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Wisconsin
Department of Commerce

THE UNIVERSITY of WISCONSIN MADISON

39th Annual WCBC Refresher
February 17, 2010
Existing Buildings

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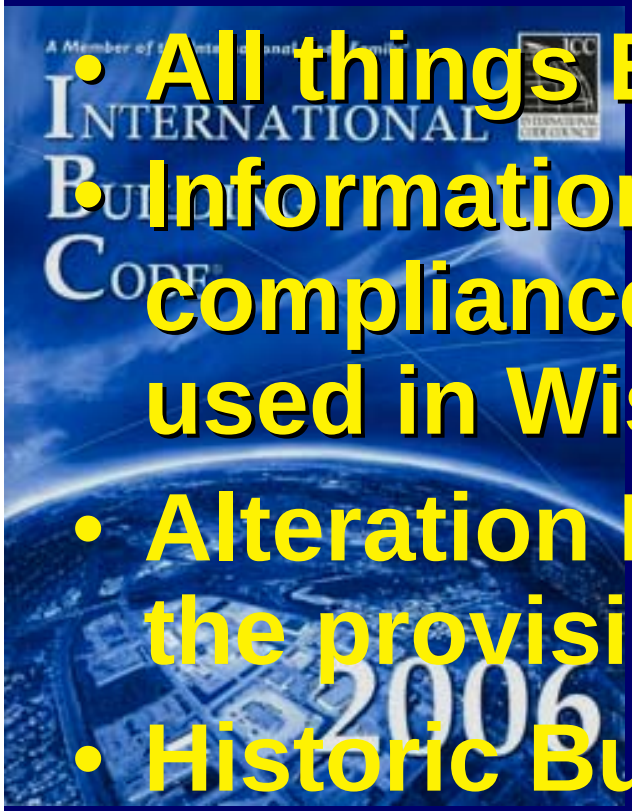
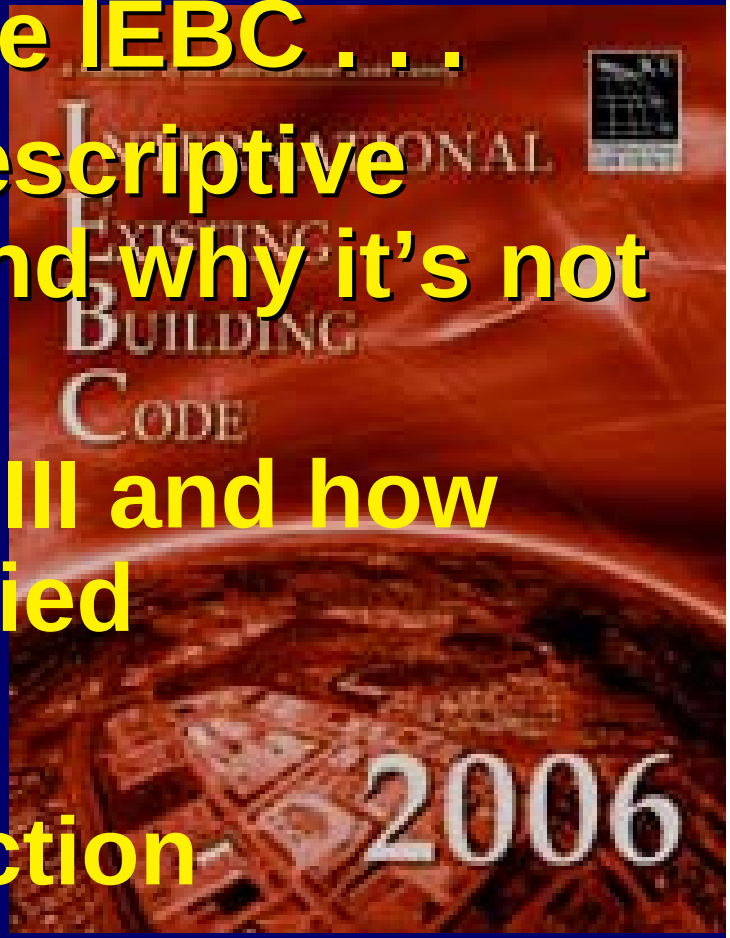
What Is the Session About?





- All things Existing & the IEBC . . .
- Information on the "prescriptive compliance method" and why it's not used in Wisconsin
- Alteration Levels I, II & III and how the provisions are applied
- Historic Buildings
- Fire-Resistive Construction
- Wisconsinisms

WI Comm. Bldg. Code - Future

- Most recent joint meeting of CBCC & MDCC on Thursday 1/21/2010
- Updated Specialty Advisory Council Timeline

•Existing Bldgs [IEBC]	•Means of Egress
•Structural	•Fire Safety
•Fire Prot. Systems	•General
•Energy [IECC]	•HVAC [IMC & IFGC]

WCBC SPECIALTY SUBJECT
[ICC Codes - 2009 Editions]
Advisory Council Meetings

Date	IEBC	Egress	Struct.	Fire Prot. Systems	Fire Safety	General	Energy (IECC)	HVAC (IMC & IFGC)
Feb 2009								
Mar 2009								
April 2009		X (4/29)		X (4/21)		X (4/16)		
May 2009					X (5/28)			
June 2009		X (6/24)						
July 2009				X (7/21)		X (7/28)		
Aug 2009	X (8/18)		X (8/5)		X (8/26)		X (8/11)	X
Sept 2009			X (9/16)					X (9/24)
Oct 2009	X (10/27)		X (10/30)(				X (10/6 & 10/28)	
Nov 2009		UMB (11/19)		UMB (11/19)		UMB (11/19)		X (11/12)
Dec 2009								X (12/17)
Jan 2010	UMB (1/21)		UMB (1/21)		UMB (1/21)			
Feb 2010								
Mar 2010							UMB	UMB
April 2010								
May 2010	PUBLIC HEARINGS							
June 2010								
July 2010								
Aug 2010	**Must be submitted to Legislature before Sept 1, 2010**							

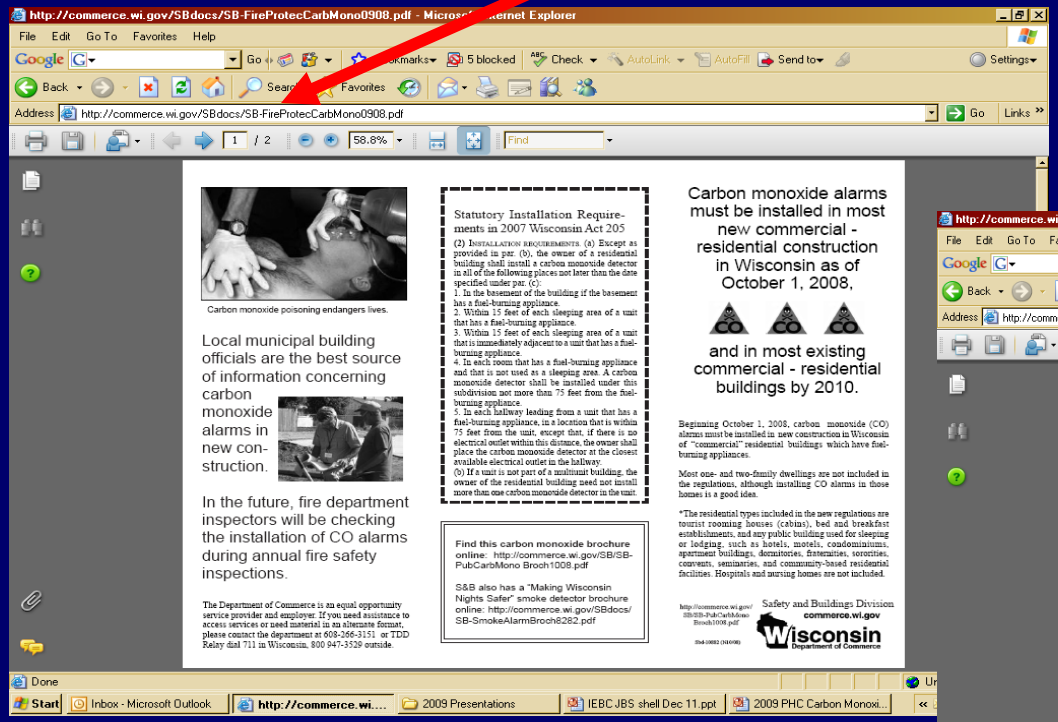
Carbon Monoxide Detectors/Alarms

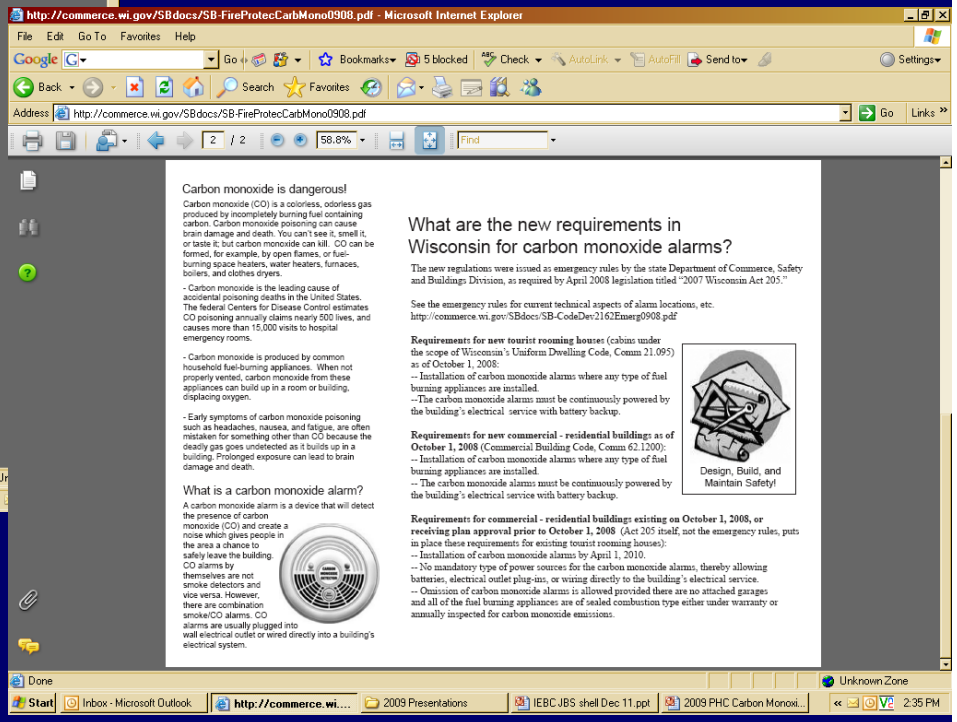
Carbon Monoxide Detectors

- History
  - Emergency Rules issued on 9/3/2008 as a result of Legislation
  - Normal Rules followed 6/1/2009
  - Modifications to be within fire package as a result of public hearing comments (PH 12/18/09)

CO Det. Req's. – Helpful Tool

http://commerce.wi.gov/SBdocs/SB-FireProtecCarbMono0908.pdf





Where – 1 & 2 Family

- CO alarms are only required to be installed in those new "UDC" Building that are used as a Tourist Rooming House and also contain fuel-burning appliances. Those types of buildings are also commonly called Tourist Cabins.

Tourist Cabin Made from Discarded Sailboat

The "sailboat" tourist cabin boasts even a sun deck to attract guests

WHEN A STORM wrecked the hull bottom of his sailboat, Albert O. James, of Lakeport, Mich., hauled it up on shore, scooped out a foundation for it in the sand, and changed it into an overnight cabin for tourists. A wooden shelter was erected over a double bed set into the forward part of the cockpit, while a screened sitting room was built at the aft end and fitted with colorful awnings. The transformation from boat to cottage cost less than five dollars.

Tourist Rooming House

- Incl's all cabins & cottages where sleeping accommodations are offered for pay to tourists or transients.
- NOT bed and breakfast establishmt's regulated under ch. HFS 197
- NOT private boarding or rooming houses not accommodating tourists or transients

Where - Commercial

- CO alarms are to be installed in most new "residential" Commercial Bldg's that contain fuel-burning appliances. Includes tourist rooming houses/cabins, bed and breakfast establishments, and any public building used for sleeping or lodging, such as hotels, motels, condo's, apartment bldg's, dorm's, fraternities, sororities, convents, seminaries, community-based residential facilities, and homeless shelters.


WILDERNESS


HOTEL
WISCONSIN
Mélange
cafe & bar
SPECIAL RATES
FOR BRADLEY
CENTER MECCA
EVENTS
HOTEL WISCONSIN
MAXIE'S
OPTICAL


ΓΦΒ

Not required in . . .

- New or Existing Hospitals and nursing homes


STOP


Red Cedar Medical Center
EMERGENCY Room
Urgent Care
Main Entrance

Where in the Bld'g
Exception For Existing!

- Allows the omission of CO alarms in existing bldgs. provided there are no attached garages and all of the fuel burning appliances are of sealed combustion type either under warranty or annually inspected for CO emissions. [Comm 62.1200(2)(a)4.]
- Allows any power source if required

When – Retroactivity [1 & 2 Family]

- **Reqmt's for 1 & 2 family tourist room'g houses and cabins that *exist* on October 1, 2008, or receiving plan approval prior to October 1, 2008** *(Act 205 itself, not the emergency rules, puts in place the retroactive requirements):*

  – **Installation of carbon monoxide alarms by April 1, 2010**

When – retroactivity [Commercial]

- **Reqmt's for commercial residential buildings that exist on October 1, 2008, or receiving plan approval prior to October 1, 2008** *(Act 205 itself, not the emergency rules, puts in place the retroactive requirements):*
  - **Installation of carbon monoxide alarms by April 1, 2010**

Existing Commercial Buildings Administration

Comm 61.03 Application.

Provides the basic parameters as to how the Wisconsin Commercial Building Code is to be applied

- ***Comm 61.03 (1) STANDARDS***
- ***(2) RETROACTIVITY***
- ***(3) CONFLICTS***
- ***(4) DEPARTMENT AUTHORITY***
- ***(5) LOCAL ORDINANCES***

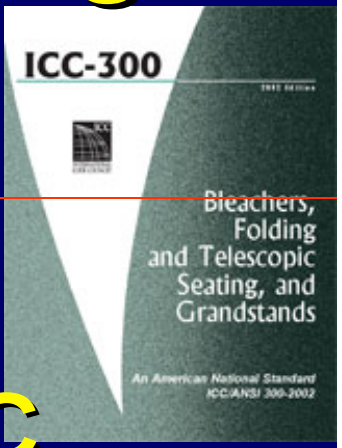
WCBC APPLICATION (cont)

- ***Comm 61.03***
- ***(6) ALTERNATIVES***
- ***(7) NEW BUILDINGS AND STRUCTURES***
- ***(8) ALTERATIONS***
- ***(9) REPLACEMENTS***
- ***(10) REPAIRS***

WCBC APPLICATION (cont)

- ***Comm 61.03***
- ***(11) CHANGE OF OCCUPANCY OR USE***
- ***(12) TEMPORARY USE***
- ***(13) EXISTING BUILDINGS AND STRUCTURES***
- ***(14) INTERNATIONAL FIRE CODE***

Ch. Comm 61.03 – Existing Buildings



- In the section on “existing buildings” we reference the ICC standard [ICC 300] on bleachers [Comm 61.03(13)(b)]
- Includes the yearly maintenance that is expected as well as other “retroactive” provisions

Ch. Comm 61.03 – Existing Buildings (cont)

- Provisions found in Ch 5 of the standard:
  - Yearly Inspn's [s. 501]
  - Maintenance [s. 502]
  - Guards [s. 503]
  - Child Opening Protect'n [s. 504]

Comm 61.04 Definitions

- ***Comm 61.04 Definitions.*** *In this code:*
  (1) *"Authorized representative" means any certified municipality or county as specified in s. Comm 61.60, and any appointed agent as specified in s. Comm 61.61.*

  Comm 61.04 Definitions. (2) *"Department" means the department of commerce.*

Comm 61.04 Def's (cont)

- ***Comm 61.04 Definitions. (3)*** *"Dwelling unit" has the meaning given in s. 101.61 (1), Stats., for the purpose of determining whether this code applies to a residential occupancy. For all other purposes, the meaning is as given in IBC section 202, IECC section 202, and IMC section 202.*

  Note: Section 101.61 (1), Stats., reads in part: " `Dwelling unit' means a structure or that part of a structure which is used or intended to be used as a home, residence or sleeping place by one person or by 2 or more persons maintaining a common household, to the exclusion of all others."

  Comm 61.04 Definitions. (4) *"HVAC" means heating, ventilating, and air conditioning.*

Comm 61.04 Def's (cont)

- ***Comm 61.04 Definitions. (5)*** *"IBC" and "International Building Code" mean the International Building Code®, as adopted under s. Comm 61.05 and modified in this code.*
- ***Comm 61.04 Definitions. (6)*** *"ICC Electrical Code" means ch. Comm 16.*
- ***Comm 61.04 Definitions.(7)*** *"IEBC" and "International Existing Building Code" mean the 2006 edition of the International Existing Building Code®, as adopted under s. Comm 61.05 and modified in this code.*

Comm 61.04 Def's (cont)

- ***Comm 61.04 Definitions. (8)*** *"IECC" and "International Energy Conservation Code" mean the International Energy Conservation Code®, as adopted under s. Comm 61.05 and modified in this code.*
- ***Comm 61.04 Definitions. (9)*** *"IFC" and "International Fire Code" mean the International Fire Code®.*
- ***Comm 61.04 Definitions. (10)*** *"IFGC" and "International Fuel Gas Code" mean the International Fuel Gas Code®, as adopted under s. Comm 61.05 and modified in this code.*
- ***Comm 61.04 Definitions. (11)*** *"IMC" and "International Mechanical Code" mean the International Mechanical Code®, as adopted under s. Comm 61.05 and modified in this code.*

Comm 61.04 Def's (cont)

Comm 61.04 Definitions. (12) *"IPC" and "International Plumbing Code" mean chs. Comm 81 to 87.*

Comm 61.04 Definitions. (13) *"IPSC" and "International Private Sewage Code" mean chs. Comm 81 to 87.*

Comm 61.04 Def's (cont)

- ***Comm 61.04 Definitions.(14)*** *"Multifamily dwelling" has the meaning given in s. 101.971 (2), Stats.*

  Note: Section 101.971 (2), Stats., reads as follows: " `Multifamily dwelling' means an apartment building, rowhouse, town house, condominium or manufactured building, as defined in s. 101.71 (6), that does not exceed 60 feet in height or 6 stories and that consists of 3 or more attached dwelling units the initial construction of which is begun on or after January 1, 1993. `Multifamily dwelling' does not include a facility licensed under ch. 50."

Comm 61.05 Adoption of the International Codes

- *(1) IBC.*
- *(2) IECC*
- *(3) IMC*
- *(4) IFGC*
- *(5) IEBC*

Chapter Comm 61 Subchapter III

Comm 61.30 Plan review and approval.
Comm 61.31 Plans.
Comm 61.32 Permission to start construction.
Comm 61.33 Evidence of plan approval.
Comm 61.34 Sprinkler documents.
Comm 61.35 Revocation of approval.
Comm 61.36 Expiration of plan approval and extension of plan approval.
Comm 61.37 Department limitation.
Comm 61.39 Registration of cross connection control assemblies.

Myth Busted

There is NO (Nyet, NIX, did I say NO yet) requirement that a plan has to be submitted to gain an approval for a change in use . . . NEVER WAS.

Submittal requirements exist only for the plans of the alteration work that is often affiliated with a request for approval to change a use.

61.30 (4) EXCLUSION FOR MINOR ALTERATIONS.

61.30(4) MINOR ALTERATIONS

If the code official can understand the proposed project and agree that compliance can be achieved without having plans to work from, no submittal of plans is necessary.

One does not have to be a certified insp. or muni . . . just knowledgeable

Document the decision!

MINOR ALTERATIONS
Consistency not Required

Knowledge of a building will vary from municipality to municipality & person to person . . . this proviso is more about ones individual intimacy to a building.

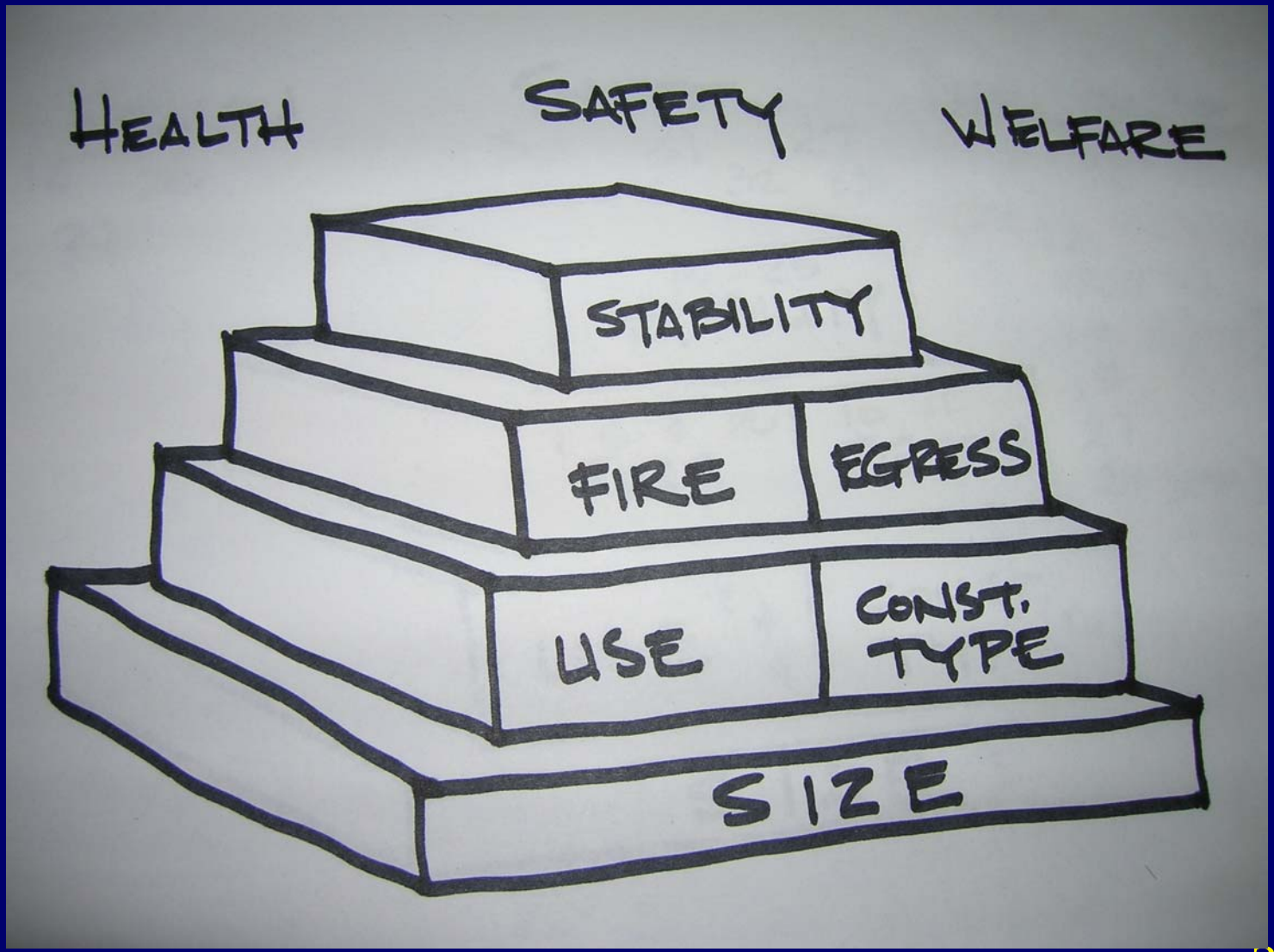
Local Officials don't have to require a submittal based on S&B's lack of familiarity!

Foundation of the Building Code

Foundation For Commercial Building Code Application

- What is the Use of the Building?
- What is the Building Made Of?

