the VCC; and
5. Voluntary alterations to lateral force-resisting systems conducted in accordance with Appendix A and the referenced standards of this code shall be permitted.

**603.7.6 Voluntary seismic improvements.** Alterations to existing structural elements or additions of new structural elements that are not otherwise required by this chapter and are initiated for the purpose of improving the performance of the seismic force resisting system of an existing structure or the performance of seismic bracing or anchorage of existing nonstructural elements shall be permitted, provided that an engineering analysis is submitted demonstrating the following:

1. The altered structure and the altered nonstructural elements are no less conforming to the provisions of the VCC with respect to earthquake design than they were prior to the alteration.
2. New structural elements are detailed as required for new construction.
3. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required for new construction.
4. The alterations do not create a structural irregularity as defined in ASCE 7 or make an existing structural irregularity more severe.

**14-1/2  
columns to  
3-3/4  
columns**

# 604 Level 3 Alterations

- Deleted entirely as retrofit requirements



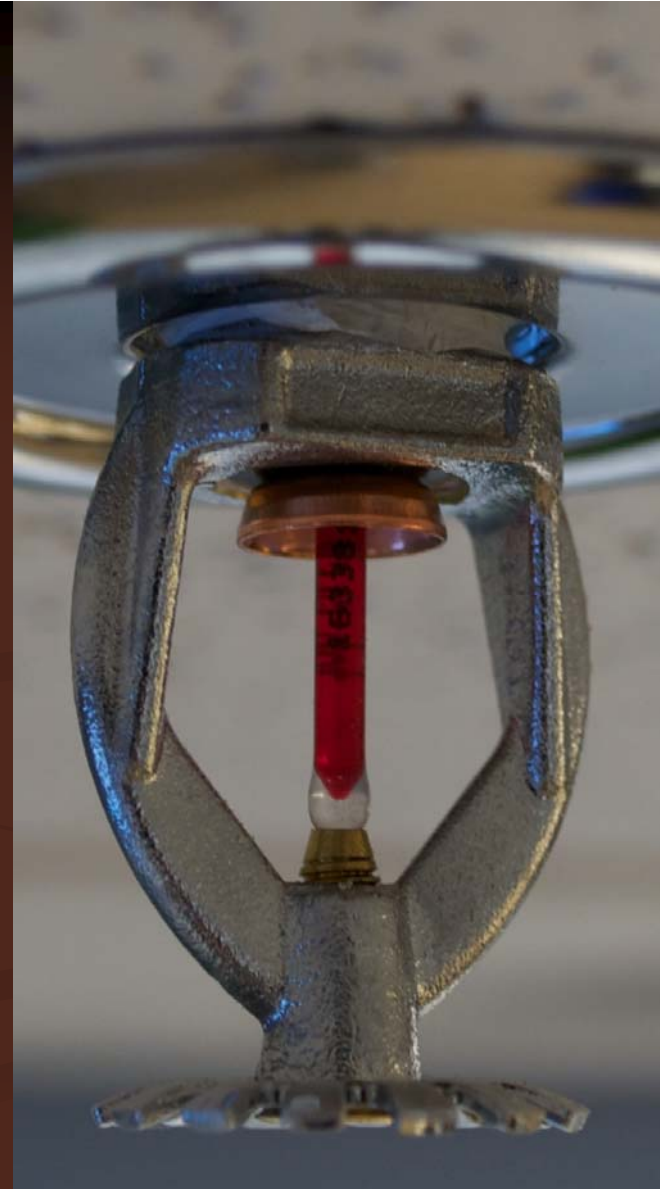


## Chapter 7 – Change of Occupancy



# Fire Protection

- 704.2 Fire Sprinkler Systems
  - Reference clarified to 903 instead of Chapter 9
- 704.3 Fire Alarm and Detection System
  - Reference clarified to 907 instead of Chapter 9
- Intent of above references is to check IF each system is required, not to apply chapter 9 provisions







## 704.4 Standpipe Systems

- New section clarifies that when a CoO occurs to an occupancy that requires a new standpipe per VCC 905, that standpipe shall serve the area of the CoO

## 705.3 Means of Egress for Change to Higher Hazard Category

- Sections 705.3.1 through 705.3.7 created to relocate applicable exceptions from deleted sections in Chapter 6