Building Blocks

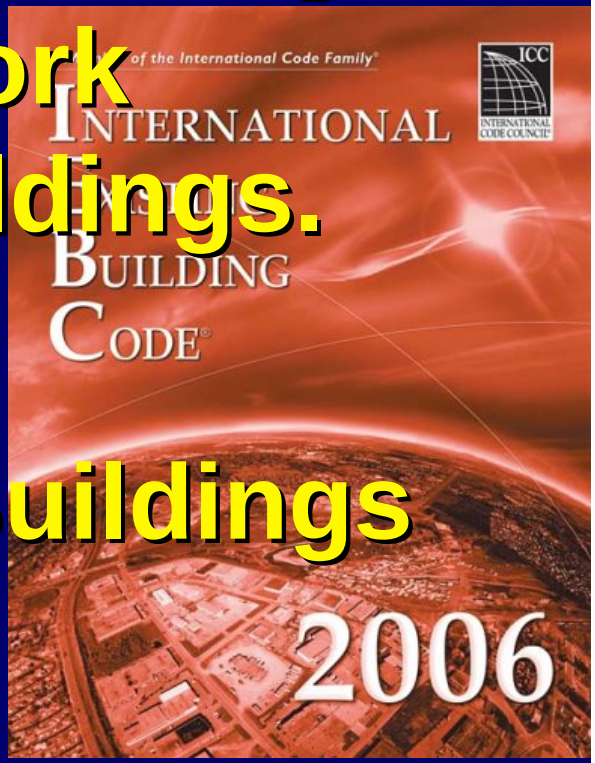


Building Blocks

International Existing Building Code Modified

The Exist'g. Bldg. part of WCBC – USE IEBC

- The IEBC [Comm Chapter 66] must be used for all work relating to existing buildings.
- IBC Ch 34 is dropped.
- Dropped the Historic Buildings code, Comm 70

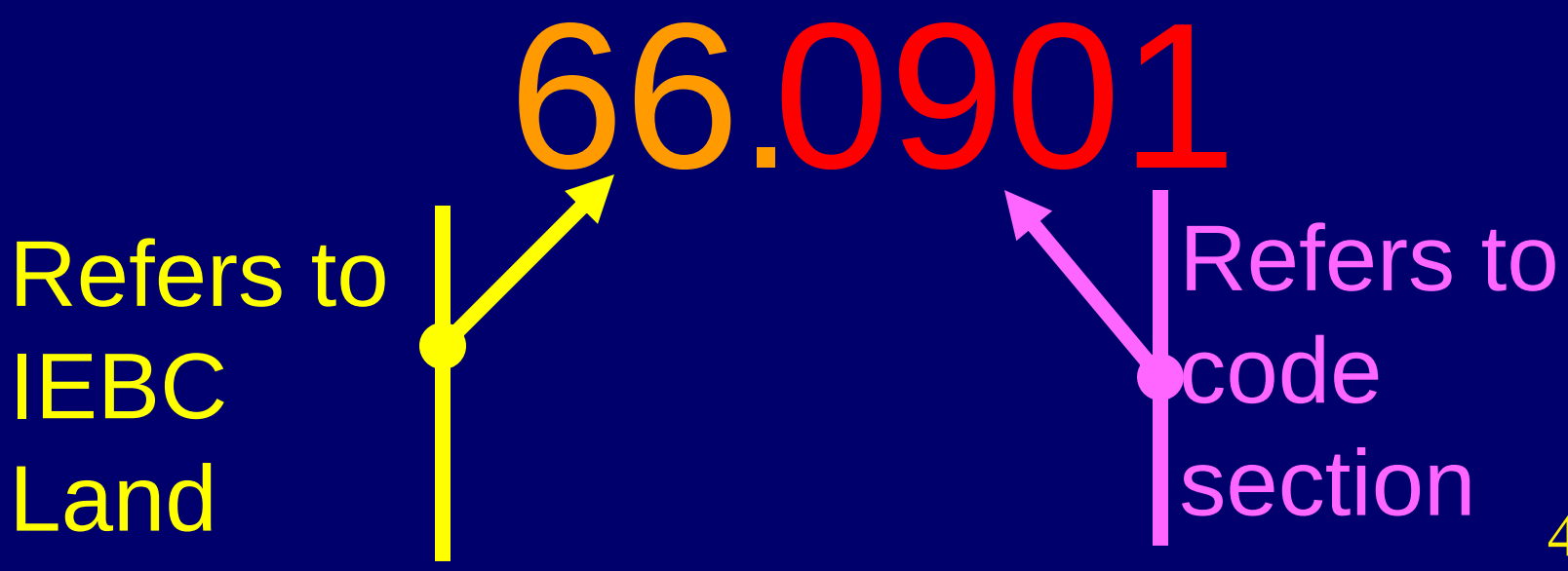


What's in the "latest" WCBC

Soil Erosion	Ch. Comm 60
Administration	Ch. Comm 61
Building	Ch. Comm 62
Energy	Ch. Comm 63
Mechanical	Ch. Comm 64
Fuel Gas	Ch. Comm 65
Existing Building	Ch. Comm 66

WCBC Navigating Wisconsin Modifications

- **Deciphering the Numbering of Adm. Rule Ch's Comm 62 - 66**



WCBC/Exist'g Bldg. [IEBC] (cont.)

- Ch 2 – Definitions (W)
- ~~Ch 3 – Presc. Compl. Methods~~ (W)
- Ch 4 – Classification of Work
- Ch 5 – Repairs (W)
- CH 6, 7 & 8 – Altn's (Lev 1, 2 & 3) (W)
- CH 9 – Change of Occupancy (W)

WCBC/Exist'g Bldg. [IEBC] (cont.)

- Ch 10 – Additions
- Ch 11 – Historic Buildings (W)
- Ch 12 – Relocated/Moved Bldgs
- Ch 13 – Perf. Compl. Methods (W)
- CH 14 – Construction Safegaurds
- CH 15 – Referenced Standards

IEBC Wisconsinisms CH 1

- **Comm 66.0100 Changes, additions or omissions to IEBC. Changes, additions or omissions to the IEBC are specified in this subchapter and are rules of the department and are not requirements of the IEBC.**

IEBC Wisconsinisms CH 1 Note on State Fair Housing Law

- Note: The requirements of s. 101.132, Stats., may be more restrictive than the administrative rules when a project involves the remodeling of housing. The term "remodeled" has the meaning given in s. 101.132 (1) (h), Stats., and the term "housing" has the meaning given in s. 106.50 (1) (L), Stats.

IEBC Wisconsinisms CH 1
State Fair Housing Law Scenarios

- Section 101.132 Stats., incl's 4 basic reqmt's for housing:

1. An accessible entrance
2. Accessible public/common use areas
3. Accessible doors & int. passage
4. Accessible features like accessible controls, grab bar reinf. & lever handles

IEBC Wisconsinisms CH 1 State Fair Housing Law and Remodeling

- Section 101.132 (2) (b), Stats., provides requirements for 3 different remodeling scenarios based on the percentage of the floor areas being physically altered

Fair Housing Law Remodeling Scenario 1

- **1. If more than 50% of the interior square footage of any housing with 3 or more dwelling units (D.U.'s) is to be remodeled, the entire housing shall conform to the standards in par. (a), regardless of when first intended for occupancy.**

Fair Housing Law Remodeling Scenario 2

- **2. If 25% to 50% of the interior square footage of any housing with three or more (D.U.'s) is to be remodeled, that part of the housing that is to be remodeled shall conform to the standards in par. (a), regardless of when first intended for occupancy.**

Fair Housing Law
Remodeling Scenario 3

- **3. If less than 25% of the int. square footage of any housing with three or more D.U.'s is to be remodeled, the remodeling is not subject to the standards in par. (a) unless the alt'n involves work on doors, entrances, exits or toilet rooms, in which case the doors, entrances, exits or toilet rooms shall conform to the standards in par. (a) regardless of when first intended for occupancy.**

IEBC Wisconsinisms CH 1 (cont)

- **Comm 66.0101 Administration.** Except for IEBC section 102.4, substitute the following wording for the requirements in IEBC chapter 1:

IEBC Wisconsinisms CH 1 (cont)

- **Comm 66.0101 Administration (1)** APPLICATION. The provisions of the IEBC shall apply to the repair, alteration, change of occupancy, addition, and relocation of existing buildings. Repairs, alterations, change of occupancy, existing buildings to which additions are made, historic buildings, and relocated buildings complying with the provisions of the IBC, IMC, IPC, and IRC as applicable shall be considered in compliance with the provisions of this code.

IEBC Wisconsinisms CH 1 (cont)

- **Comm 66.0101 Administration (2)** CHANGE OF OCCUPANCY TO A PUBLIC BUILDING OCCUPANCY. Where a building or portion of a building that has not been previously occupied or used as a public building or place of employment is to be changed to an occupancy or use that constitutes a public building or place of employment, the building or portion of a building shall comply with the IBC for new construction, except for IBC rules relating to the properties of building materials.

IEBC Wisconsinisms CH 1 (cont)

- **Comm 66.0101 Administration (3)** TEMPORARY USE. A municipal fire or building code official may allow an existing building or a portion of an existing building to be used temporarily in a manner that differs from the approved use for the building or space subject to all of the following provisions:
- (a) The official shall determine the time frame within which the temporary use is permitted, based on the extent hazards are created by the temporary use. This time frame may not exceed 180 days, except the official may grant extensions for demonstrated cause.
- (b) Except as provided in par. (c), buildings or spaces considered for temporary use shall conform to the requirements of this code as necessary to ensure the public safety, health and general welfare.
- (c) The official may require additional safety requirements for a temporary use as a trade-off for any safety provisions that may be lacking.
- (d) The official may terminate the approval for a temporary use at any time and order immediate discontinuance of the use or complete evacuation of the building or space.

IEBC Wisconsinisms CH 1 (cont)

- **Comm 66.0101 Administration (4)** COMPLIANCE METHOD. (a) The repair, alteration, change of occupancy, addition, or relocation of all existing buildings shall comply with one of the methods listed in par. (b) or (c) as selected by the applicant. Application of a method shall be the sole basis for assessing the compliance of work by the code official. Paragraphs (b) and (c) shall not be applied in combination with each other.
  (b) Repairs, alterations, additions, changes in occupancy, and relocated buildings complying with the applicable requirements of IEBC chapters 4 through 12 shall be considered in compliance with the provisions of this code.
  (c) Repairs, alterations, additions, changes in occupancy, and relocated buildings complying with IEBC chapter 13 shall be considered in compliance with the provisions of this code.

IEBC Ch 2 – Definitions

201 – General

202 – General Definitions [WI]

IEBC Wisconsinisms CH 2

- **Comm 66.0202 General definitions.**
- **(1) ADDITIONS. This is a department definition for this chapter in addition to the definitions in IEBC section 202: "Exhibit building" means a qualified historic building that is open to the general public only for display or tours.**
- **(2) SUBSTITUTIONS. Substitute the following definition for the corresponding definition in IEBC section 202: "Historic building" means a "qualified historic building" as defined under s. Comm 62.0202 (2) (c). [takes users to s. 101.121 (2) (c), Stats.]**

Stats – Qualified Historic Building

- Section 101.121 (2) (c) “Qualified historic building" means a historic building meeting any one of 5 criteria:
- 1. Is listed on, or has been nominated by the state historical society for listing on, the national register of historic places in WI or the state register of historic places - or
- 2. Is included in a district which is listed on, or has been nominated by the state historical society for listing on, the national register of historic places in WI or the state register of historic places, and has been determined by the state historical society to contribute to the historic significance of the district - or

Stats – Qual. Hist. Bld'g (cont)

- 2m. Is determined by the state historical society to be eligible for listing on the national register of historic places in WI or the state register of historic places - or
- 3. Is listed on a certified local register of historic property - or
- 4. Is included in a district which is listed on a certified local register of historic property, and has been determined by the city, village, town or county to contribute to the historic significance of the district

IEBC Ch 2 Definitions

Chapter 2 includes 21 definitions, but several are more significant than others

- **Change of Occupancy . . .**
- **Primary Function . . .**
- **Technically Infeasible . . .**
- **Work Area . . .**

Def. – Change of Occupancy

CHANGE OF OCCUPANCY. A change in the purpose or level of activity within a building that involves a change in application of the requirements of this code.

Def. – Primary Function

PRIMARY FUNCTION. A primary function is a major activity for which the facility is intended. Areas that contain a primary function include, but are not limited to, the customer services lobby of a bank, the dining area of a cafeteria, the meeting rooms in a conference center, as well as offices and other work areas in which the activities of the public accommodation or other private entity using the facility are carried out. Mechanical rooms, boiler rooms, supply storage rooms, employee lounges or locker rooms, janitorial closets, entrances, corridors and restrooms are not areas containing a primary function.

Def. – Technically Infeasible

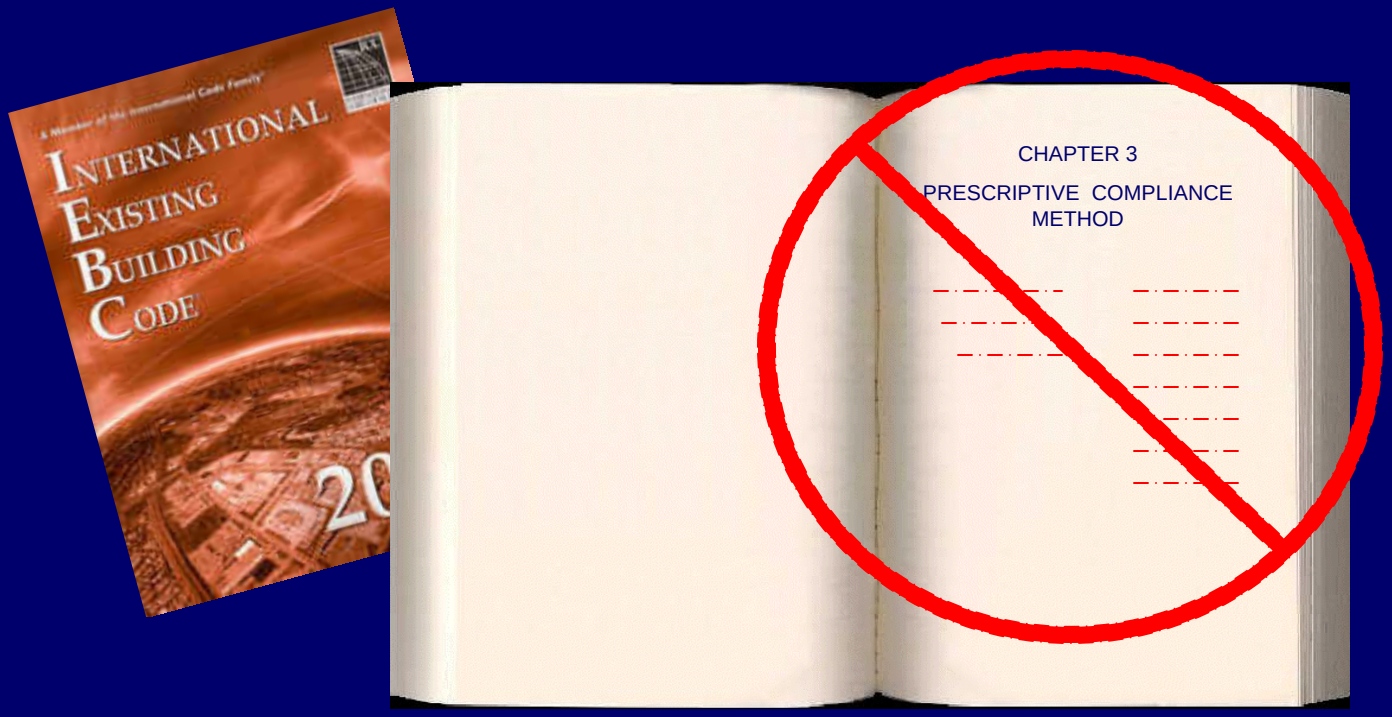
An alteration of a building or a facility that has little likelihood of being accomplished because the existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame or because other existing physical or site constraints prohibit modification or addition of elements, spaces, or features that are in full and strict compliance with the minimum requirements for new construction and that are necessary to provide accessibility.

Def. – Work Area

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.

IEBC Wisconsinisms CH 3

- **Comm 66.0300 – Don't use Chapter 3 of the IEBC in Wisconsin**



IEBC Ch 3 – Presc. Compl. Meth.

301 – General [WI]
302 – Additions, Altn's or Repairs
303 – Fire Escapes
304 – Glass Replacement
305 – Change of Occupancy
306 – Historic Buildings
307 – Moved Structures
308 – Accessibility

Chapter 4
Classification of Work

- 401 – General
- 402 – Repair
- 403 – Alteration-Level 1
- 404 – Alteration-Level 2
- 405 – Alteration-Level 3
- 406 – Addition
- 407 – Change of Occupancy
- 408 – Relocated or moved buildings
- 409 – (Qualified) Historic Bldg's

Important Realizaton !

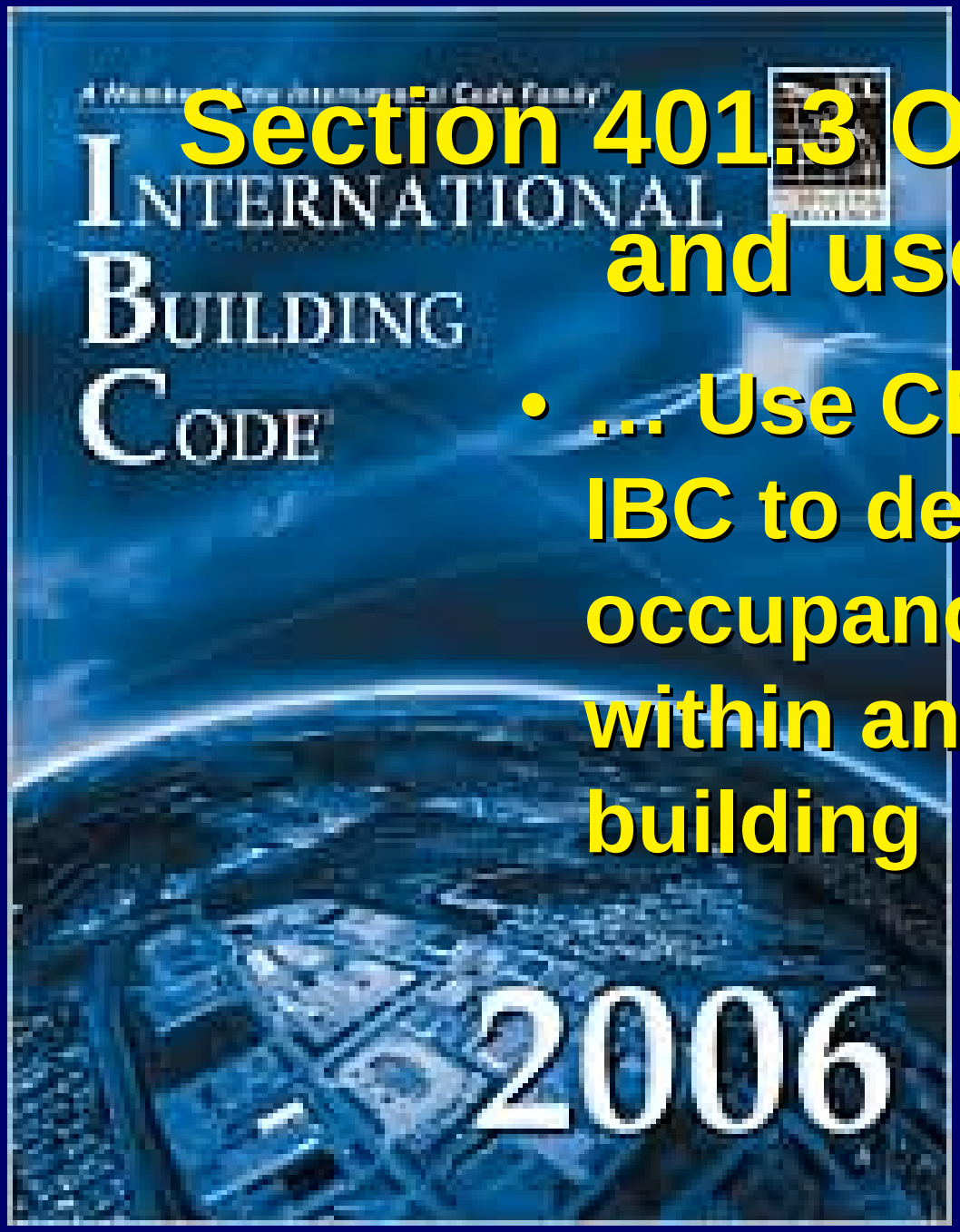
More than one classification will generally exist for each project !

Section 401 - General

- 401.1 Scope. … use this in conjunction with Ch 5 – 12 and explains how to apply the IEBC to alterations, repairs, additions and the changes of occupancy that happen to virtually all existing structures…

Section 401.2 Work area.

- …Work area is that portion [or portions] of a building consisting of all reconfigured spaces indicated on the construction documents.



Section 401.3 Occupancy and use.

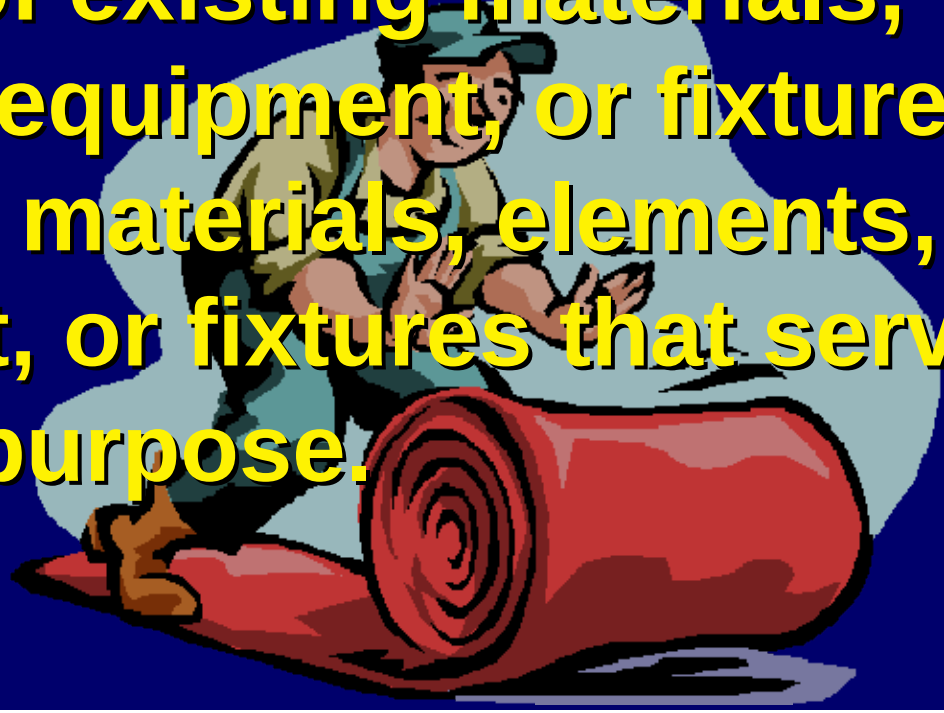
- … Use Chapter 3 of the IBC to determine the occupancy and use within an existing building

Section 402.1 Repairs

- **Repairs are the restoration to good or sound condition of any part of an existing building for the purpose of its maintenance.**

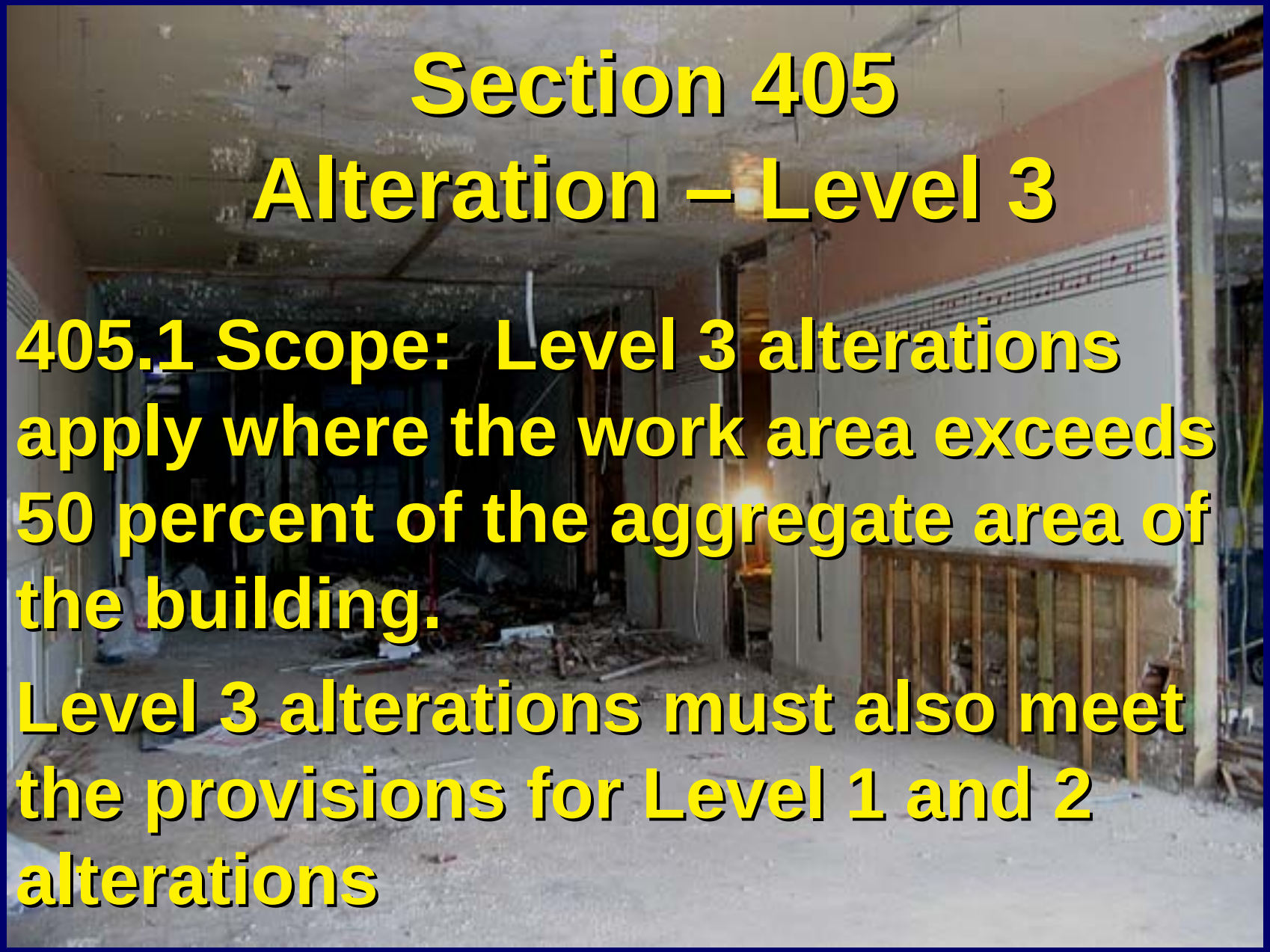
Section 403 Alteration – Level 1

- 403.1 Scope: Level 1…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.