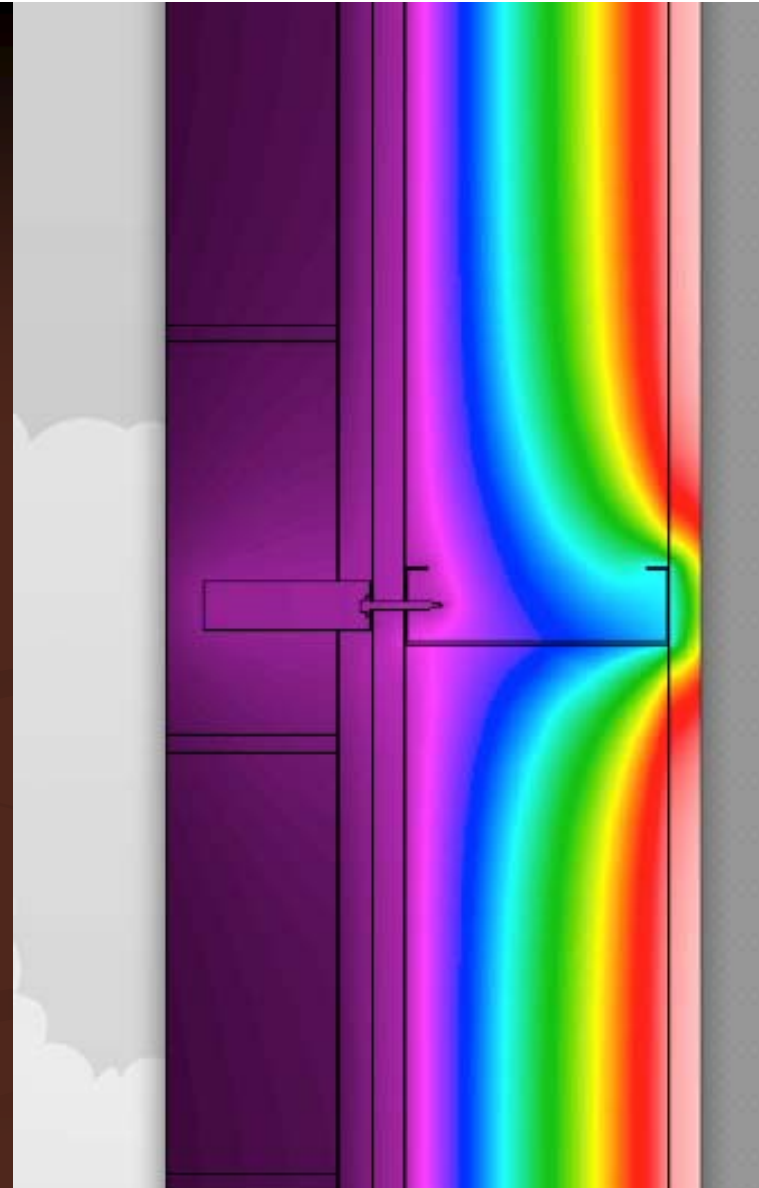


# Chapter 8 - Additions



# 805 Energy Conservation (new)

- Requirements of VECC R502 and C502 relocated to VEBC 805.2 and 805.3 respectively
- Pointer added in VECC to the VEBC
- 2 compliance paths:
  - Addition only
  - Addition plus existing building