Section 404
Alteration – Level 2

- 404.1 Scope: 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.
- Level 2 alterations to also meet the Level 1 provisos

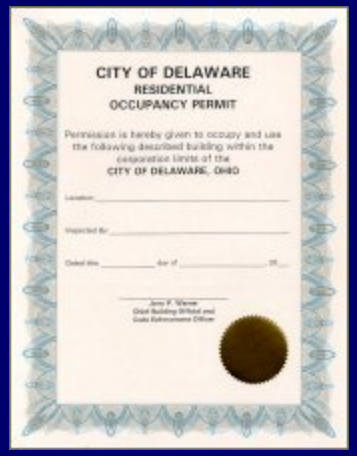


Section 405
Alteration – Level 3

- 405.1 Scope: Level 3 alterations apply where the work area exceeds 50 percent of the aggregate area of the building.
- Level 3 alterations must also meet the provisions for Level 1 and 2 alterations

Section 406 Change of Occupancy

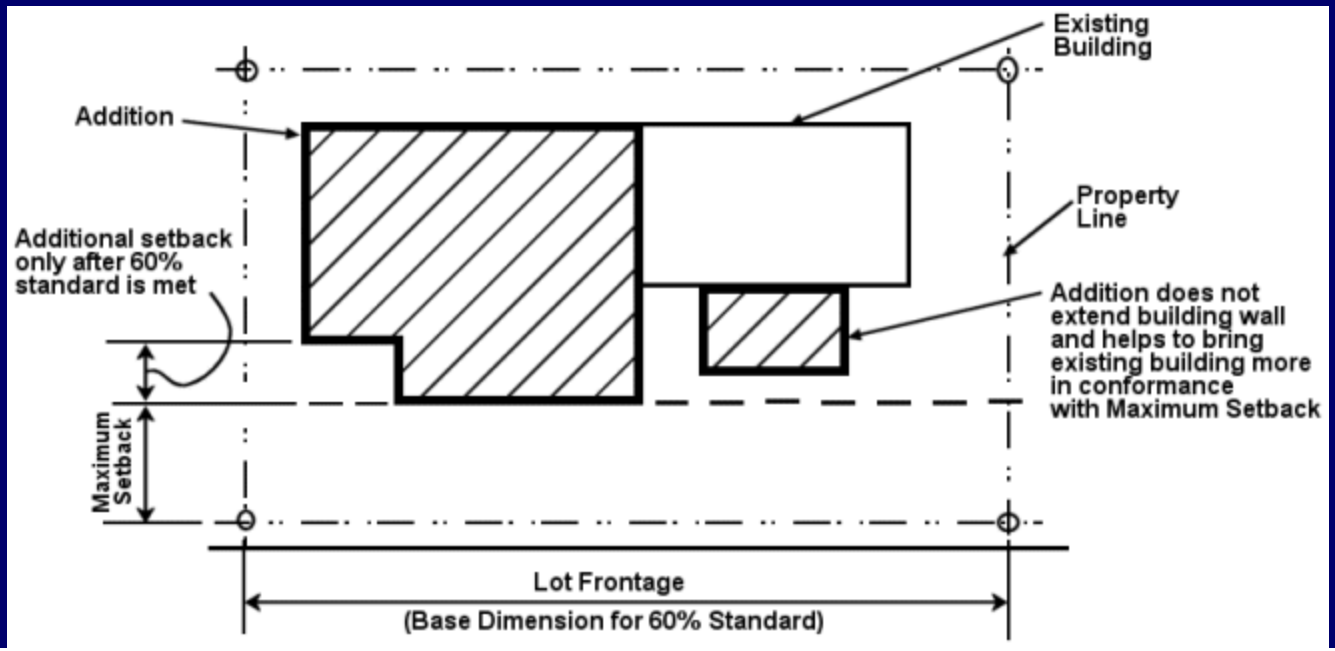
- **406.1 Scope - Change as defined in Ch 2…purpose or level of activity within a building that involves a change in application of the requirements of this code.**


CITY OF DELAWARE
RESIDENTIAL
OCCUPANCY PERMIT

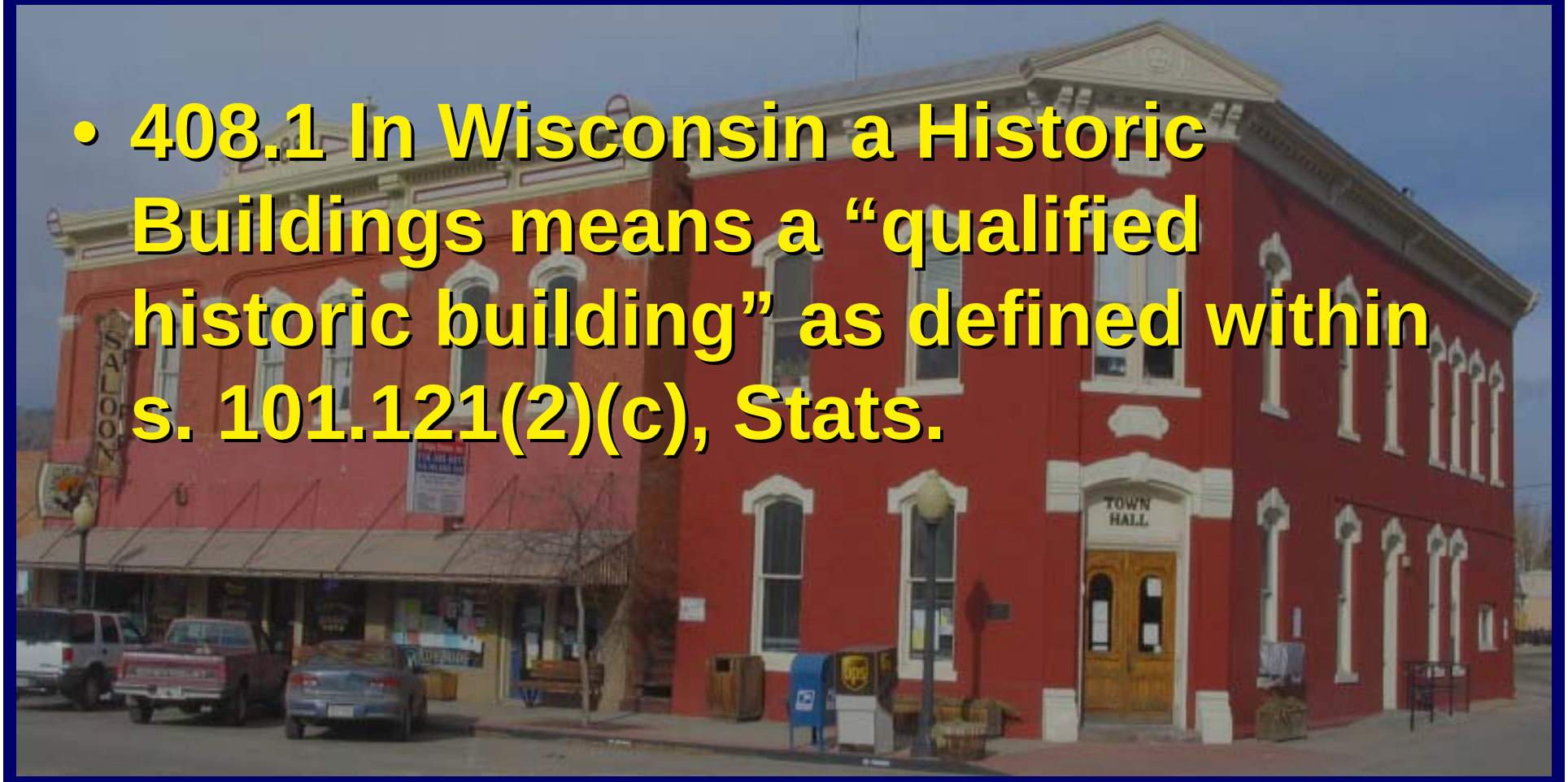
Permission is hereby given to occupy and use the following described building within the corporation limits of the
CITY OF DELAWARE, OHIO

Section 407 Additions

- 407.1 Scope Provisions for additions … an extension or increase in floor area, number of stories, or height of a building.

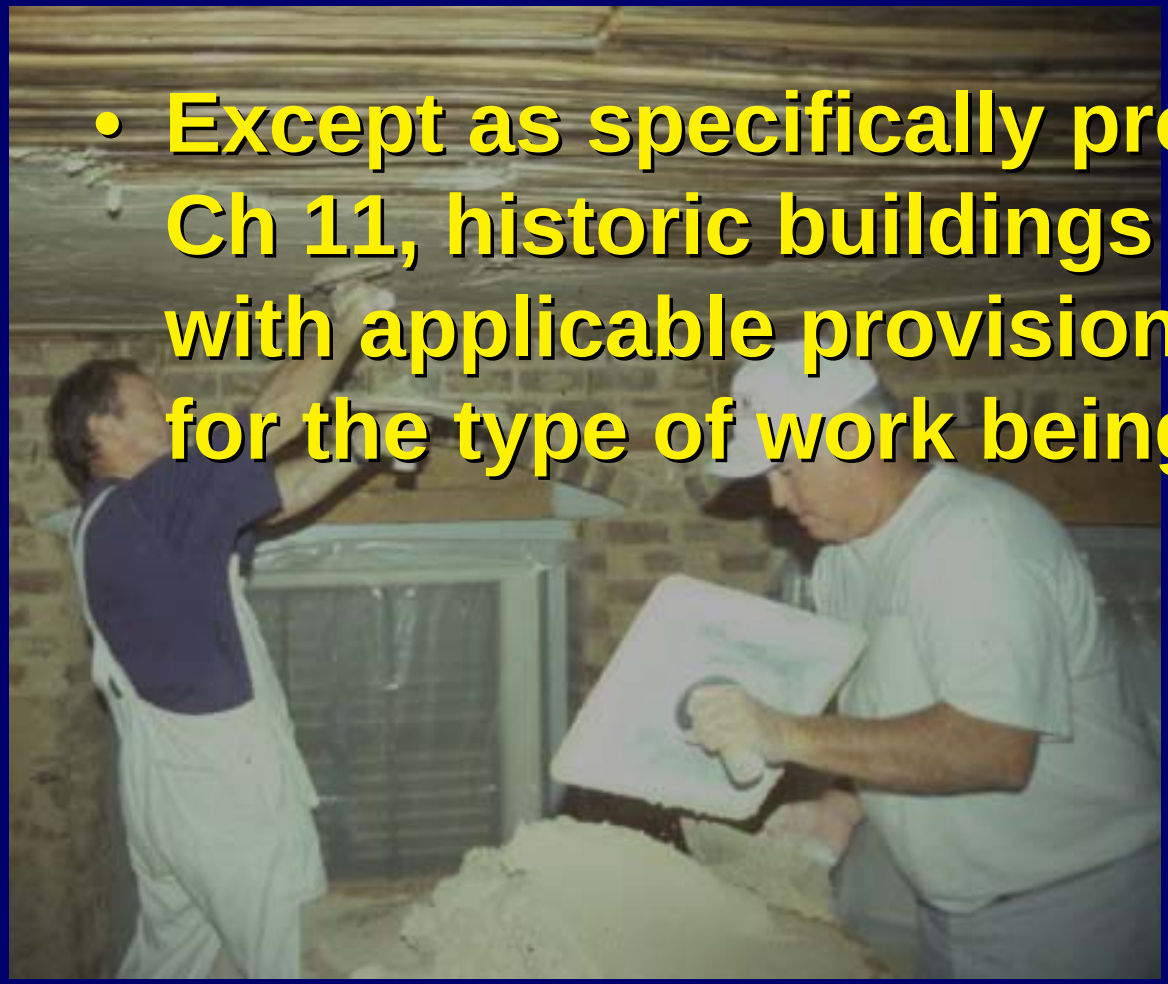


Section 408 Historic Buildings



- 408.1 In Wisconsin a Historic Buildings means a “qualified historic building” as defined within s. 101.121(2)(c), Stats.

Section 408.2 Application



- Except as specifically provided for in Ch 11, historic buildings are to comply with applicable provisions of this code for the type of work being performed.

Section 409 Relocated Buildings

- **409.1 Scope: Existing Commercial Buildings that are relocated or moved buildings will follow Ch 12**

IEBC Wisconsinisms CH 5

- **Comm 66.0506 Structural evaluation.** The requirements in IEBC sections 506.2 to 506.2.5 are **not** included as part of this code.
- **Comm 66.0509 Plumbing.** The requirements in IEBC section 509 are **not** included as part of this code.

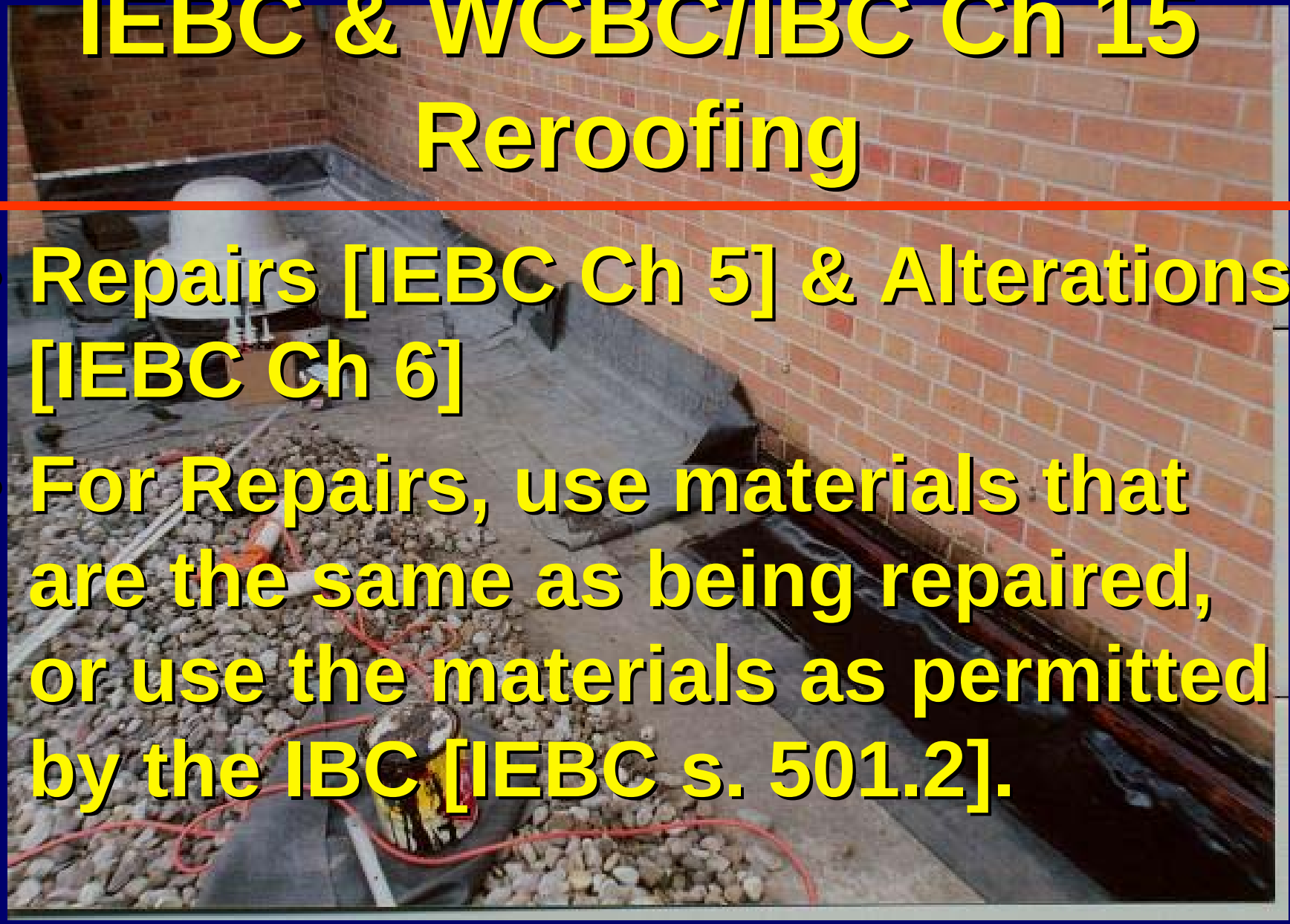
IEBC Ch 5 - Repairs

- SECTION 501 GENERAL
- SECTION 502 BUILDING ELEMENTS AND MATERIALS
- SECTION 503 FIRE PROTECTION
- SECTION 504 MEANS OF EGRESS
- SECTION 505 ACCESSIBILITY
- SECTION 506 STRUCTURAL [WI]
- SECTION 507 ELECTRICAL
- SECTION 508 MECHANICAL
- SECTION 509 PLUMBING [WI]

IEBC Ch 5 - Repairs

- Approach
  - With a few specific exceptions, repairs may be made with like or similar materials, even if those materials are no longer permitted by the WCBC or International Codes®

IEBC & WCBC/IBC Ch 15 Reroofing



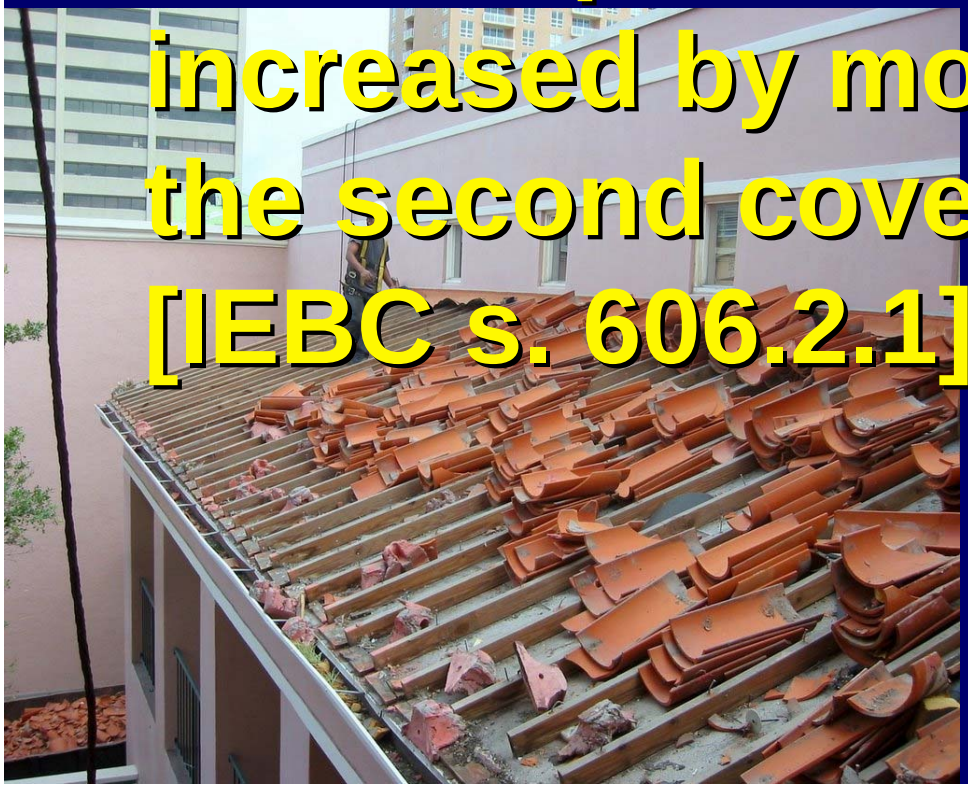
- Repairs [IEBC Ch 5] & Alterations [IEBC Ch 6]
- For Repairs, use materials that are the same as being repaired, or use the materials as permitted by the IBC [IEBC s. 501.2].

WCBC/IEBC Reroofing (cont.)

- Reroofing - Altns [IEBC Ch 6]
- Use the same materials as permitted by the IBC [IEBC s. 602.3].

WCBC/IEBC Reroofing (cont.)

- Reroofing - Altns [IEBC Ch 6]
- Regarding Structural, remember the exceptions when the DL is not increased by more than 5% or if the second cover is less than 3# [IEBC s. 606.2.1]



WCBC/IEBC Reroofing (cont.)

- The Reroofing must meet the energy conservation [IECC] requirements of the WCBC [Comm 66.0607] except where the roof is not exposed and the energy use of the building is not increased.

WCBC/IBC Chapter 15 Noteworthy Changes

- 1510 Reroofing – Added an exception to the tear off restriction – Will not have to tear off a new protective coating on spray foam roofs

IEBC CH 6

601 – General

602 – Building Elements (W)

603 – Fire Protection

604 – Means of Egress

605 – Accessibility

606 – Structural

607 – Energy Conservation (W)

IEBC Wisconsinisms CH 6

- **Comm 66.0602 Building elements and materials. (1)** MATERIALS AND METHODS. Substitute the following wording for the requirements in IEBC section 602.3: All new work shall comply with materials and methods requirements in the ICC EC, IBC, IECC, IFGC, IMC, and IPC, as applicable, that specify material standards, detail of installation and connection, joints, penetrations, and continuity of any element, component, or system in the building.

IEBC Wisconsinisms CH 6 (cont)

- **Comm 66.0602 Building elements and materials.**
  (2) INTERNATIONAL FUEL GAS CODE. The requirements in IEBC section 602.3.1 are not included as part of this code.

- 602.3.1 International Fuel Gas Code.
- The following sections of the International Fuel Gas Code shall constitute the fuel gas materials and methods requirements for Level 1 alterations.
- 1. All of Chapter 3, entitled "General Regulations," except Sections 303.7 and 306.
- 2. All of Chapter 4, entitled "Gas Piping Installations," except Sections 401.8 and 402.3.
- 2.1. Sections 401.8 and 402.3 shall apply when the work being performed increases the load on the system such that the existing pipe does not meet the size required by code. Existing systems that are modified shall not require resizing as long as the load on the system is not increased and the system length is not increased even if the altered system does not meet code minimums.
- 3. All of Chapter 5, entitled "Chimneys and Vents."
- 4. All of Chapter 6, entitled "Specific Appliances."

IEBC Wisconsinisms CH 6 (cont)

- **Comm 66.0607 Energy conservation requirements.** Substitute the following wording for the requirements in IEBC section 607.1: **(1)** ADDITIONS, ALTERATIONS, RENOVATIONS OR REPAIRS. Except as specified in sub. (2), additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of IECC as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with the IECC. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems.

IEBC Wisconsinisms CH 6 (cont)

- **Comm 66.0607 Energy conservation reqmt's. *What about those exceptions in sub. (2) ??***
  (2) EXCEPTIONS. All of the following need not comply provided the energy use of the building is not increased:
- There are 4 exceptions as follows:
- (a) Storm windows installed over existing fenestration.
- (b) Glass only replacements in an existing sash and frame.

IEBC Wisconsinisms CH 6 (cont)

- **Comm 66.0607 (2)** ***What about the rest of those other 2 exceptions ??***
  (2) EXCEPTIONS. All of the following need not comply provided the energy use of the building is not increased:
- (c) Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
- (d) Construction where the existing roof, wall or floor cavity is not exposed.

IEBC Wisconsinisms CH 6 (cont)

- **Not so fast . . . Important significant language often overlooked**
- **66.0607 Energy conservation requirements.**
  (1) ADDITIONS, ALTERATIONS, RENOVATIONS OR REPAIRS. Except as specified in sub. (2), additions, alterations, renovations or repairs to an existing building, building system or **portion thereof** shall conform to the . . . IECC.

IEBC Wisconsinisms CH 6 (cont)

- **"Portion thereof" . . .**
- **In essence, the provisions of the IECC are only to be applied to that part being worked on . . . Effectively only what you are touching !**

IEBC Ch 6 Alterations - 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.

IEBC Ch 6 - Level 1 Alt's (cont)

Level 1 alterations are commonly the type of minor alteration being referred to in Comm 61.30(4). Plan submittal may not be needed.

IEBC Ch 6 - Level 1 Alt's (cont)

Direction Given on subjects of:

- **Bldg elements/Matl's [602 & WI]**
- **Fire Protection [603]**
- **Means of Egress [604]**
- **Accessibility [605]**
- **Structural [606]**
- **Energy Cons'n [607 & WI]**

Section 605.1 Accessibility

- Altered Buildings are to comply with the applicable provisions in Section 605.1.1 through 605.1.12, chapter 11 of the IBC and ICC A117.1… “unless technically infeasible”. In which case… “to the maximum extent feasible”.
- …access to be maintained during occupancy.

Section 605.1 Accessibility

Four Exceptions...

1. The Altered Element or space is not involving a primary function or affecting the accessible route to a primary function

2. IBC Accessible Means of Egress not required in existing buildings

Section 605.1 Accessibility

Four Exceptions (cont'd)...

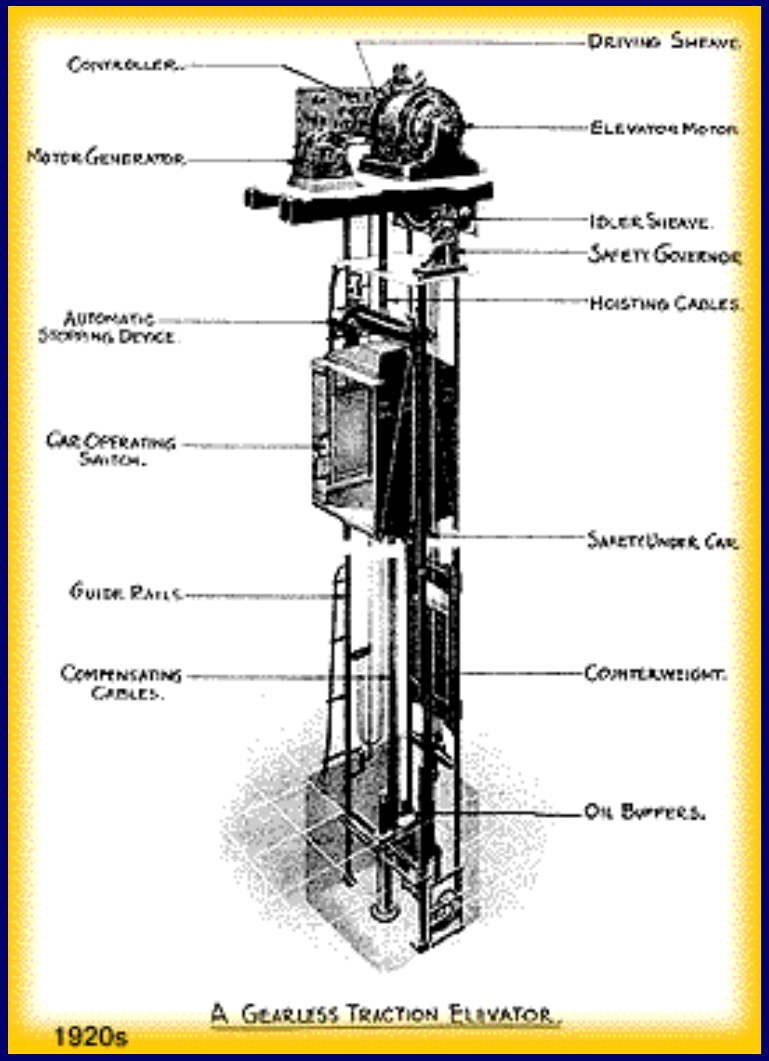
3. Type B DU's/sleeping units need not be provided within existing buildings

4. When altering a Type A individually Owned DU's within an R-2, the unit needs to meet Type B provisions of IBC Ch. 11 & ICC ANSI A117.1.

Section 605.1.1 Entrances

...when altering an entrance and the building already has an accessible entrance on an accessible route, the altered entrance need not be made accessible unless called for by s. 605.2 ...[Alterations Affecting an Area Containing a Primary Function.]

Section 605.1.2 Elevators



...altered elements shall comply with ASME A17.1 and ICC/ANSI A117.1...

Section 605.1.3 Platform Lifts

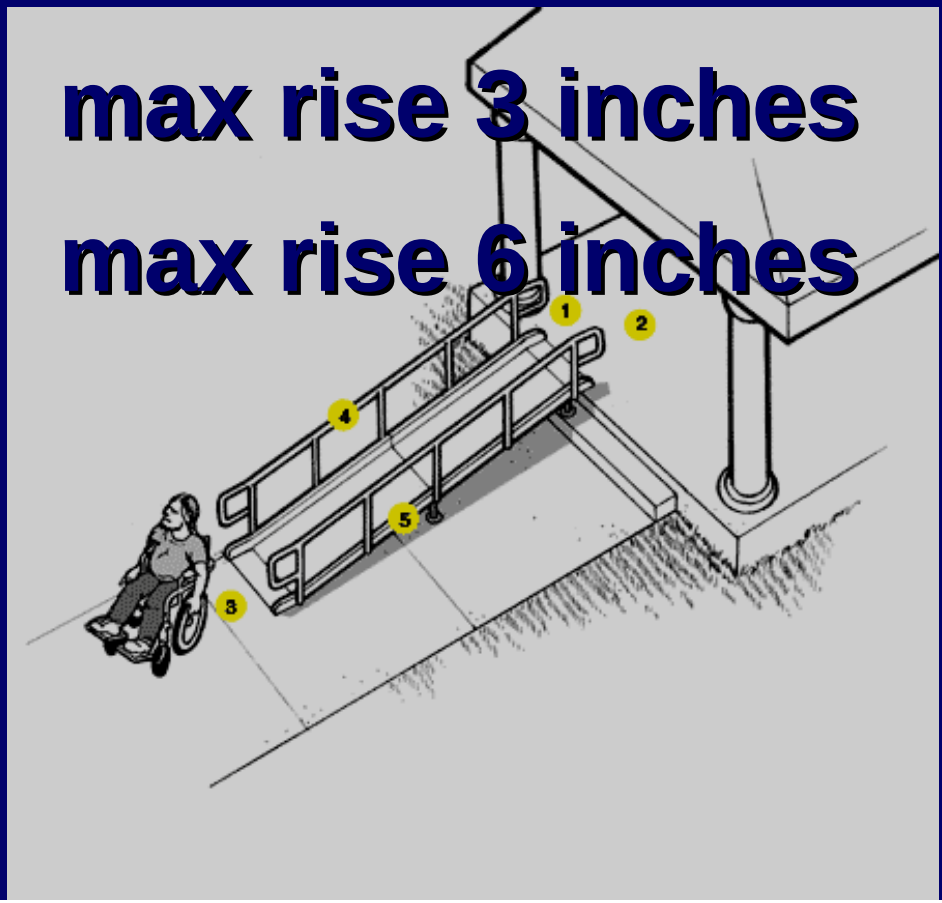
...complying with ICC A117.1 and installed in accordance with ASME A18.1 shall be permitted as component of accessible route.

Section 605.1.4 Ramps

...steeper than allowed in IBC 1010, reference table 605.1.4...

1:10 – 1:8 **max rise 3 inches**

1:12 – 1:10 **max rise 6 inches**



Section 605.1.5 Dining Areas

...unlike new const., access is NOT required to raised or sunken dining areas or outdoor seating areas provided the same service and decor exists in an accessible space.

Section 605.1.6 Performance Areas

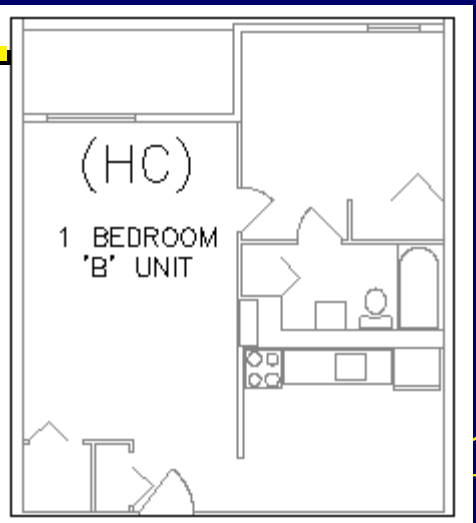
...where technically infeasible to alter performance areas...at least one of each type shall be made accessible.

Section 605.1.7 Jury boxes

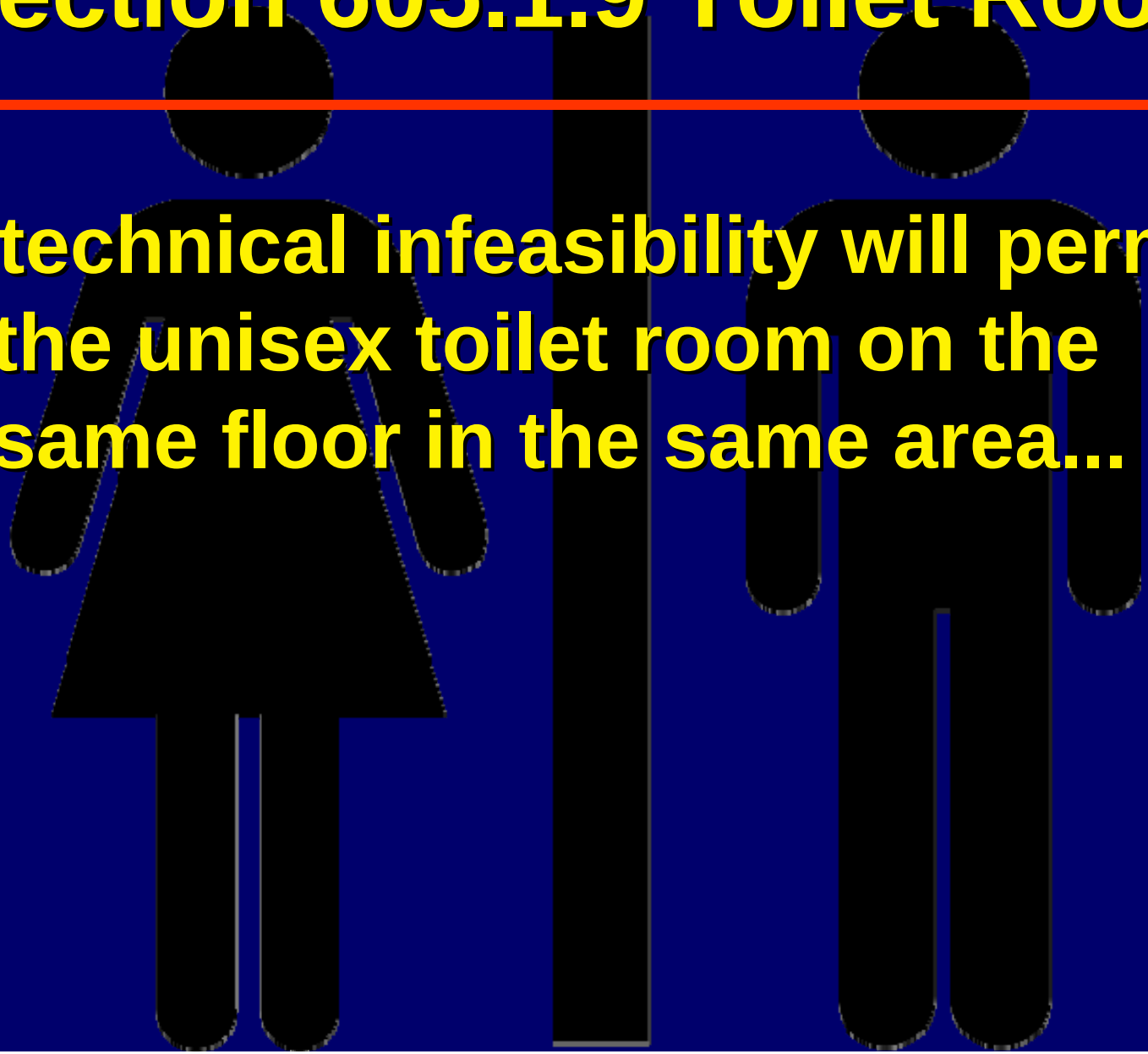
...access not required within defined area of jury or witness stand where ramp or lift poses a hazard or restricts egress.

Section 605.1.8 Dwelling Unit

When altering I-1, I-2, I-3, R-1, R-2 or R-4 . . . provisos of IBC 1107 for Accessible or Type A units and alarm provisos of IBC Ch. 9 apply only to the quantity of the spaces being altered.



Section 605.1.9 Toilet Rooms



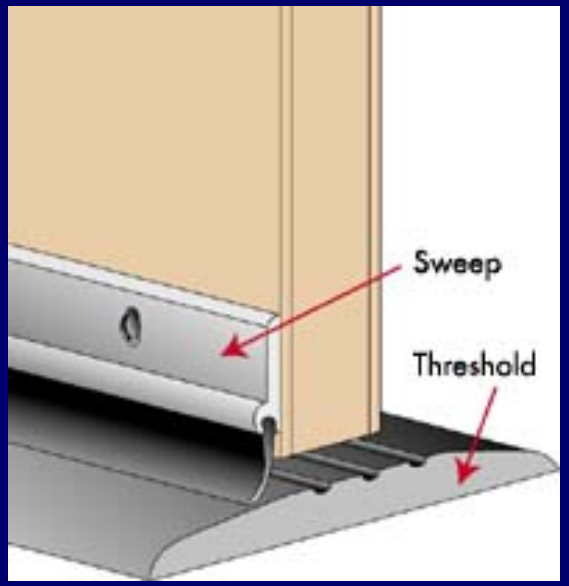
...technical infeasibility will permit the unisex toilet room on the same floor in the same area...

Section 605.1.10 Fitting Room

…technical infeasibility will permit one accessible room on same floor in same area permitted… When fitting rooms provided for separate sex, each to have access as well.

Section 605.1.11Thresholds

...3/4” maximum height with beveled edges.



Section 605.1.12 Extent of Application ...

... Not to impose requirement for greater accessibility than that required for new construction

... Conversely, not to reduce accessibility.

Section 605.2 Alterations Affecting Areas of Primary Function

...access to or areas containing a primary function...that route shall be accessible.

Exceptions...

- Disproportionate cost - 20%
- Alts to windows, hardware, controls, etc.
- Alts to syst's like mech, elect, fire, etc
- alterations to increase accessibility

Section 605.2 Alt'ns Affecting Primary Funct'n Area (cont)

Before moving to the 4 exceptions, do not forget the main exception . . . Without the alteration of an area containing a primary function . . . none of the exceptions even need probing.

Section 605.2 Alt'ns Affecting Primary Funct'n Area (cont)

Getting back to those 4 exceptions

- Disproportionate cost - 20%
- Alts to windows, hardware, controls, etc.
- Alts to syst's like mech, elect, fire, etc
- alterations to increase accessibility

Section 605.2 Alt'ns Primary Funct'n Area Except's (cont)

First to dispose of the no brainers . . .

- **Disproportionate cost - 20%**
- **Alts to windows, hardware, controls, etc.**
- **Alts to syst's like mech, elect, fire, etc**
- **alterations to increase accessibility**

Section 605.2 Alt'ns Primary Funct'n Area Except's (cont)

What's so different about that first exception . . .

- **Disproportionate cost - 20%**
- **Alts to windows, hardware, controls, etc.**
- **Alts to syst's like mech, elect, fire, etc**
- **alterations to increase accessibility**

Section 605.2 "Disproportionality" (cont)

Disproportionate cost - 20%

- **Wisconsin tools . . .**
- **Does not demand that one spend 20%**

DISPROPORTIONALITY WORKSHEET
Comm 62 and IBC section 3408
ALTERATIONS TO A PRIMARY FUNCTION AREA

A. TOTAL COST OF ALTERATION TO PRIMARY FUNCTION AREA (Excluding costs in B.)	$_____
MINIMUM COSTS FOR ACCESSIBLE ROUTE: (When the cost of providing an accessible route exceeds 20% of the total cost of the alteration, the cost is considered disproportionate)	$_____
B. COSTS REQUIRED TO PROVIDE AN ACCESSIBLE ROUTE: (Listed in order of suggested priority in the event the cost is disproportionate)	
1. Costs associated with providing an accessible route to the altered area: (Route is from exterior to the altered area, including entrance and parking):	$_____
• Costs associated with providing an accessible entrance:	$_____
• Costs associated with providing components of an accessible route (Ramps, elevators, platform lifts):	$_____
• Costs associated with providing accessible elements such as parking:	$_____
2. Costs associated with making toilet rooms accessible:	$_____
3. Costs associated with relocating an inaccessible drinking fountain:	$_____
TOTAL COSTS TO PROVIDE AN ACCESSIBLE ROUTE:	$_____
C. DISPROPORTIONATE COSTS: If the total cost of the expenditures in B. is greater than 20% of the total cost of the alteration in A., list the elements and spaces being provided that will equal or exceed 20% of the total cost of the alteration. If a non-accessible item exceeds 20% and all other elements and spaces along the accessible route comply with the current accessibility requirements, the additional expenditure is not required	_____ _____ _____

SBD-10219 (R. 4/03)

DISPROPORTIONALITY WORKSHEET
Comm 62 and IBC section 3408
ALTERATIONS TO A PRIMARY FUNCTION AREA
DISPROPORTIONATE COSTS TO PROVIDING AN ACCESSIBLE ROUTE

Division of Safety and Buildings form, SBD 10219, Disproportionate Costs in Alterations, shall be submitted with the SBD-118 Plan Application form and plans at the time of building plan review.

The plan reviewer will determine compliance with the alteration requirements specified in chapter Comm 62 and IBC section 3408.

Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)].

PROJECT INFORMATION **Project Transaction Number**_____

BUILDING LOCATION:

_____
STREET ADDRESS

_____
CITY, VILLAGE, TOWNSHIP

_____
OWNER'S NAME (PLEASE PRINT)

_____
OWNER'S SIGNATURE

DATE OF ALTERATION:_____

SBD-10219 (R: 4/03)

The intent of this requirement is for the owner and designer to analyze the exist'g bldg's accessible route features to the altered area against the current code requirements and to then remove existing barriers to people with disabilities, provided the cost is not disproportionate. If the cost to provide an accessible route to the altered area is greater than 20 percent of the total cost of the altered area, the cost is deemed disproportionate. However, if the total cost of the alteration is greater than 20 percent, the owner is required to spend up to 20 percent of the total cost to provide accessible route features. If a non-accessible item exceeds the 20 percent and all other elements and spaces along the accessible route comply with the current accessibility requirements, the owner is not required to spend the additional money to make spaces outside of the altered area accessible.

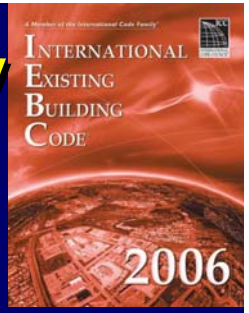
Section 606 - Structural

- In some cases, work on roofs can demand improving the roof structure or more analysis.
- Where the added DL is more than a 5% increase
- Previously mentioned second layer of roof covering that is up to 3 PSF

Structural & Roof (cont)

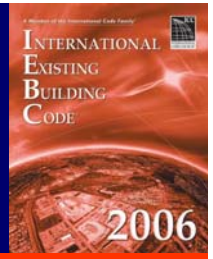
- Make sure masonry parapets are braced if bldg. is Seismic Des. Category D, E, or F
- If the re-roofing requires more than a 50% tear-off, evaluate the deck diaphragm for deterioration . . . Repair as needed

Exist'g Bldg's & Energy Conservation



- [Comm 66.0607] Addn's, altn's, or repairs are to conform to the provisos of the IECC as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply. [Remember the previous]
- The work cannot create an unsafe/hazardous cond'n or overload existing building systems.
- NOTE THE EXCEPTIONS . . . .

Comm 66.0607 (cont)



- **THE EXCEPTIONS. The following items do not have to comply as long as the energy use of the bld'g is not increased:**
- **Storm windows over exist'g windows.**
- **Glass replacement in an existing sash & frame.**
- **Exist'g ceiling/wall/floor cavities exposed during construction as long as the cavities are already insulated.**
- **Construction where the existing roof, wall or floor cavity is not exposed.**

IEBC Ch 7 - Level 2 Alt's Direction

Direction Given on subjects of:

- **General [701 & WI]**
- **Special Use/Occ'y [702]**
- **Build'g Elements/Matl's [703 & WI]**
- **Fire Protection [704]**
- **Means of Egress [705]**

IEBC Ch 7 – Direction (cont)

- Accessibility [706]
- Structural [707]
- Electrical [708]
- Mechanical [709 & WI]
- Plumbing [710 & WI]
- Energy Cons’n [711 & WI]

IEBC Wisconsinisms CH 7

- **There are 4 sections of Chapter 7 that are modified. Sections 701, 709, 710 & 711.**
- **Comm 66.0701 Compliance.** This is a department exception to the requirement in IEBC section 701.3: The installation or extension of an automatic sprinkler system may exclude the protection of combustible concealed spaces that are not accessible in existing buildings.

IEBC Wisconsinisms CH 7 (cont)

- **Comm 66.0709 Altered existing mechanical systems.** The exception to the requirements in IEBC section 709.1 and the requirements in IEBC section 709.2 are not included as part of this code.

IEBC Wisconsinisms CH 7 (cont)

- **Comm 66.0710 Minimum plumbing fixtures.** Substitute the following wording for the requirements in IEBC section 710.1: Where the occupant load of a story is increased by more than 20 percent, plumbing fixtures for the story shall be provided in quantities specified in the IBC based on the increased occupant load.

IEBC Wisconsinisms CH 7 (cont)

- **Comm 66.0711 Minimum energy conservation requirements.** Substitute the following wording for the requirements in IEBC section 711: Level 2 alterations to existing buildings or structures shall comply with s. Comm 66.0607.