## Chapter 9 – Historic Buildings





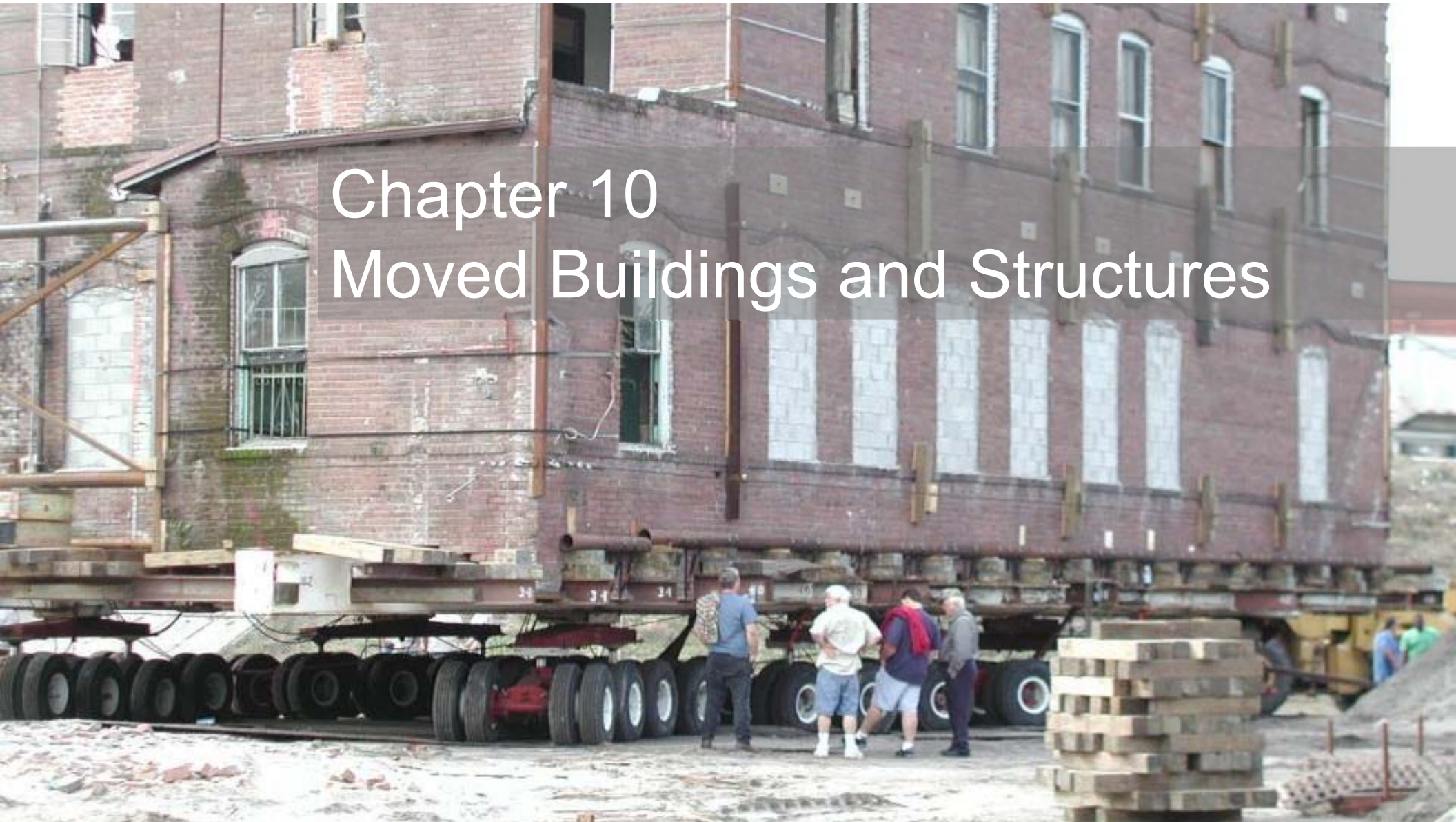
# 904 Fire Safety

- 904 Fire Safety retrofit requirements deleted; remaining relevant sections moved to 905 Alterations or 906 Change of Occupancy as applicable



# Chapter 10

## Moved Buildings and Structures





# Chapter 11

## Retrofit Requirements





# Retrofit Requirements

Retrofit requirements relocated here from VCC

- 1101.17 Address Identification
- 1101.18 Fire Department Connection Sign





## Chapter 12

# Construction Safeguards

# 1210 Demolition

- Section relocated from VCC 3303 as requirement pertaining to existing buildings





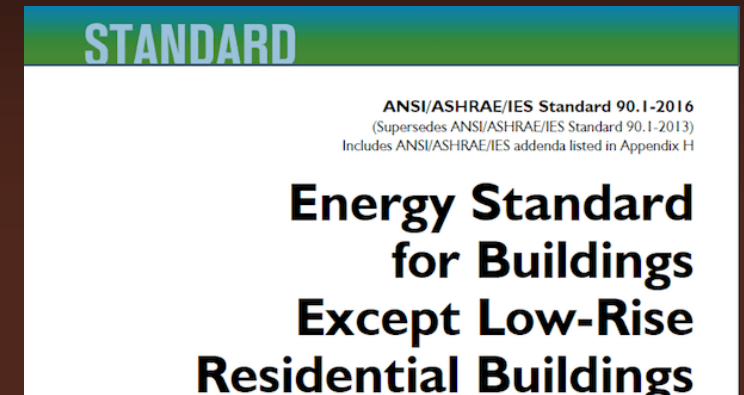
The background image shows a collection of books. In the foreground, two books are open, their pages fanned out. One book has a red cover, and the other has a blue cover. Behind them, several other books are stacked, some with green covers. The books are resting on a dark wooden surface. A semi-transparent grey rectangular box is centered over the books, containing the chapter title in white text.