IEBC Ch 7 Alterations - Level 2

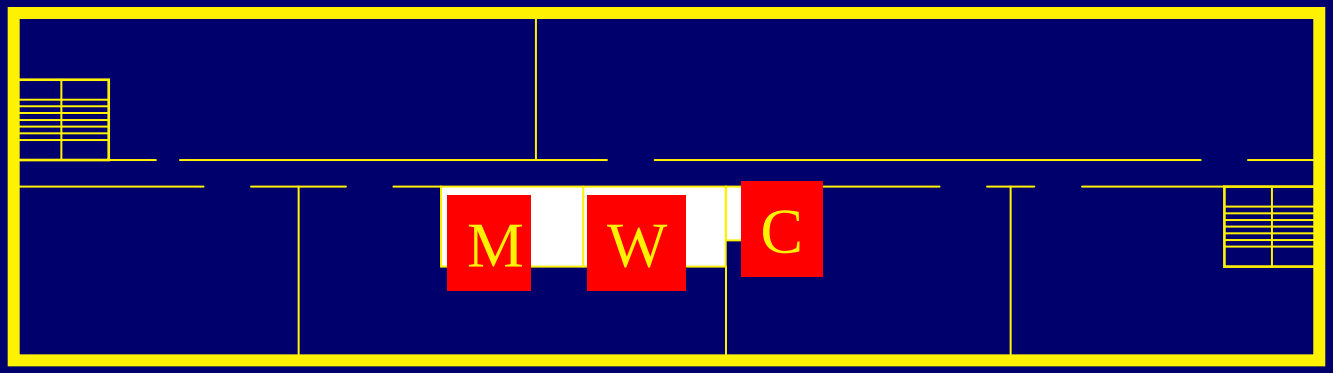
Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

Chapter 7
Alterations - Level 2

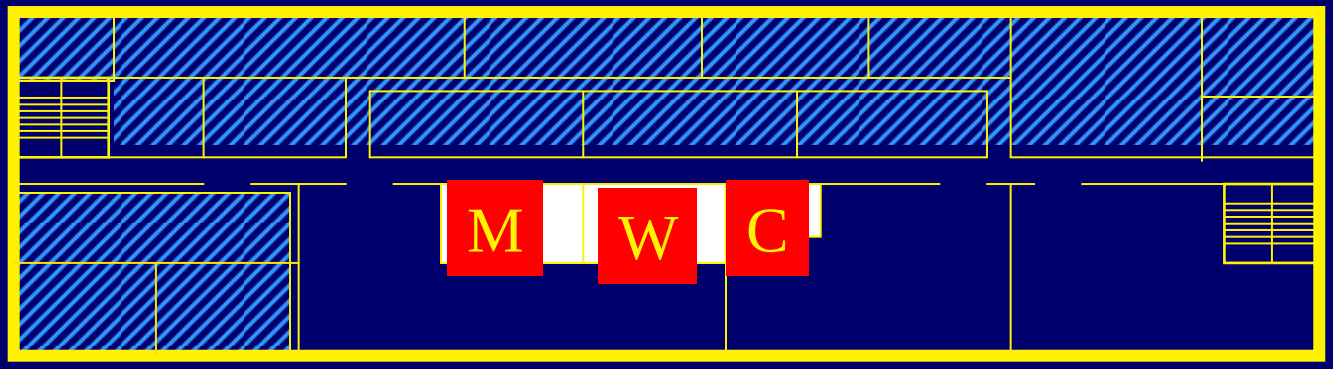
Example

- **A rearrangement of 3 tenant spaces results in reconfiguration of 60% of the 1st floor. There are no alterations taking place on the second floor of the building.**
- **The reconfigured work area is only 30% of the buildings total area. Stays at Level 2 !**

Chapter 7 Altn's - Level 2 Example (cont)



Existing First Floor



Proposed First Floor

Chapter 7
Alterations - Level 2

A DIFFERENT Example:

- **An existing building can be reused by the owner without rearranging any of the existing spaces but will need to add/subtract/move around some of the existing doors and windows**
- **Even though there is no reconfigured work area associated with the project, it's still at Level 2 !**

IEBC Ch 8 - Level 3 Alt's Direction

Direction Given on subjects of:

- **General [801]**
- **Special Use/Occ'y [802 & WI]**
- **Build'g Elements/Matl's [803]**
- **Fire Protection [804]**
- **Means of Egress [805]**

IEBC Ch 8 – Direction (cont)

- Accessibility [806]
- Structural [807]
- Energy Cons'n [808 & WI]
- Plumbing [Wisconsinism on the State law dealing with the subject commonly referred to as "Potty Parity"]

IEBC Wisconsinisms CH 8

- **Comm Comm 66.0802 Emergency Controls.** The requirements in IEBC section 802.2.1 are not included as part of this code.

IEBC Wisconsinisms CH 8 (cont)

- **Comm 66.0808 Minimum energy conservation requirements.** Substitute the following wording for the requirements in IEBC section 808.1: Level 3 alterations to existing buildings or structures shall comply with s. Comm 66.0607.

IEBC Wisconsinisms CH 8 (cont)

- **Comm 66.080 Plumbing.** These are dept. rules in add'n to the requirements in IEBC chapter 8:
  (1) Pursuant to s. 101.128, Stats., level 3 alterations within an existing facility where the public congregates shall necessitate that plumbing fixtures serving the work area be provided in a ratio of at least 2 water closets for females as to each water closet and urinal for the males.
- **(2)** (a) Under this section "facility where the public congregates" has the meaning has given in s. 101.128 (1) (b), Stats.
- (b) Under this section "alterations" has the meaning as given in s. 101.128 (1) (d), Stats., for "renovation".

IEBC Wisconsinisms CH 8 (cont)

- I am thinking those statutory definitions are important !
- Section 101.128 (1) (b), Stats., reads: "Facility where the public congregates" means any of the following that has a general capacity or a seating capacity of 500 or more persons:
  1. An amusement facility.
  2. A convention or trade hall or center.
  3. A specialty event center.
  4. A sports or entertainment arena, center or building.
  5. A stadium.
  6. An airport, bus terminal, train station or other transportation center.

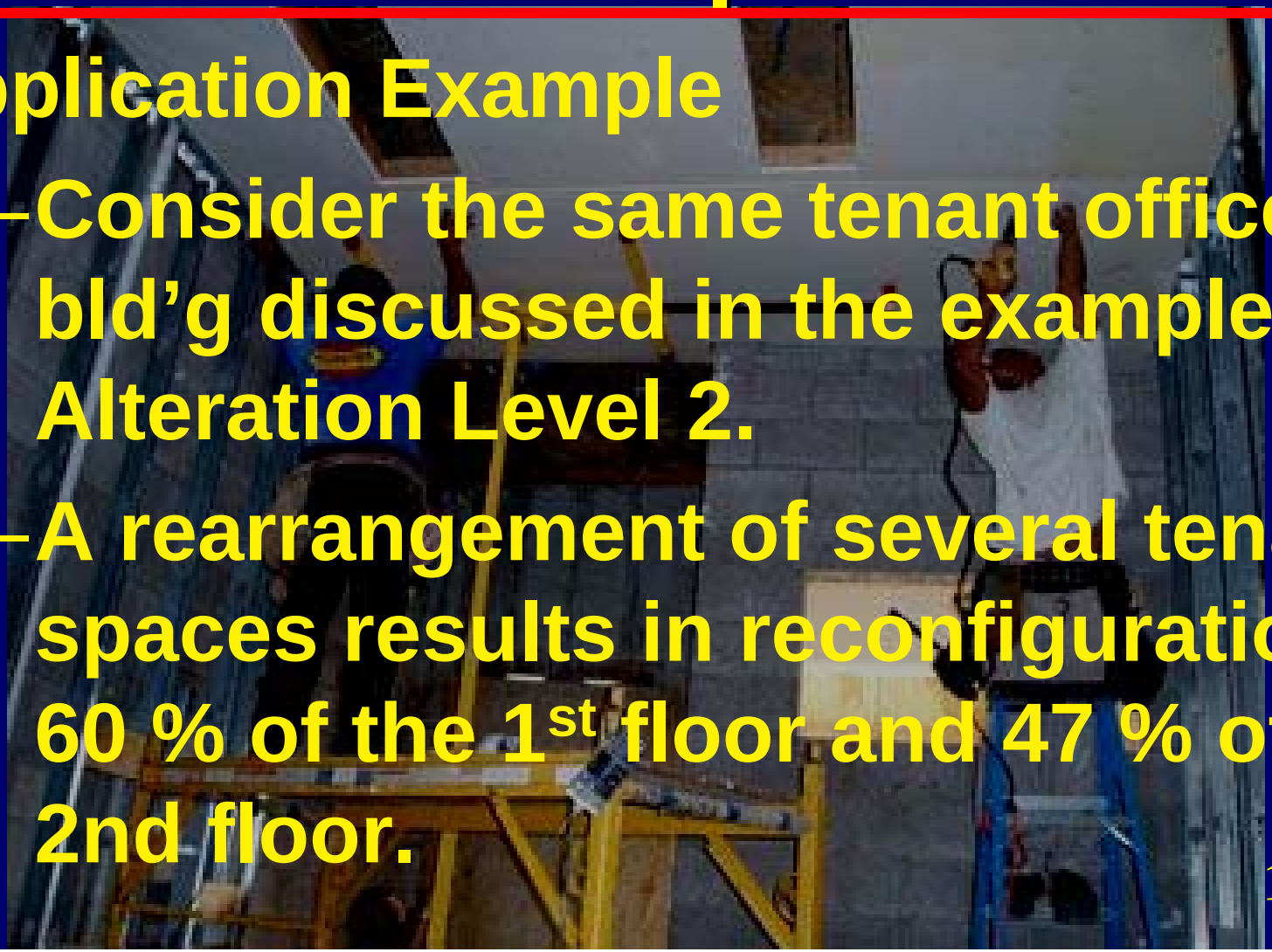
IEBC Wisconsinisms CH 8 (cont)

- Section 101.128 (1) (d), Stats., reads: "Renovation" means any structural remodeling, improvement or alteration of an existing facility where the public congregates. "Renovation" does not include any of the following:
  1. Reroofing.
  2. Cosmetic remodeling, including painting or the installation of wall covering, of paneling, of floor covering or of suspended ceilings.
  3. An alteration to an electrical or mechanical system.

IEBC Ch 8 Alterations-Level 3

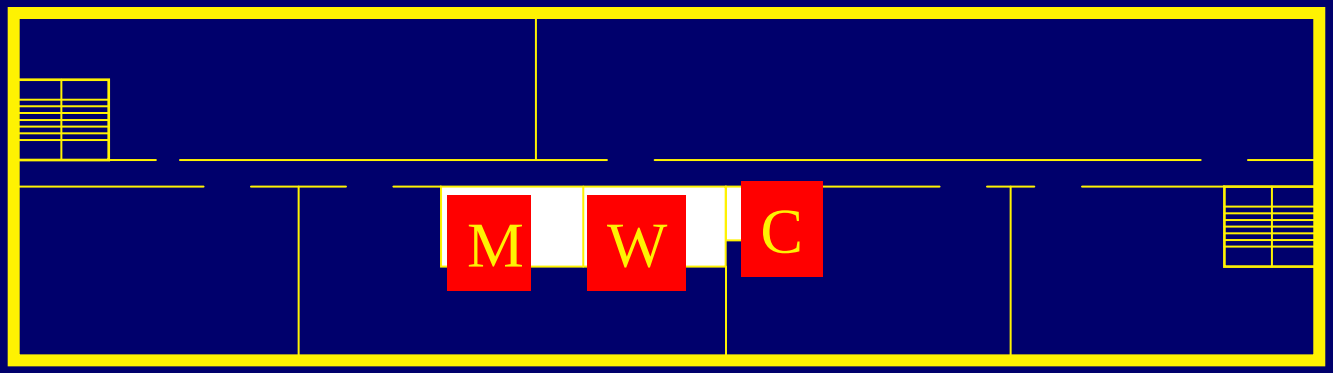
Level 3 provisions come into play where the work area (the area that has been reconfigured – see definition s. 202) exceeds 50% of the aggregate area <u>of the building</u>.

Chapter 8 Altn's - Level 3 Example

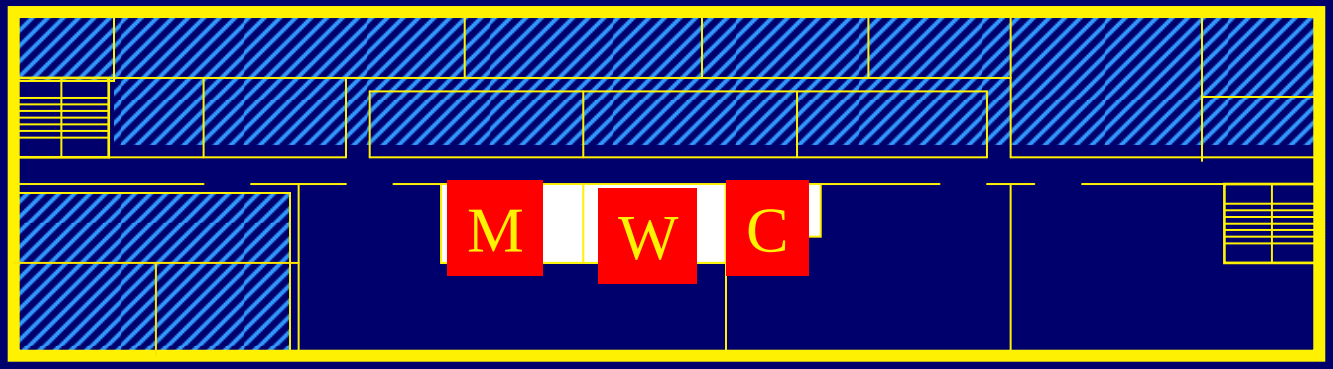


- Application Example
  - Consider the same tenant office bld'g discussed in the example of Alteration Level 2.
  - A rearrangement of several tenant spaces results in reconfiguration of 60 % of the 1st floor and 47 % of the 2nd floor.

Chapter 8 Altn's - Level 3 Example (cont)

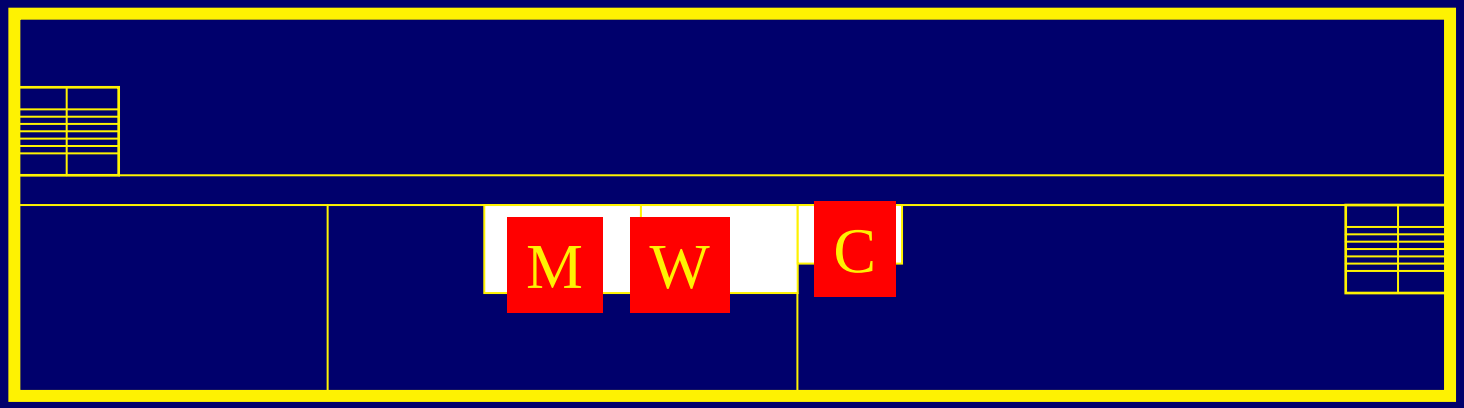


Existing First Floor

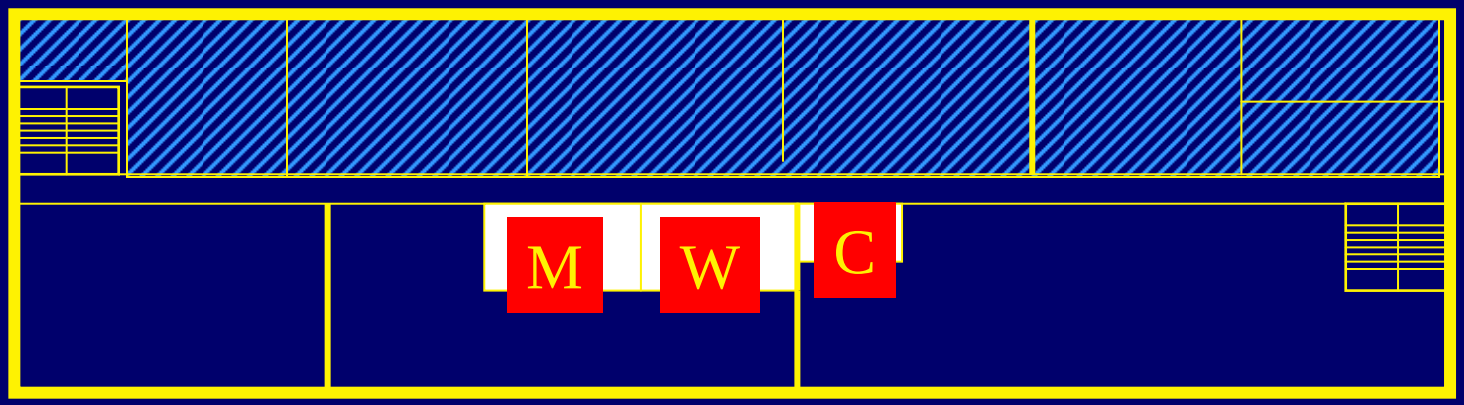


Proposed First Floor

Chapter 8 Altn's - Level 3 Example (cont)



Existing Second Floor



Proposed Second Floor

Chapter 8
Altn's -Level 3 Example (cont)

Analysis:

This is an Alteration, Level 3 project because the work area consists of 53.5% of the building agg. area, over the 50% limit. As a Level 3, req'd. to follow the Chapter 8 provisions in add'n to those of Chs. 7 & 6

Important !

Do not include area of door or window work within the AREA calculation !

Ch. 9 – Change of Occupancy What's in 901 to 911?

- GENERAL [901 & WI]
- SPECIAL USE & OCCUPANCY [902]
- BLD'G ELEMENTS & MATL'S [903]
- FIRE PROTECTION [904]
- MEANS OF EGRESS [905]
- ACCESSIBILITY [906]

Ch. 9 – 901 to 911? (cont)

- STRUCTURAL [907]
- ELECTRICAL [908]
- MECHANICAL [909]
- PLUMBING [910 & WI]
- OTHER REQMT'S [911 & WI] (only light & vent'n)

IEBC Wisconsinisms CH 9

- **There are 4 modifications to Chapter 9 that relate to the basic scoping for change of occupancy as spelled out in Comm 66.0901(1) through (4).**
- **Comm 66.0901 Change of occupancy. (1)** CHANGE IN OCCUPANCY WITH NO OCCUPANCY CLASSIFICATION. Substitute the following wording for the requirements in IEBC section 901.2: A change in occupancy, as defined in IEBC section 202, with no change of occupancy classification shall not be made to any structure which will subject the structure to any special provisions of the applicable international codes, including the provisions of IEBC sections 902 through 911, without the approval of the code official.

IEBC Wisconsinisms CH 9

- **Comm 66.0901 Change of occupancy.**
- **(2)** CHANGE OF OCCUPANCY CLASSIFICATION. This is a department rule in addition to the requirements in IEBC section 901.3: Buildings undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with IECC.

IEBC Wisconsinisms CH 9 (cont)

- **Comm 66.0901 Change of occupancy.**
- **(3)** CERTIFICATION OF OCCUPANCY REQUIRED. The requirements in IEBC section 901.4 are not included as part of this code.
- **(4)** STANDPIPE SYSTEMS. This is a department rule in addition to the requirements in IEBC section 912.2: Standpipe systems shall be provided in existing buildings and structures or portions of existing buildings and structures in accordance with chapter 9 of the IBC when existing buildings or structures that are greater than 60 feet in height are changed to include a Group R-1 or R-2 occupancy.

IEBC Wisconsinisms CH 9 (cont)

- **Comm 66.0910 Plumbing.** Substitute the following wording for the requirements in IEBC section 910: Where the occupant load of a story is increased by more than 20 percent, plumbing fixtures for the story shall be provided in quantities specified in the IBC based on the increased occupant load.

IEBC Wisconsinisms CH 9 (cont)

- **Comm 66.0911 Other requirements.** This is a department rule in addition to the requirements in IEBC section 911: At least one existing elevator shall be provided with emergency recall operation and emergency in-car operation complying with ch. Comm 18 when an existing building or structure that is greater than 60 feet in height is changed to include a Group R-1 or R-2 occupancy.

IEBC Ch 9
Change of Occupancy

- Similar to alteration levels, the extent of the change triggers differing levels of expected compliance.
  - Change of an occupancy provision that triggers a code requirement, but with no change to occupancy classification or group
  - Change of Occupancy that changes the Occupancy Classification or Group.

IEBC Ch. 9 – Change within Class or Group

- Change in occupancy, but with no change of occupancy classification or group must conform to Sections 902 through 911 and certain special provisos of the IBC (Covered Mall Bldg., Atriums, etc. – from IBC Ch. 4)

IEBC Ch. 9 Back to Change within Class or Group

- Change in occupancy, but with no change of occupancy classification or group . . .
- It is not uncommon for changes in activities or activity levels to occur within occupancies that will have implications on life safety risks without a change to class or group

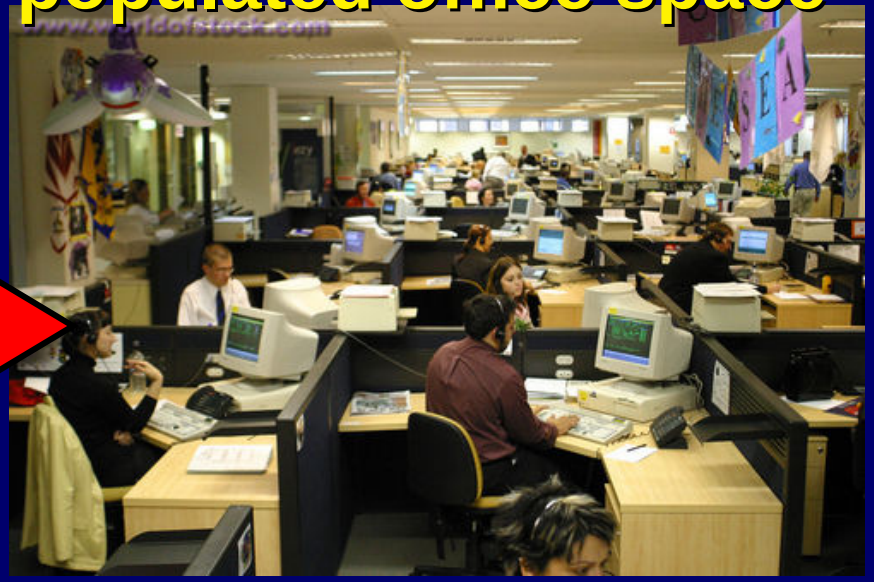
Ch. 9 – Change within (cont)

- How did we get here?
- Remember 901.2 . . . Must gain approval of the code official.
- S&B constantly speaks to the “code in effect” and the maintenance of existing conditions.
- Pre or Post 2002 (Model Code era)
- # of Exits and Assy. Sprinklers

IEBC Ch. 9 – Change within (cont)

- Most commonly recognized change is that which increases the occupant density within a given space.
- All are aware of the significant dangers and increased risks associated with increasing capacity without consideration for the adequacy of the egress system . . . Think of the other ramifications

Change to more densely populated office space



More Densely Populated Office Space

Is it a single exit building or space?
Remember 49 person limit !

No sprinkler trigger based on occupant load

Don’t forget toilet fixture counts if capacity jumps by over 20% ! [see Comm 66.0910]

Change to more densely populated mercantile space

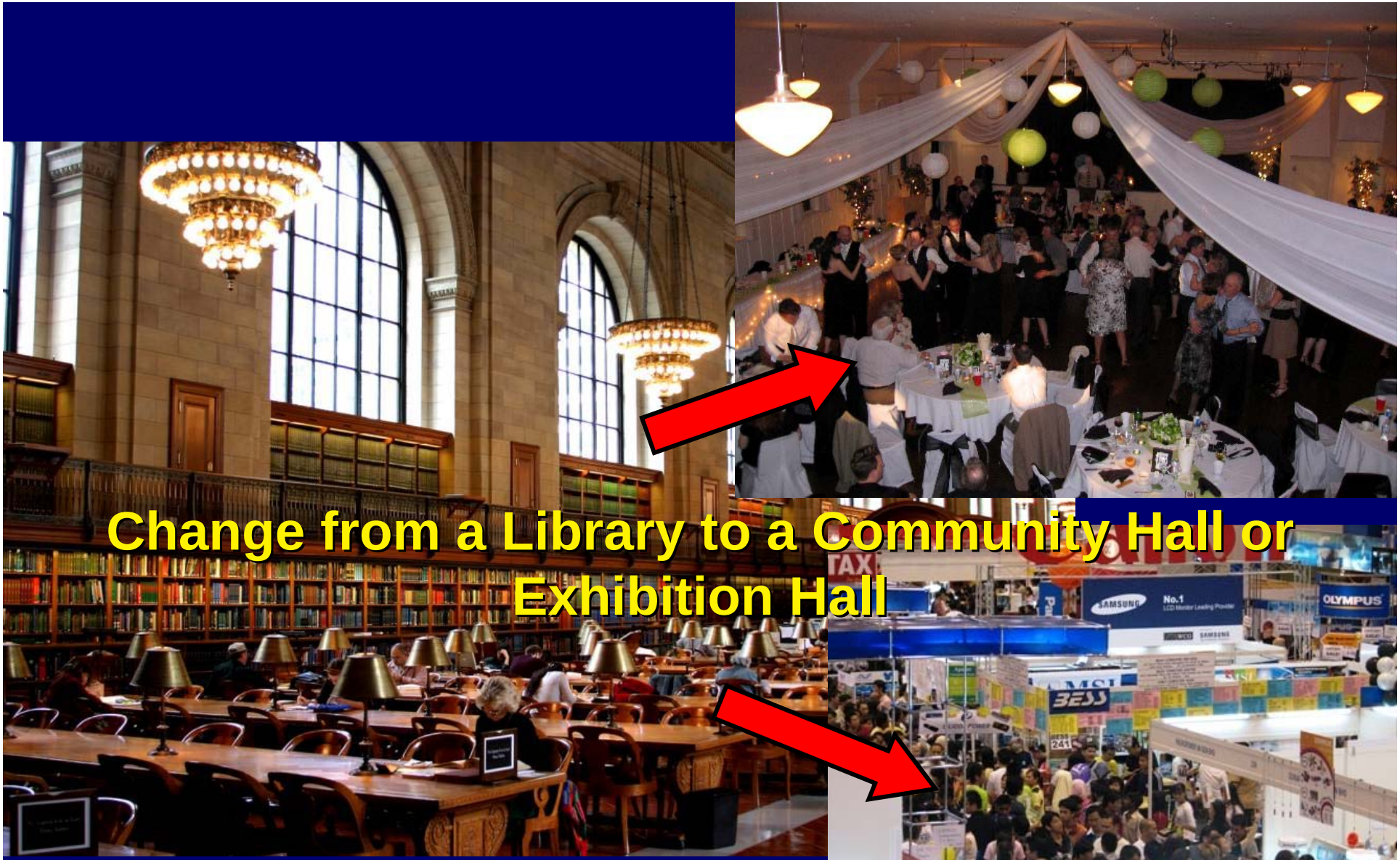
More Densely Populated Mercantile Space

Is it a single exit building or space?

Remember 49 person limit !

No sprinkler trigger based on occupant load !

Don’t forget toilet fixture counts if capacity jumps by over 20% ! [see Comm 66.0910]


Change from a Library to a Community Hall or Exhibition Hall
SAMSUNG
No.1
OLYMPUS
BESS

From a Library to a Community Hall or Exhibition Hall

Is it a single exit building or space?
Remember 49 person limit !

A-3 sprinkler trigger based on 300 person occupant load !

Don’t forget toilet fixture counts if capacity jumps by over 20% ! [see Comm 66.0910]

Wisconsinism – Standpipes Changing to R-1 or R-2

Is it a single exit building or space?

Remember 49 person limit !

A-3 sprinkler trigger based on 300 person occupant load !

Don’t forget toilet fixture counts if capacity jumps by over 20% ! [see Comm 66.0910]

IEBC Ch. 9 – Change to Class or Group

- When Change moves to different classification or group, Section 912 is added to Sections 902 through 911
- Section 912 Drives MORE reqmt's. that must be satisfied of the existing building.

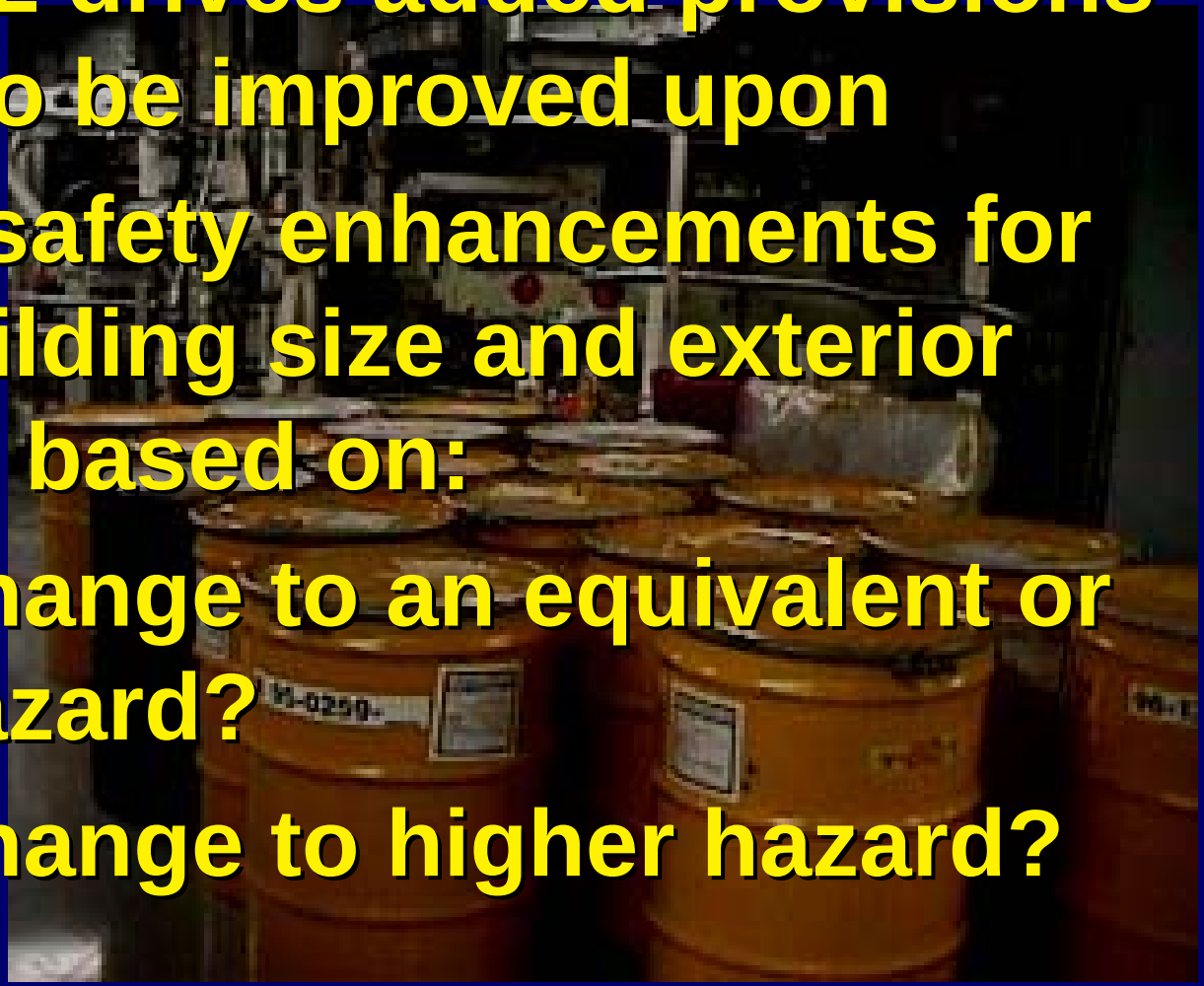
IEBC Ch. 9 – Occ'y Change (cont)

- First is the understanding that sprinklering/alarms [per triggers in IBC Ch. 9] and interior finishes [walls & ceilings per IBC – see Ch. 8] must be brought into compliance (IEBC s. 912.2 & 912.3 resp.)
- Next is the analysis of other subject and the relative hazards associated with the change.


Change from mercantile to office space

Ch. 9 – Section 912 (cont)

- Section 912 drives added provisions that have to be improved upon
- Degree of safety enhancements for egress, building size and exterior walls to be based on:
  - ? Is the Change to an equivalent or lesser hazard?
  - ? Is the Change to higher hazard?



Ch. 9 – Section 912 (cont)

- **Safety enhancements for Fire Protection Systems (Sprinklers, Standpipes & Alarm/Detection), Interior Finish and Accessibility are NOT based on relativity of hazard . . . [refer to IEBC sections 912.1.2, 912.1.4, 912.2, 912.3 & 912.8 plus WI Mod's]**

Ch 9 – Sect. 912
Relativity of Hazard

- Evaluation of hazards based on:
  - Life safety and exiting
  - Height and area
  - Exposure of exterior walls

IEBC TABLE 912.4

HAZARD CATEGORIES
MEANS OF EGRESS

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

IEBC TABLE 912.5

HAZARD CATEGORIES HEIGHTS AND AREAS

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, M, S-1
4 (Lowest Hazard)	A-5, B, F-2, R-3, S-2, U

EBC TABLE 912.6

HAZARD CATEGORIES
EXPOSURE OF EXTERIOR WALLS

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


Change from mercantile to office space

IEBC TABLE 912.4

HAZARD CATEGORIES
MEANS OF EGRESS

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

IEBC TABLE 912.5

HAZARD CATEGORIES HEIGHTS AND AREAS

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, M, S-1
4 (Lowest Hazard)	A-5, B, F-2, R-3, S-2, U

EBC TABLE 912.6

HAZARD CATEGORIES
EXPOSURE OF EXTERIOR WALLS

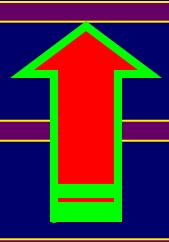
RELATIVE HAZARD	OCCUPANCY CLASSIFICATIONS
1 (Highest Hazard)	H
2	F-1, M, S-1
3	A, B, E, I, R
4 (Lowest Hazard)	F-2, S-2, U

Change from offices to restaurant use

IEBC TABLE 912.4

HAZARD CATEGORIES
MEANS OF EGRESS

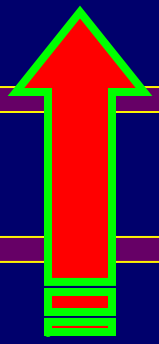
RELATIVE HAZARD	OCCUPANCY CLASSIFICATIONS
1 (Highest Hazard)	H
2	I-2, I-3, I-4
3	A, E, I-1, M, R-1, R-2, R-4
4	B, F-1, R-3, S-1
5 (Lowest Hazard)	F-2, S-2, U



IEBC TABLE 912.5

HAZARD CATEGORIES HEIGHTS AND AREAS

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, M, S-1
4 (Lowest Hazard)	A-5, B, F-2, R-3, S-2, U



EBC TABLE 912.6

HAZARD CATEGORIES
EXPOSURE OF EXTERIOR WALLS

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

Ch. 10 – What's in 1001 to 1005?

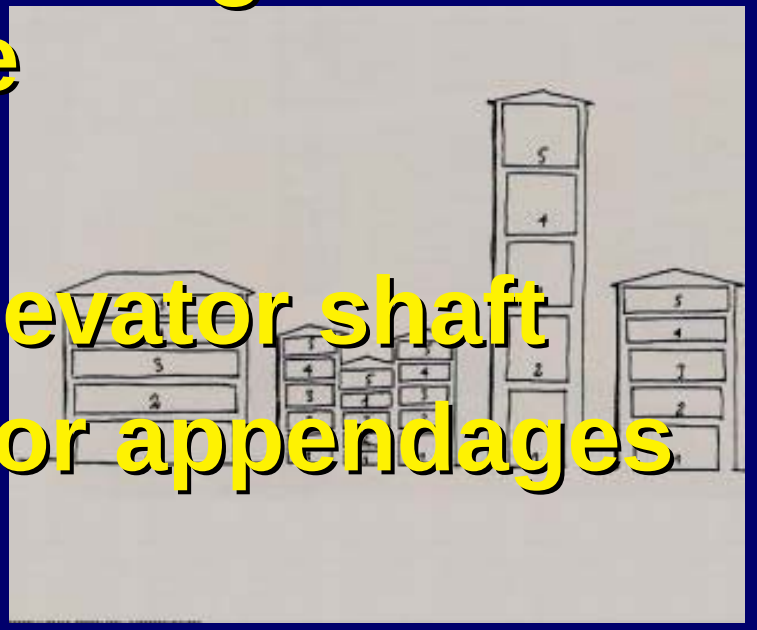
- GENERAL [1001]
- HEIGHTS AND AREAS [1002]
- STRUCTURAL [1003]
- SMOKE ALARMS [1004]
- ACCESSIBILITY [1005]

NO

Wisconsinisms

IEBC Ch 10 Additions

- Definition
  - An extension or increase in floor area (including floor infill projects), number of stories, or height of a building or structure
  - Exception 1002.2
    - Infill stairway or elevator shaft
    - Exit stair or elevator appendages



IEBC Ch 10 – Additions (cont)

- Approach
  - Additions are treated much as they have always been treated by the WCBC.
  - Not creating or extending non-conformance of existing buildings
  - Separation is often critical

Ch. 11 – Historic Buildings What's in 1101 to 1106?

- GENERAL [1101 & WI]
- REPAIRS [1102]
- FIRE SAFETY [1103]
- ALTERATIONS [1104]
- CHANGE OF OCCUPANCY [1105]
- STRUCTURAL [1106]

IEBC Wisconsinisms CH 11

- **Comm 66.1101 Historic buildings.**
- **(1)** GENERAL. The requirements in IEBC section 1101.2 are not included as part of this code.

IEBC Wisconsinisms CH 11 (cont)

- **For Historic Buildings used as exhibits, Wisconsin adds 9 requirements to those found in the IEBC. They are spelled out in (a) through (i) of Comm 66.1101(2)**
- **Comm 66.1101 Historic buildings. (2)** EXHIBIT BUILDINGS. These are department rules in addition to the reqmt's in IEBC section 1105: Historic buildings to be used as exhibit buildings shall comply with all of the following reqmt's:
  (a) The building shall be open to the public only under the supervision of a tour guide.
- (b) The building may not be lived in, slept in or worked in, except for the purpose of demonstrating to the public how people lived in a particular era.

WI Historic Exhibit Bldgs (cont)

- **Wisconsin 9 criteria (cont'd)**
- (c) Smoking is prohibited in the building.
  (d) Open flame equipment may not be used in the building, except for fire places and other mechanical equipment original to the building.
  (e) Fire extinguishers shall be installed in exhibit buildings and may be located in a nonconspicuous location but accessible to the occupants.

WI Historic Exhibit Bldgs (cont)

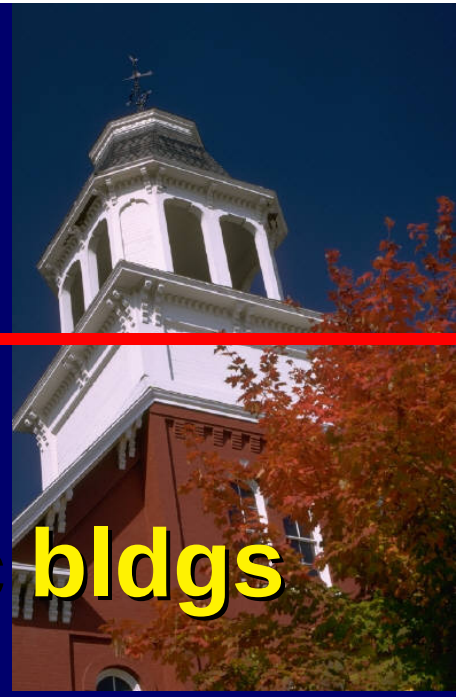
- **Wisconsin 9 criteria (cont'd)**

  (f) 1. At least one smoke detector shall be provided for each 1,200 square feet of floor area with a minimum of one smoke detector per floor level.
  2. a. Except as specified in subd. 2. b., where electricity is provided in the exhibit building, the smoke detectors shall be connected to the electrical power.
  b. Where no electrical power is provided to an exhibit building, the smoke detectors shall be of a battery type.
  c. Smoke detectors shall be tested weekly.

WI Historic Exhibit Bldgs (cont)

- **Wisconsin 9 criteria (cont'd)**
- (g) Exhibit buildings provided with only one means of egress shall be restricted to a total capacity of 12 people, and not more than 6 people may be located above or below the first floor at any one time.
  (h) Stairways without 6-foot, 4-inch vertical headroom clearance shall have signs posted warning occupants of the headroom clearance available.
  (i) Exit signs shall be provided in accordance with the prevailing code in exhibit buildings occupied prior to ½-hour before sunrise and ½-hour after sunset and in all areas not provided with natural lighting.

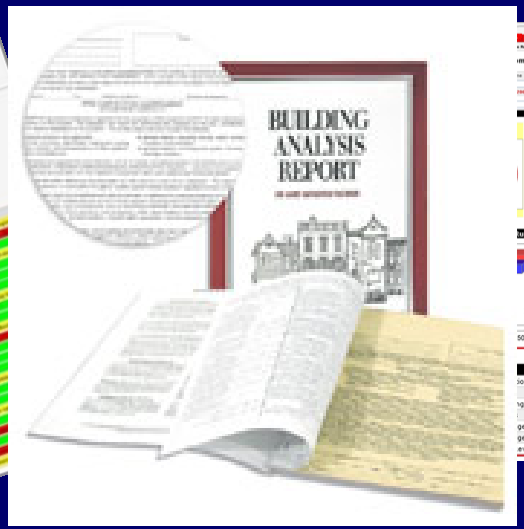
IEBC Ch 11
Historic Buildings

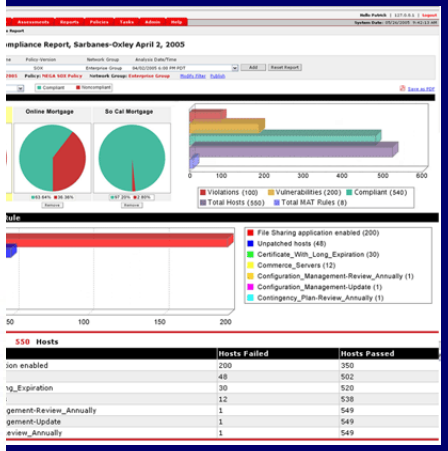


- Approach
  - Work performed in historic bldgs allows specific additional exceptions to IEBC reqmt's for repair, altn's, and change of occupancy
  - Fire suppression systems often cure <u>most</u> ills . . . NOT no. of exits

Section 1101 - General

- **1101.2 - Be prepared to have owners asking if you would be willing to pull together a report on their behalf for submission to the local code official.**





Section 1103 Fire Safety

- 1103.2 & 1103.12 - Historic Buildings that do not conform to the construction provisions of the code & constitutes a distinct fire hazard can install an approved automatic fire-extinguishing system as an alternative
- CANNOT use the system as an alternative to the number of exits

Section 1103 Fire Safety Details

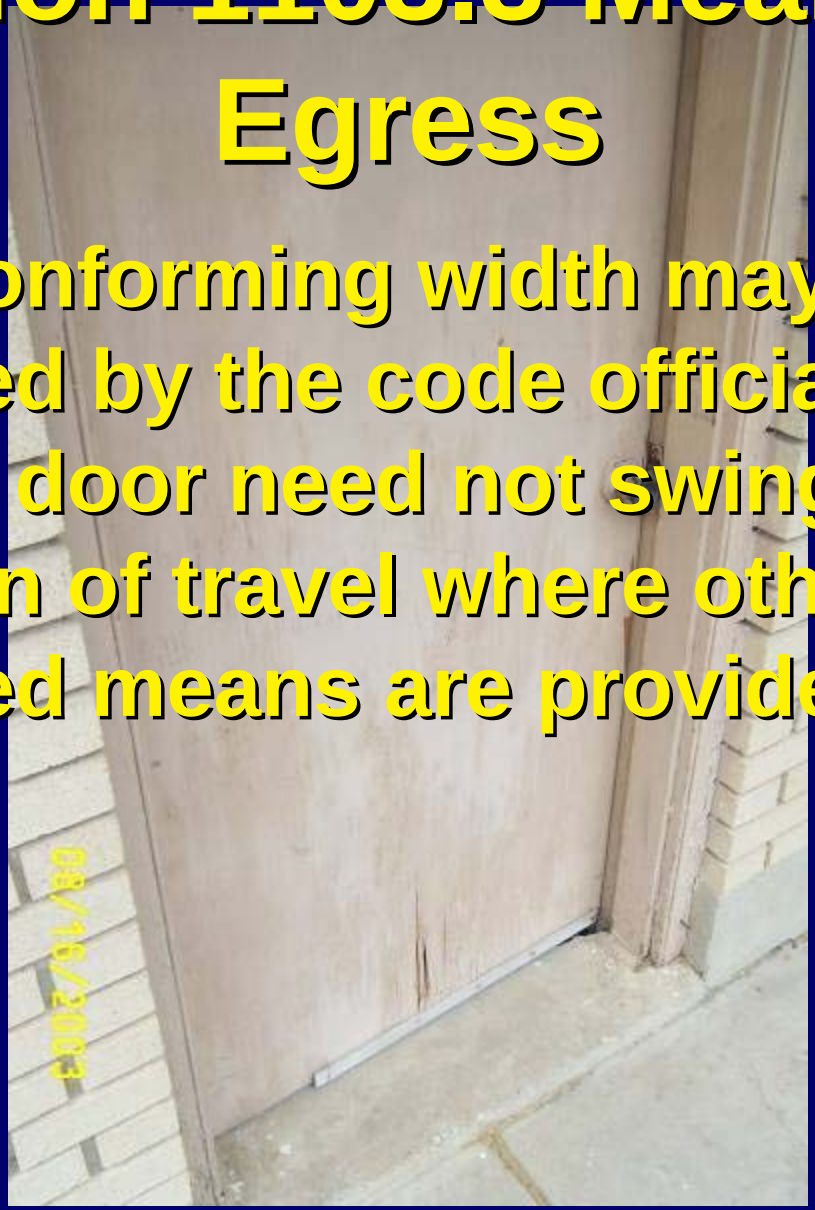
- Egress [1103.3]
- Transoms [1103.4]
- Interior Finishes [1103.5]
- Stairway Enclosure [1103.6]
- One-Hour Fire-Res. Assy's [1103.7]

Fire Safety Details (cont)

- Glazing in Fire-Res. Syst's [1103.8]
- Stairway Railings [1103.9]
- Guards [1103.10]
- Exit Signs [1103.11]
- Auto. Fire-Exting. Syst's [1103.12]

Section 1103.3 Means of Egress

- …nonconforming width may be approved by the code official…front or main door need not swing in the direction of travel where other approved means are provided



Section 1103.4 Transoms

- …Transoms in fully sprinkled R-1, R-2 & R-3 can leave the transoms in corridors and other rated walls if fixed in the colosed position . . .

Section 1103.5 Interior finishes

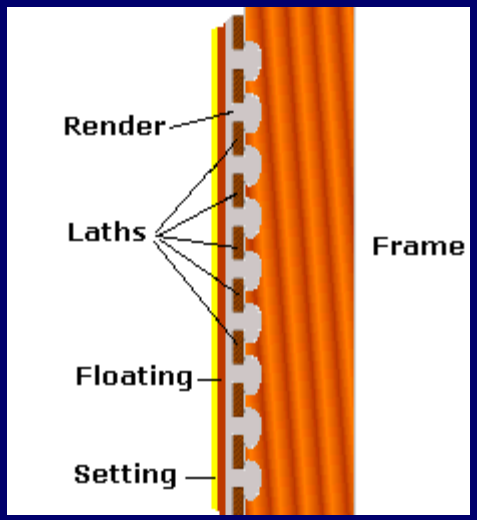
- …where demonstrated as historic…may remain

Section 1103.6 Stairway enclosure

- …three stories or less…limit the spread of smoke

Section 1103.7 One-hour fire-resistive assembies

- ...where required...need not be provided where existing wall and ceiling finish is wood or metal lath and plaster.



Section 1103.8 Glazing in fire-resistive systems

- ... Unrated historic glazing can be allowed to remain when provided with approved smoke seals and sprinklered...

Section 1103.9 Stairway railings

- ...grand stairways shall be accepted...existing handrail and guards permitted to remain...

Section 1103.10 Guards

- ...existing shall comply with Section 505 regarding height
- ...existing openings and ornamental patterns shall be accepted...

Section 1103.11 Exit signs

- …where historic character is affected alternative exit signs may be permitted

Section 1104 Alterations

- Section 1104.1 Accessibility requirements …Section 605 shall apply unless technically infeasible
- Where historic significance threatened...alternative requirements...
  - 1104.1.1 Site arrival
  - 1104.1.2 Multi-level buildings
  - 1104.1.3 Entrances
  - 1104.1.4 Toilet and bathing facilities

Section 1105 Change of Occupancy – WI Mod

Comm 66.1101 Historic buildings. (2) EXHIBIT BUILDINGS. (add's reqmt's to those of IEBC s.1105)

Historic buildings to be used as exhibit buildings . . . refer to (a) to (i) for specific details

OLD WORLD WISCONSIN

Occupancy Change Specific Provisions

- Cannot ignore Ch. 9 except as specifcally called for in Ch. 11. When Ch. 9 states you are to follow specific provisions from Ch's 5, 6 or 7 and those are covered by the exceptions in s.1102, that exception governs
- Now what are some of those items that are specifically called out and covered in Chapter 11 ?

Specifically Called out Provisions

- There are 14 different subjects . . .
- Building Area [1105.2]
- Loc’n. on Prperty [1105.3]
- Occupancy Separations [1105.4]
- Roof covering [1105.5]

14 Specific Items (cont)

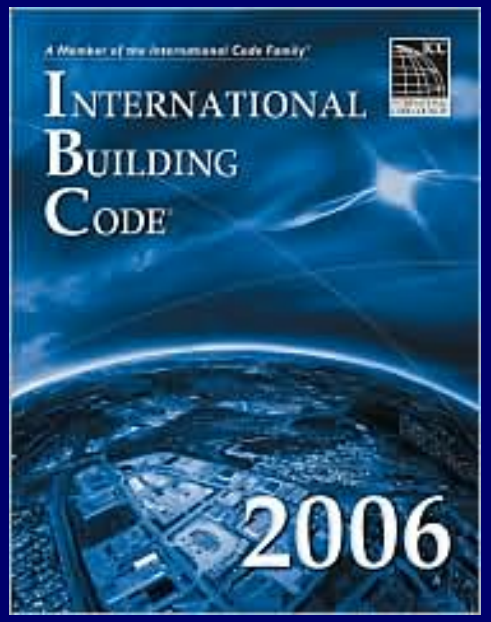
- Means of Egress [1105.6]
- Door Swing [1105.7]
- Transoms [1105.8]
- Finishes [1105.9]
- One-Hour Fire-Res. Assy's [1105.10]

14 Spec. Items (cont)

- Stairs & Railings [1105.11]
- Exit Signs [1105.12]
- Exit Stair Live Load [1105.13]
- Natural Light [1105.14]
- Accessibility [1105.15]

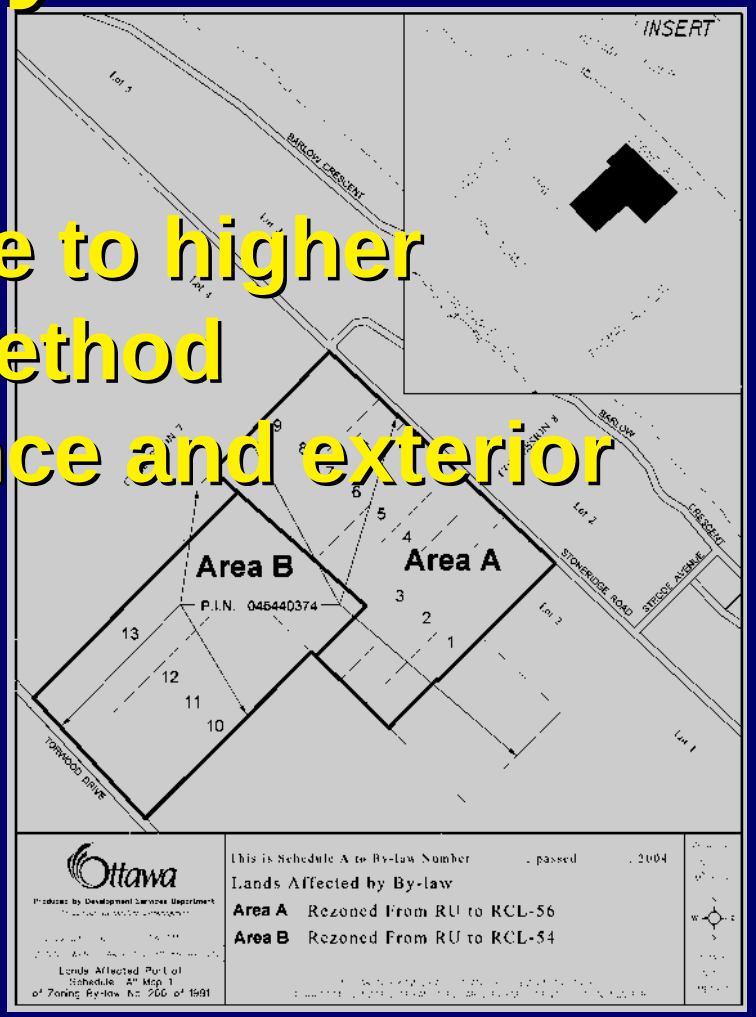
Section 1105.2 Building area

- …20% area increase beyond IBC chapter 5 is permitted



Section 1105.3 Location on property

- …where change of use to higher hazard…alternative method regarding fire resistance and exterior openings permitted

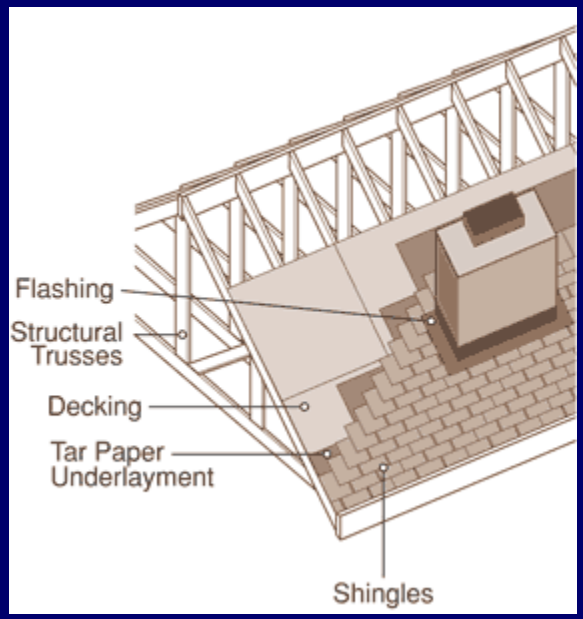


Section 1105.4 Occupancy Separation

- …required separation of one-hour can be omitted where sprinklered.

Section 1105.5 Roof Covering

- …covering not less than Class “C” where fire-retardant roof covering is required.



Section 1105.6 Means of Egress

- …existing openings and widths less than acceptable for a non-historic building...acceptable by code official.

Section 1105.7 Door Swing

When approved by the code official, existing front doors need not swing in the direction of exit travel, provided that other approved exits having sufficient capacity to serve the total occupant load are provided.

Section 1105.8 Transoms

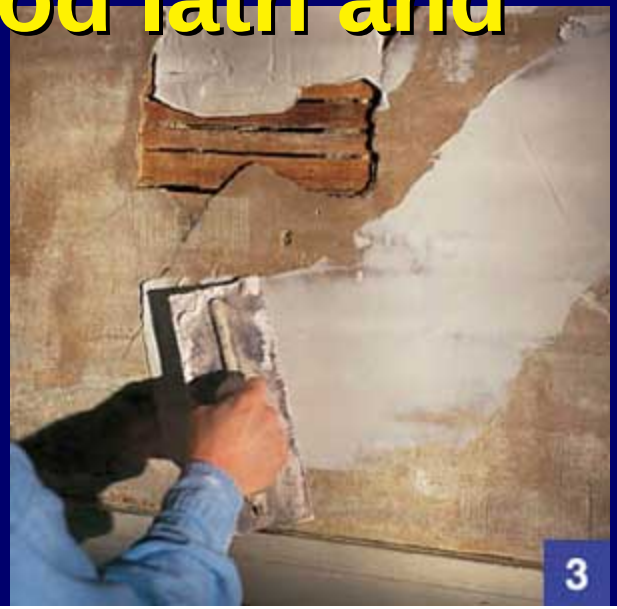
- In corridor walls required to be fire rated, transoms can remain if fixed in the closed position and wired glass (or other app'd glazing) set in a steel frame is installed on one side of the transom.
- Exception: Transoms conforming to Section 1103.4 are to be accepted.

Section 1105.9 Finishes

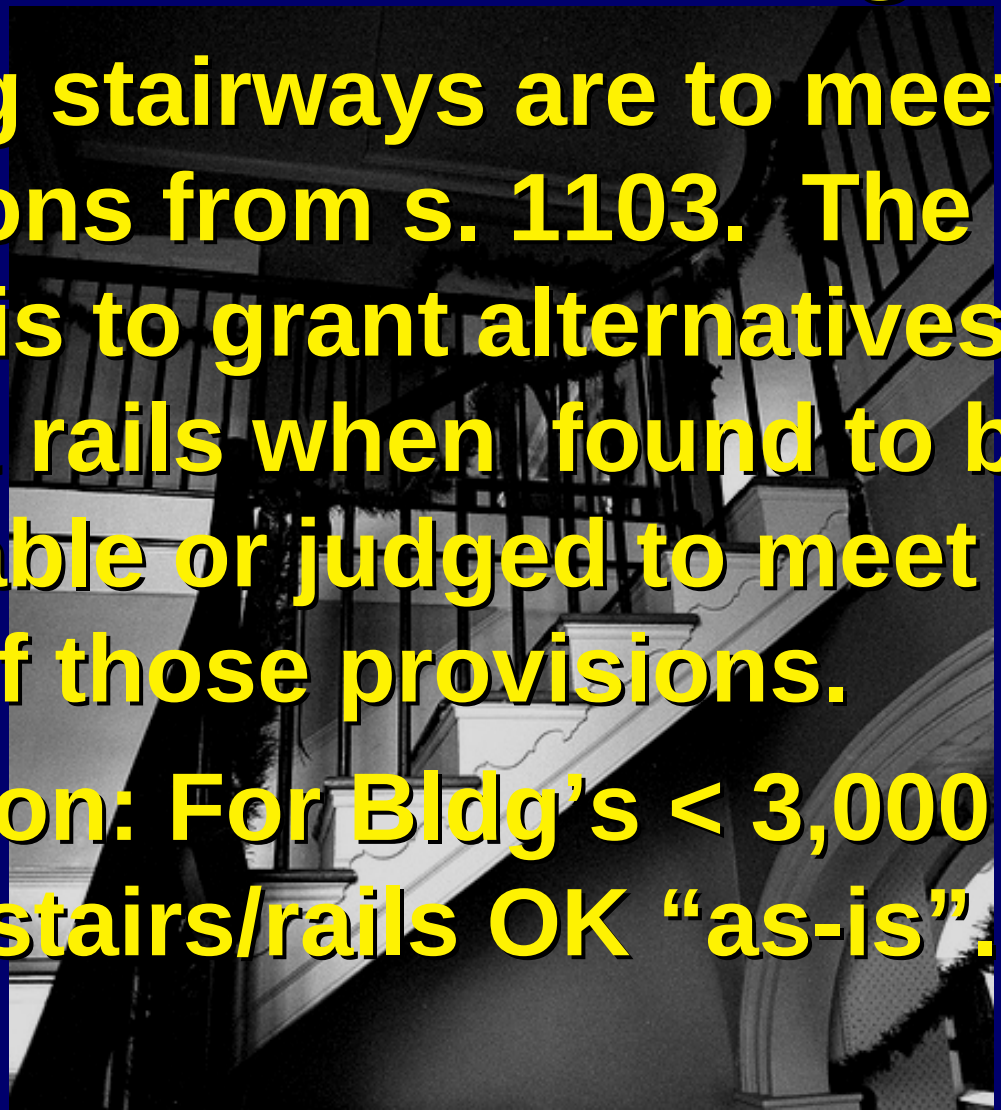
- Where finishes need a flame-spread classification of Class III or better, existing nonconforming matl's to be surfaced with an approved fire-retardant paint or finish.
- Exception: When the Existing Materials are substantiated as being historic in character, OK to treat/cover with fire-retardant paint or finish provided the bldg is fully sprinkled.

Section 1105.10
One-hour Assemblies

Where 1-HR fire rated construction is required, you can disregard in all cases where the existing wall and ceiling finish is wood lath and plaster.



Section 1105.11
Stairs and Railings



- Existing stairways are to meet the provisions from s. 1103. The code official is to grant alternatives for stairs & rails when found to be acceptable or judged to meet the intent of those provisions.
- Exception: For Bldg's < 3,000 SF the exist'g stairs/rails OK "as-is".

Section 1105.12 Exit signs

The code official may accept alternative exit sign locations where normal signage would damage the historic character of the building or structure. The signs must still identify the egress path and the exits.

Section 1105.13
Exit Stair Live Load

Existing historic stairways in buildings changed to a Group R-1 or R-2 occupancy are to be OK'd provided the stairway can support a 75 PSF live load.

Section 1105.14 Natural Light

When the code official determines compliance with the natural light requirements of Section 911.1 will lead to loss of historic character or historic materials in the building, the existing natural lighting is to be considered acceptable.

Section 1105.15 Accessibility

The provisos of s. 912.8 apply unless technically infeasible. Where the CO determines compliance with the reqmt's for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the bld'g, the alternatives of ss. 1104.1.1 - 1104.1.5 are to be allowed

Section 1106 Structural

- Section 1106.1 General …comply with Chapter 4
- Exception…code official can accept existing floor structures and approve or impose operational controls that will limit live loads to correspond with the adequacy of the structure

IEBC Ch 12
Relocated or Moved Buildings

- Covers exist'g Commercial Bldgs moved essentially intact
- Approach
  - Location on the lot & the foundation must comply with the applicable IBC provisions
  - Other than limited except's, wind, seismic, snow and flood provn's of the IBC must be complied with at the new location

IEBC Ch 12
Relocated or Moved Buildings

1201 – GENERAL

1202 – REQUIREMENTS

Ch. 13 – Performance Compliance Method
What's in 1301?

- GENERAL [1301 & WI]
- Trade-offs!
- Your own "Petition for Variance" for any/all deficient provisions within the building!

IEBC Wisconsinisms CH 13

- **CommComm 66.1301 Compliance with other codes.**
- **(1)** Substitute the following wording for the requirements in IEBC section 1301.2: The provisions of sections 1301.2.1 through 1301.2.5 shall apply to existing occupancies that will continue to be, or are proposed to be, in Groups A, B, E, F, M, R and S. These provisions shall not apply to buildings with occupancies in Group H or Group I.
- **(2)** The requirements in IEBC section 1301.3.2 are not included as part of this code.

IEBC Ch 13
Compliance Alternatives

- Intended to maintain or increase the current degree of public safety, health and general welfare without full compliance
- Approach is similar to the numerical balancing method that was used in the WI Historical Code of the past.
  - Alternative to Chapters 4-12

Compliance Alternatives Key Elements

- Investigation and Evaluation . . . Includes Structural Analysis
- In essence, 19 distinct items are compared and ranked against the 3 main categories of Fire Safety, Means of Egress & General Safety
- Scores Developed Resulting in "Pass" or "Fail" for <u>each</u> of those Main Categories

Compliance Alternatives 19 Distinct Items

- Building Height [1301.6.1]
- Building Area [1301.6.2]
- Compartmentation [1301.6.3]
- Tenant & D.U. Separations [1301.6.4]
- Corridor Walls [1301.6.5]
- Vertical Openings [1301.6.6]

19 Distinct Items (cont)

- HVAC Systems [1301.6.7]
- Auto Fire Detection [1301.6.8]
- Fire Alarm System [1301.6.9]
- Smoke Control [1301.6.10]
- Means of Egress (MOE) Capacity [1301.6.11]
- Dead Ends [1301.6.12]

19 Distinct Items (cont)

- Max. Exit Travel Distance [1301.6.13]
- Elevator control [1301.6.14]
- MOE Emergency Lighting [1301.6.15]
- Mixed Occupancies [1301.6.16]
- Automatic Sprinklers [1301.6.17]
- Standpipes [1301.6.18]
- Incidental Use Area Protection [1301.6.19]

Building Height – 1301.6.1

- The value for building height shall be the lesser value determined by the formula in Section 1301.6.1.1.
- Chapter 5 of the IBC, incl'g allowable increases due to automatic sprinklers as provided for in Section 504.2, shall be used to determine the allowable height of the building. Subtract the actual building height from the allowable height and divide by 12½ feet (3810 mm). Enter the height value and its sign (positive or negative) in Table 1301.7 under Safety Parameter 1301.6.1, Building Height, for fire safety, means of egress, and general safety. The maximum score for a building shall be 10.

Building Height (cont)

- 1301.6.1.1 Height formula. Two formulas are evaluated to compute two building height values. The lesser value is plugged into table 1301.7 [SUMMARY SHEET - BUILDING CODE].

$$\text{Height value, feet} = \frac{(AH) - (EBH)}{125} \times CF$$

- Height value, stories = (AS - EBS) x CF

Building Height (cont)

$$\text{Height value, feet} = \frac{(AH) - (EBH)}{125} \times CF$$

- **Height value, stories = (AS - EBS) x CF**

Note: Where mixed occupancies are separated and individually evaluated as indicated in Section 1301.6, the values AH, AS, EBH, and EBS shall be based on the height of the fire area of the occupancy being evaluated.

Building Height (cont)

- where:
  - AH = Allowable height in feet (mm) from Table 503 of the International Building Code.
  - EBH = Existing building height in feet (mm).
  - AS = Allowable height in stories from Table 503 of the International Building Code.
  - EBS = Existing building height in stories.
  - CF = 1 if (AH) – (EBH) is positive.
  - CF = Construction type factor shown in Table 1301.6.6(2) if (AH) – (EBH) is negative.

Building Area – 1301.6.2

- The value for building area is determined by the formula in Section 1301.6.2.2. S. 503 of the IBC Code and the formula in Section 1301.6.2.1 shall be used to determine the allowable area of the building. The allowable area shall be the lesser value calculated by Equations 12-2 and 12-3. This shall include any allowable increases due to open perimeter and automatic sprinklers as provided for in S. 506 of the IBC. Subtract the actual building area from the allowable area and divide by 1,200 square feet (112 m2). Enter the area value and its sign (positive or negative) in Table 1301.7 under Safety Parameter 1301.6.2, Building Area, for fire safety, means of egress, and general safety. In determining the area value, the maximum permitted positive value for area is 50 percent of the fire safety score as listed in Table 1301.8, Mandatory Safety Scores.

Building Area (cont)

- Allowable Area Formula
- Equation 12-2

$$A_a = \frac{\left(100 + I_f + I_s\right) \times A_t}{100}$$

- $A_{a,max} = 3 \times A_a$, as calculated in accordance with Section 506.1 of the International Building Code.

- Equation 12-3

$$A_{a,max} = \frac{A_{max}}{\text{Number of stories}}$$

Building Area (cont)

- For Equations 12-2 & 12-3
- A_a = Allowable area per floor.
- I_s = Area increase due to sprinkler protection, percent as calc' per Section 506.3 of the IBC.
- I_f = Area increase due to frontage, percent as calc'd per Section 506.2 of the IBC.
- A_t = Tabular area (S.F.) per floor in accordance with Table 503 of the IBC.
- A_{max} = Total area of the entire building.
- $A_{a,max}$ = Allowable area per floor based on the limitations of Section 506.4 of the IBC.

Building Area (cont)

$$\text{Area value}_i = \frac{\text{Allowable area}_i}{1200 \text{ square feet}} \left[1 - \left(\frac{\text{Actual area}_i}{\text{Allowable area}_i} + \ldots + \frac{\text{Actual area}_n}{\text{Allowable area}_n} \right) \right]$$

- **Area Formula - Equation 12-4**
- **Where:**
  - **i = Value for an individual separated occupancy on a floor.**
  - **n = Number of separated occupancies on a floor**

Compartmentation – 1301.6.3

- Evaluate the compartments created by fire barrier walls which comply with Sections 1301.6.3.1 and 1301.6.3.2 and which are exclusive of the wall elements considered under Sections 1301.6.4 and 1301.6.5. Conforming compartments shall be figured as the net area and do not include shafts, chases, stairways, walls, or columns. Using Table 1301.6.3, determine the appropriate compartmentation value (CV) and enter that value into Table 1301.7 under Safety Parameter 1301.6.3, Compartmentation, for fire safety, means of egress, and general safety.

Compartmentation (cont)

TABLE 1301.6.3
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-1	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^2.

- 1301.6.3.1 - A wall used to create separate compartments must be a 2HR fire barrier
- 1301.6.3.2 - A floor/ceiling assembly used to create compartments must be a 2HR rated ass'y

Tenant & D.U. Sepn's – 1301.6.4

- Evaluate the fire-resistance rating of floors and walls separating tenants, including dwelling units, and not evaluated under Sections 1301.6.3 and 1301.6.5. Under the categories and occupancies in Table 1301.6.4, determine the appropriate value and enter that value in Table 1301.7 under Safety Parameter 1301.6.4, Tenant and Dwelling Unit Separation, for fire safety, means of egress, and general safety.

Tenant & D.U. Sepn's (cont)

TABLE 1301.6.4
SEPARATION VALUES

OCCUPANCY	CATEGORIES				
	a	b	c	d	e
A-1	0	0	0	0	1
A-2	-5	-3	0	1	3
R	-4	-2	0	2	4
A-3, A-4, B, E, F, M, S-1	-4	-3	0	2	4
S-2	-5	-2	0	2	4

Tenant & D.U. Sepn's (cont)

- When using the table, there are 5 categories to chose from [see 1301.6.4.1]

1. Category a - No fire rated separations
2. Category b - Separations less than 1HR.
3. Category c - Separations 1HR or greater, but less than 2HR rating OR with only one tenant within the fire area.
4. Category d - Separations 1HR or greater, but less than 2HR rating
5. Category e – Separations with 2HR or greater fire ratings

Corridor Walls - 1301.6.5

- **1301.6.5 - Evaluate the fire-resistance rating and degree of completeness of walls which create corridors serving the floor and that are constructed in accordance with Section 1013 of the IBC. The evaluation is not to include the wall elements considered under Sections 1301.6.3 and 1301.6.4. Under the categories and groups in Table 1301.6.5, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1201.6.5, Corridor Walls, for fire safety, means of egress, and general safety.**

Corridor Walls (cont)

TABLE 1301.6.5
CORRIDOR WALL VALUES

OCCUPANCY	CATEGORIES			
	a	b	c[a]	d[a]
A-1	-10	-4	0	2
A-2	-30	-12	0	2
A-3, F, M, R, S-1	-7	-3	0	2
A-4, B, E, S-2	-5	-2	0	5

a. Corridors not providing at least one-half the travel distance for all occupants on a floor shall use Category
b.

What about them categories ?

Corridor Walls (cont)

- 1301.6.5.1 There are 4 categories to choose from in using the table

1. Category a - No fire partitions
2. Category b - Less than 1HR rated partitions
3. Category c – 1HR to less than 2HR part'ns OR without corridors as permitted by Section 1014 of the IBC.
4. Category d – 2HR or greater fire-resistance rating, incl. doors conforming to Section 715 of the IBC.

Vertical Openings – 1301.6.6

- Evaluate the fire-resistance rating of vertical exit enclosures, hoistways, escalator openings, and other shaft enclosures within the building, and openings between two or more floors. Table 1301.6.6(1) contains the appropriate protection values. Multiply that value by the construction type factor found in Table 1301.6.6(2). Enter the vertical opening value and its sign (positive or negative) in Table 1301.7 under Safety Parameter 1301.6.6, Vertical Openings, for fire safety, means of egress, and general safety. If the structure is a one-story building, enter a value of 2. Unenclosed vertical openings that conform to the requirements of S. 707 of the IBC shall not be considered in the evaluation of vertical openings.

Vertical Openings (cont)

1301.6.6.1 – Use the following formula to compute the vertical opening value.

VO = PV x CF

(Equation 12-5)

VO = Vertical opening value.
PV =Prot'n value from T-1301.6.6.(1).
CF =Const'n type factor from T-1301.6.6.(2)

Vertical Openings (cont)

TABLE 1301.6.6(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

TABLE 1301.6.6(2)
CONSTRUCTION-TYPE FACTOR

FACTOR	TYPE OF CONSTRUCTION								
	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
	1.2	1.5	2.2	3.5	2.5	3.5	2.3	3.3	7

HVAC Systems [1301.6.7]

- **Evaluate the ability of the HVAC system to resist the movement of smoke and fire beyond the point of origin. Under the categories in Section 1301.6.7.1, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.7, HVAC Systems, for fire safety, means of egress, and general safety.**

HVAC Systems - Categories

- 1301.6.7.1 Pick one of the 5 Categories for use in the table.
- 1. Category a - Plenums not per S. 602 of the IMC. -10 points.
- 2. Category b - Air movement in egress elements not per S. 1017.4 of the IBC. -5 points.
- 3. Category c - Both Categories a and b are applicable. -15 points.

HVAC Syst – Categories (cont)

- 1301.6.7.1 Pick one of the 5 Categories for use in the table (cont).
- 4. Category d - The HVAC syst meets S. 1017.4 of the IBC AND S. 602 of the IMC. 0 points.
- 5. Category e - Systems serving 1- story; or a central boiler/chiller syst with no ductwork connecting 2 or more stories. +5 points.

Auto Fire Detection [1301.6.8]

- Evaluate the smoke detection capability based on the location and operation of automatic fire detectors in accordance with S. 907 of the IBC and the IMC. Under the categories and occupancies in Table 1301.6.8, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.8, Automatic Fire Detection, for fire safety, means of egress, and general safety.

TABLE 1301.6.8
AUTOMATIC FIRE DETECTION VALUES

OCCUPANCY	CATEGORIES				
	a	b	c	d	e
A-1, A-3, F, M, R, S-1	-10	-5	0	2	6
A-2	-25	-5	0	5	9
A-4, B, E, S-2	-4	-2	0	4	8

Tell me more about those categories . . .

Auto Fire Detection Cetegories

1301.6.8.1 The 5 categories to choose from are:

1. Cat. a - None.
2. Cat. b – Exist'g smoke detectors in HVAC systs per the IFC.
3. Cat. c - Smoke det's in HVAC systems that meet the new buildings provisos in the IMC.

Auto Detect'n Categories (cont)

1301.6.8.1 The 5 categories (cont):

4. Cat. d - Smoke det's throughout all floor areas other than individual sleeping units, tenant spaces, and dwelling units.

5. Cat. e - Smoke det's installed throughout the fire area.

Fire Alarm System [1301.6.9]

- Evaluate the capability of the fire alarm system in accordance with S. 907 of the IBC. Under the categories and occy's in Table 1301.6.9, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.9, Fire Alarm System, for fire safety, means of egress, and general safety.

TABLE 1301.6.9
FIRE ALARM SYSTEM VALUES

OCCUPANCY	CATEGORIES			
	a	b[a]	c	d
A-1, A-2, A-3, A-4, B, E, R	-10	-5	0	5
F, M, S	0	5	10	15

a. For buildings equipped throughout with an automatic sprinkler system, add 2 points for activation by a sprinkler water-flow device.

Fire Alarm System Categories

1301.6.9.1 The 4 categories for F.A. syst's are:

1. **Cat a - None.**
2. **Cat b – F.A. syst with manual fire alarm boxes per S. 907.3 of the IBC and notification appliances per S. 907.9 of the IBC.**
3. **Cat c – F.A. system meeting S. 907 of the IBC.**

F. A. Syst. Categories (cont)

1301.6.9.1 The 4 categories for F.A. syst's (cont):

4. **Cat d - Category c plus a req'd emergency voice/alarm commun. system and a fire command station conform'g to S. 403.8 of the IBC and contains the emergency voice/alarm communications system controls, fire department communication system controls, and any other controls spec'd in S. 911 of the IBC (where syst's are provided).**

Smoke Control [1301.6.10]

- Evaluate the ability of a natural or mechanical venting, exhaust, or pressurization system to control the movement of smoke from a fire. Under the categories and occupancies in Table 1301.6.10, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.10, Smoke Control, for means of egress and general safety.

TABLE 1301.6.10
SMOKE CONTROL VALUES

OCCUPANCY	CATEGORIES					
	a	b	c	d	e	f
A-1, A-2, A-3	0	1	2	3	6	6
A-4, E	0	0	0	1	3	5
B, M, R	0	2[a]	3[a]	3[a]	3[a]	4[a]
F, S	0	2[a]	2[a]	3[a]	3[a]	3[a]

a. This value shall be 0 if compliance with Category d or e in Section 1201.6.8.1 has not been obtained.

Smoke Control (cont)

1301.6.10.1 The 6 categ's for smoke control are:

1. Cat a - None.
2. Cat b - The bldg. is fully sprinkled. Openings are provided in exterior walls at the rate of 20 square feet (1.86 m2) per 50 linear feet (15 240 mm) of exterior wall in each story and distributed around the building perimeter at intervals not exceeding 50 feet (15 240 mm). Such openings shall be readily openable from the inside without a key or separate tool and shall be provided with ready access thereto. In lieu of operable openings, clearly and permanently marked tempered glass panels shall be used.

6 Categories (cont)

3. Cat c - One enclosed exit stairway, with ready access thereto, leads to each occupied floor of the building. The stairway has operable exterior windows, and the building has openings in accordance with Category b.
4. Cat d - One smokeproof enclosure and the building has openings in accord. with Category b.

6 Categories (cont)

5. Cat e - The building is equipped throughout with an automatic sprinkler system. Each fire area is provided with a mechanical air-handling system designed to accomplish smoke containment. Return and exhaust air shall be moved directly to the outside without recirculation to other fire areas of the building under fire conditions. The system shall exhaust not less than six air changes per hour from the fire area. Supply air by mechanical means to the fire area is not required. Containment of smoke shall be considered as confining smoke to the fire area involved without migration to other fire areas. Any other tested and approved design that will adequately accomplish smoke containment is permitted.

6 Categories (cont)

6. Cat f - Each stairway shall be one of the following: a smokeproof enclosure per S. 1020.1.7 of the IBC; pressurized in accordance with S. 909.20.5 of the IBC; or having operable exterior windows.

Means of Egress (MOE) Capacity [1301.6.11]

- **Evaluate the means-of-egress capacity and the number of exits available to the building occupants. In applying this section, the MOE are required to conform to the following ss. of the IBC: 1003.7, 1004, 1005.1, 1014.2, 1014.3, 1015.2, 1019, 1024.1, 1024.2, 1024.6, 1025.2, 1024.3, 1024.4 and 1026.**

MOE Capacity [1301.6.11] (cont)

- The no. of exits credited is the no. that is available to each occupant of the area being evaluated. Existing fire escapes shall be accepted as a component in the MOE when conforming to Section 705.3.1.2. Under the categories and occupancies in Table 1301.6.11, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.11, Means-of-Egress Capacity, for MOE and general safety.

TABLE 1301.6.11
MEANS OF EGRESS VALUES

OCCUPANCY	CATEGORIES				
	a[a]	b	c	d	e
A-1, A-2, A-3, A-4, E	-10	0	2	8	10
M	-3	0	1	2	4
B, F, S	-1	0	0	0	0
R	-3	0	0	0	0

a. The values indicated are for buildings six stories or less in height. For buildings over six stories in height, add an additional -10 points.

MOE Capacity (cont)

1301.6.11.1 The 5 categories for MOE capacity and no. of exits are:

1. **Cat a—Compliance with the minimum required means-of-egress capacity or number of exits is achieved through the use of a fire escape in accordance with Section 605.3.1.2.**
2. **Cat b—Capacity of the means of egress meets S. 1003 of the IBC, and the number of exits meets S. 1019 of the IBC.**

5 Categories (cont)

3. Cat c—Capacity of the means of egress is equal to or exceeds 125 percent of the required means-of-egress capacity, the means of egress complies with the min. req'd width dimensions spec'd in the IBC, and the no. of exits meets the min. no. req'd by S. 1019 of the IBC.
4. Cat d—The no. of exits provided exceeds the no. of exits req'd by S. 1019 of the IBC. Exits shall be located a distance apart from each other equal to not less than that spec'd S. 1015 of the IBC.
5. Category e—The area being evaluated meets both Categories c and d.

Dead Ends [1301.6.12]

- In spaces required to be served by more than one means of egress, evaluate the length of the exit access travel path in which the building occupants are confined to a single path of travel. Under the categories and occupancies in Table 1301.6.12, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.12, Dead Ends, for means of egress and general safety.

[TABLE 1301.6.12
DEAD-END VALUES

OCCUPANCY	CATEGORIES[a]		
	a	b	c
A-1, A-3, A-4, B, F, M, R, S	-2	0	2
A-2, E	-2	0	2

a. For dead-end distances between categories, the dead end value shall be obtained by linear interpolation.

Dead Ends (cont)

1301.6.12.1 - The 3 categories for dead ends are:

1. Cat a - Dead end of 35 feet in nonsprink'd buildings or 70 feet in sprink'd buildings.
2. Cat b - Dead end of 20 feet; or 50 feet in Group B in accordance with S.1016.3, Exc. 2 of the IBC.
3. Category c — No dead ends; or ratio of length to width (l/w) is less than 2.5:1.

Max. Exit Travel Distance [1301.6.13]

- Evaluate the length of exit access travel to an approved exit. Determine the appropriate points in accordance with the following equation and enter that value into Table 1301.7 under Safety Parameter 1301.6.13, Maximum Exit Access Travel Distance for means of egress and general safety. The maximum allowable exit access travel distance shall be determined in accordance with Section 1016 of the IBC.

Max. Exit Distance (cont)

$$\text{Points} = 20 \times \frac{\text{Maximum allowable travel distance} - \text{Maximum actual travel distance}}{\text{Maximum allowable travel distance}}$$

Elevator control [1301.6.14]

- Evaluate the passenger elevator equipment and controls that are available to the fire department to reach all occupied floors. Elevator recall controls shall be provided in accordance with the International Fire Code. Under the categories an occupancies in Table 1301.6.14, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.14, Elevator Control, for fire safety, means of egress, and general safety. The values shall be zero for a single story building.

TABLE 1301.6.14
ELEVATOR CONTROL VALUES

ELEVATOR TRAVEL	CATEGORIES			
	a	b	c	d
Less than 25 feet of travel above or below the primary level of elevator access for emergency fire-fighting or rescue personnel	-2	0	0	+2
Travel of 25 feet or more above or below the primary level of elevator access for emergency fire-fighting or rescue personnel	-4	NP	0	+4

For SI: 1 foot = 304.8 mm.
NP = Not permitted.

Elevator control (cont)

1301.6.14.1 The 4 categ's for elev. Contl's are:

1. **Cat a - No elevator.**
2. **Cat b - Any elev. without Phase I and II recall.**
3. **Cat c - All elev's with Phase I and II recall as required by the IFC.**
4. **Cat d - All meet Category c; or Category b where permitted to be without recall; and at least one elevator that complies with new construction reqmt's serves all occupied floors.**

MOE Emergency Lighting [1301.6.15]

- Evaluate the presence of and reliability of means-of-egress emergency lighting. Under the categories and occupancies in Table 1301.6.15, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.15, Means-of-Egress Emergency Lighting, for means of egress and general safety.

TABLE 1301.6.15
MEANS-OF-EGRESS EMERGENCY LIGHTING VALUES

NUMBER OF EXITS REQUIRED BY SECTIONS 1018.1 AND 1018.2 OF THE *INTERNATIONAL BUILDING CODE*	CATEGORIES		
	a	b	c
Two or more exits	NP	0	4
Minimum of one exit	0	1	1

NP = Not permitted.

MOE Emerg'y Light' (cont)

1301.6.15.1 The 3 categories for MOE emerg'y lighting are:

1. Cat a - MOE lighting and exit signs not provided with emergency power in accordance with Section 2702 of the IBC.
2. Cat b – MOE lighting and exit signs provided with emergency power in per S. 2702 of the IBC.
3. Cat c - Emergency power provided to MOE lighting and exit signs, which provides protection in the event of power failure to the site or building.

Mixed Occupancies [1301.6.16]

- Where a building has two or more occupancies that are not in the same occupancy classification, the separation between the mixed occupancies shall be evaluated in accordance with this section. Where there is no separation between the mixed occupancies or the separation between mixed occupancies does not qualify for any of the categories indicated in Section 1301.6.16.1, the building shall be evaluated as indicated in Section 1301.6, and the value for mixed occupancies shall be zero.

Mixed Occ’ys [1301.6.16] (cont)

- Under the categories and occupancies in Table 1301.6.16, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.16, Mixed Occupancies, for fire safety and general safety. For buildings without mixed occupancies, the value shall be zero.

[TABLE 1301.6.16
MIXED OCCUPANCY VALUES[a]

OCCUPANCY	CATEGORIES		
	a	b	c
A-1, A-2, R	-10	0	10
A-3, A-4, B, E, F, M, S	-5	0	5

a. For fire-resistance ratings between categories, the value shall be obtained by linear interpolation.

Mixed Occupancies (cont)

1301.6.16.1 The 3 categ's for mixed occy's are:

1. Cat a - Minimum 1-hour fire barriers between occupancies.
2. Cat b - Fire barriers between occupancies in accordance with Section 508.3.3 of the IBC.
3. Cat c - Fire barriers between occupancies having a fire-resistance rating of not less than twice that req'd by Section 508.3.3 of the IBC.

Automatic Sprinklers [1301.6.17]

- **Evaluate the ability to suppress a fire based on the installation of an automatic sprinkler system in accordance with Section 903.3.1.1 of the IBC. “Required sprinklers” shall be based on the requirements of this code. Under the categories and occupancies in Table 1301.6.17, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.17, Automatic Sprinklers, for fire safety, means of egress divided by 2, and general safety.**

Auto Sprinklers [1301.6.17] (cont)

- High-rise buildings defined in Section 403.1 of the IBC that undergo a change of occupancy to Group R shall be equipped throughout with an automatic sprinkler system in accordance with Section 403.2 of the IBC and Chapter 9 of the IBC.

TABLE 1301.6.17
AUTOMATIC SPRINKLER SYSTEM VALUES

OCCUPANCY	CATEGORIES					
	a[a]	b[a]	c	d	e	f
A-1, A-3, F, M, R, S-1	-6	-3	0	2	4	6
A-2	-4	-2	0	1	2	4
A-4, B, E, S-2	-12	-6	0	3	6	12

a. These options cannot be taken if Category a in Section 1201.6.18 is used.

Automatic Sprinklers (cont)

1301.6.17.1 The 6 categories for automatic sprinkler system protection are:

1. Category a—Sprinklers are required throughout; sprinkler protection is not provided or the sprinkler system design is not adequate for the hazard protected in accordance with Section 903 of the IBC.

AFS 6 Categories (cont)

2. Category b—Sprinklers are required in a portion of the building; sprinkler protection is not provided or the sprinkler system design is not adequate for the hazard protected in accordance with Section 903 of the IBC.
3. Category c—Sprinklers are not required; none are provided.

AFS 6 Categories (cont)

4. Category d—Sprinklers are required in a portion of the building; sprinklers are provided in such portion; the system is one that complied with the code at the time of installation and is maintained and supervised in accordance with Section 903 of the IBC.

AFS 6 Categories (cont)

5. Category e—Sprinklers are required throughout; sprinklers are provided throughout in accordance with Chapter 9 of the IBC.
6. Category f—Sprinklers are not required throughout; sprinklers are provided throughout in accordance with Chapter 9 of the IBC.

Standpipes [1301.6.18]

- Evaluate the ability to initiate attack on a fire by making supply of water available readily through the installation of standpipes in accordance with Section 905 of the IBC. “Required Standpipes” are to be based on the reqmt’s of the IBC. Under the categories and occupancies in Table 1301.6.18, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.18, Standpipes, for fire safety, means of egress, and general safety.

TABLE 1301.6.18
STANDPIPE SYSTEM VALUES

OCCUPANCY	CATEGORIES			
	a[a]	b	c	d
A-1, A-3, F, M, R, S-1	-6	0	4	6
A-2	-4	0	2	4
A-4, B, E, S-2	-12	0	6	12

a. This option cannot be taken if Category a or Category b in Section 1201.6.17 is used.

Incidental Use Area Protection [1301.6.19]

- Evaluate the protection of incidental use areas in accordance with Section 508.7 of the IBC. Do not include those where this code requires suppression throughout the building, including covered mall buildings, high-rise buildings, public garages, and unlimited area buildings. Assign the lowest score from Table 1301.6.19 for the building or fire area being evaluated. If there are no specific occupancy areas in the building or fire area being evaluated, the value shall be zero.

Almost There . . .

- **1301.7 Building score. After determining the appropriate data from Section 1301.6, enter those data in Table 1301.7 and total the building score.**
- **1301.8 Safety scores. The values in Table 1301.8 are the required mandatory safety scores for the evaluation process listed in Section 1301.6.**

TABLE 1301.6.19
INCIDENTAL USE AREA VALUES[a]

PROTECTION REQUIRED BY TABLE 508.2 OF THE *INTERNATIONAL BUILDING CODE*	PROTECTION PROVIDED						
	None	1 hour	AFSS	AFSS with SP	1 hour and AFSS	2 hours	2 hours and AFSS
2 hours and AFSS	-4	-3	-2	-2	-1	-2	0
2 hours, or 1 hour and AFSS	-3	-2	-1	-1	0	0	0
1 hour and AFSS	-3	-2	-1	-1	0	-1	0
1 hour	-1	0	-1	-1	0	0	
1 hour, or AFSS with SP	-1	0	-1	-1	0	0	0
AFSS with SP	-1	-1	-1	-1	0	-1	0
1 hour or AFSS	-1	0	0	0	0	0	0

a. AFSS = Automatic fire suppression system; SP = Smoke partitions (See IBC Section 508.2.2.1).

Note: For Table 1301.7, see page 66.

TABLE 1301.8
MANDATORY SAFETY SCORES[a]

OCCUPANCY	FIRE SAFETY (MFS)	MEANS OF EGRESS (MME)	GENERAL SAFETY (MGS)
A-1	20	31	31
A-2	21	32	32
A-3	22	33	33
A-4, E	29	40	40
B	30	40	40
F	24	34	34
M	23	40	40
R	21	38	38
S-1	19	29	29
S-2	29	39	39

a. MFS = Mandatory Fire Safety
MME = Mandatory Means of Egress
MGS = Mandatory General Safety

TABLE 1301.9
EVALUATION FORMULAS[a]

FORMULA					T1201.7	T1201.8		SCORE	PASS	FAIL
					_____ (FS)					
					-					
					_____ (ME)					
FS	-	MFS	>	0	-	_____ (MFS)	=	_____	_____	_____
ME	-	MME	≥	0	_____ (GS	_____ (MME)	=	_____	_____	_____
GS	-	MGS	≥	0	-	_____ (MGS)	=	_____	_____	_____

a. FS = Fire Safety; ME = Means of Egress; GS = General Safety; MFS = Mandatory Fire Safety; MME = Mandatory Means of Egress; MGS = Mandatory General Safety

TABLE 1301.7
SUMMARY SHEET—BUILDING CODE

Existing occupancy _____	Proposed occupancy_____
Year building was constructed _____	Number of stories_____ Height in feet _____
Type of construction _____	Area per Floor _____
Percentage of frontage increase _____ %	Percentage of height reduction _____%
Completely suppressed: Yes _____	No _____ Corridor wall rating _____
Compartmentation: Yes _____ No _____	Required door closers:_____Yes _____No
Fire-resistance rating of vertical opening enclosures	_____
Type of HVAC system _____	Serving number of floors_____
Automatic fire detection: Yes _____ No _____	Type of location_____
Fire alarm system: Yes _____ No _____	Type _____
Smoke control:Yes _____ No _____	Type _____
Adequate exit routes:Yes_____ No _____	Dead ends: Yes _____ No _____
Maximum exit access travel distance_____	Elevator controls: Yes _____No _____
Means-of-egress emergency lighting:Yes ___ No ___	Mixed occupancies: Yes _____ No _____

SAFETY PARAMETERS	FIRE SAFETY (FS)	MEANS OF EGRESS (ME)	GENERAL SAFETY (GS)
1301.6.1 Building Height 1301.6.2 Building Area 1301.6.3 Compartmentation			
1301.6.4 Tenant and Dwelling Unit Separations 1301.6.5 Corridor Walls 1301.6.6 Vertical Openings			
1301.6.7 HVAC Systems 1301.6.8 Automatic Fire Detection 1301.6.9 Fire Alarm System			
1301.6.10 Smoke Control 1301.6.11 Means-of-Egress Capacity 1301.6.12 Dead Ends	**** **** ****		
1301.6.13 Maximum Exit Access Travel Distance 1301.6.14 Elevator Control 1301.6.15 Means-of-Egress Emergency Lighting	**** ****		
1301.6.16 Mixed Occupancies 1301.6.17 Automatic Sprinklers 1301.6.18 Standpipes 1301.6.19 Incidental Use Area Protection		**** Divide by 2	
Building Score—Total Value			

TABLE 1301.7 (Cont)

Evaluating Building Safety [1301.9]

- The mandatory safety score in Table 1301.8 shall be subtracted from the building score in Table 1301.7 for each category. Where the final score for any category equals zero or more, the building is in compliance with the requirements of this section for that category. Where the final score for any category is less than zero, the building is not in compliance with the requirements of this section.

One more thing Mixed Occy's . . .

- **1301.9.1 For mixed occupancies, the following provisions apply:**
- **1. Where the separation between mixed occupancies does not qualify for any category indicated in Section 1301.6.16, the mandatory safety scores for the occupancy with the lowest general safety score in Table 1301.8 must be used. (See Section 1201.6.)**
- **2. Where the separation between mixed occupancies qualifies for any category indicated in Section 1301.6.16, the mandatory safety scores for each occupancy are placed against the evaluation scores for the appropriate occupancy.**

IEBC Ch 14
Construction Safeguards

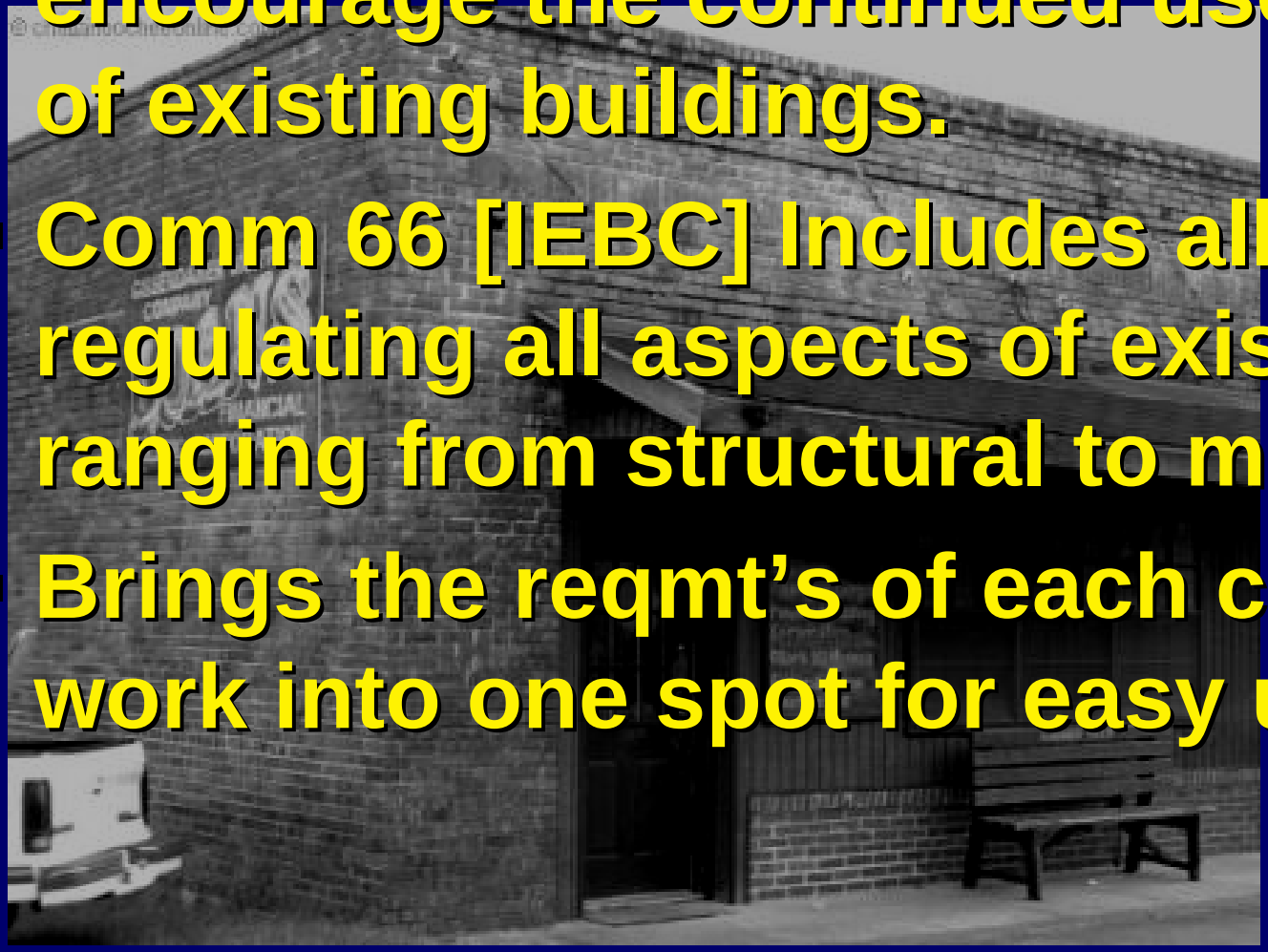
- Should be very familiar . . . Similar to IBC Ch. 33, but geared to conditions associated with existing buildings
- Includes provisions for the general protection of the public & site cleanliness (includes sanitary)
- Covers 7 other specific items . . .

7 Specific Const. Safeguards

- Prot'n of Adjoining Property
- Temp. Use of Public