## Chapter 13

### Referenced Standards

## 2 new referenced standards

- ASHRAE 90.1 – 2016 Energy Standard for Buildings Except Low-Rise Residential Buildings
  - Cited via 805.3
- UL 217 – 2016 Single and Multiple Station Smoke Alarms – with Revisions Through October 2015
  - Cited via 302.3





A black bear is standing in front of a blue and white tent. The bear is facing away from the camera, showing its thick black fur. The tent is set up on a grassy area with many fallen yellow and orange leaves. In the background, there are trees with autumn-colored leaves. A semi-transparent text box is overlaid on the left side of the image.

# Chapter 14 Compliance Alternative – Change of Occupancy



## Chapter 14 – Compliance Alternative - COO

### 2015 VEBC

- Has duplicated provisions - especially as they relate to the term "evaluation" (1401.4, 1401.4.1, 1401.5, and 1401.6) - with each saying something different.
- The entire chapter is just one (1) section (1401)
- References to I-2 remain, even though 1401.1, Exception says this chapter cannot be used for 'I' occupancies
- Still contains numerous references to the IBC, even though we have basically deleted that reference throughout the rest of the VEBC and replaced it with VCC

### 2018 VEBC

- Deletes the duplicated provisions - especially as they relate to the term "evaluation" by consolidating them into a new Section 1402
- The chapter consists of four (4) sections
  - General
  - Evaluation Process
  - Evaluation Data
  - Evaluation Scores
- Relevant references to I-2 and its related provisions have been deleted
- Revised references from IBC to VCC

# Throughout Chapter 14

- Duplicated provisions deleted, especially pertaining to “evaluation”
- Chapter now divided into 4 sections
- Relevant references to I-2 and related provisions deleted
- Revised references from IBC to VCC

# 1403.3 Compartmentation

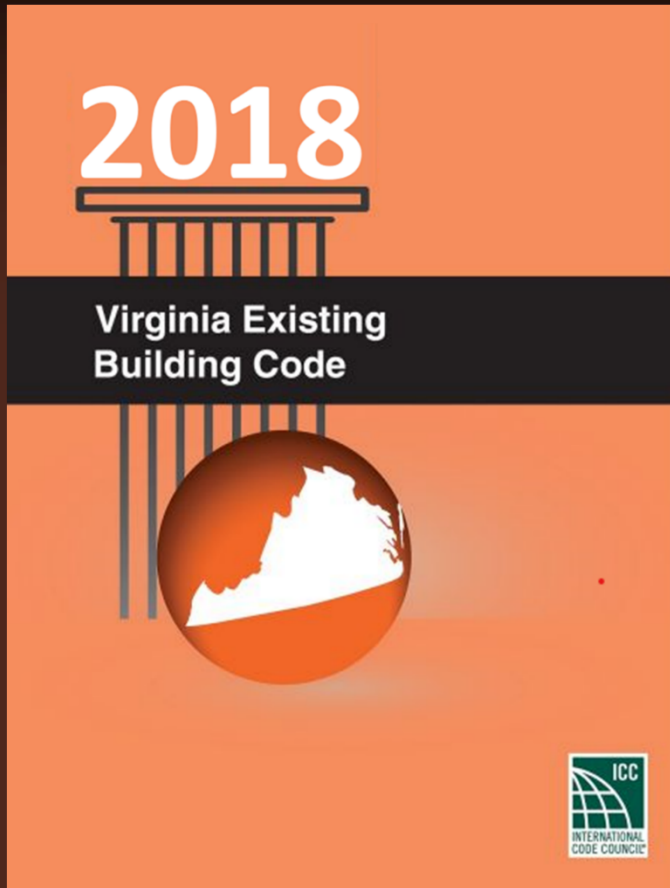
- Allows linear interpolation for compartment sizes that fall between categories

TABLE 1403.3  
COMPARTMENTATION VALUES

OCCUPANCY	CATEGORIES				
	a Compartment size equal to or greater than 15,000 square feet	b Compartment size of 10,000 square feet	c Compartment size of 7,500 square feet	d Compartment size of 5,000 square feet	e Compartment size of 2,500 square feet or less
A-1, A-3	0	6	10	14	18
A-2	0	4	10	14	18
A-4, B, E, S-2	0	5	10	15	20
F, M, R, S-1	0	4	10	16	22

For SI: 1 square foot = 0.0929 m<sup>2</sup>.





Easier to understand  
Easier to apply  
Easier to interpret  
Easier to review  
Easier to enforce

A medium shot of Steve Harvey, a bald Black man with a mustache, wearing a tan suit jacket over a white shirt. He is looking down and to his left with a wide-eyed, slightly nervous expression. The background is dark and out of focus, typical of a game show set.

What are the changes to the VEBC?

A:

B:

C:

D:



# Skill Check 2





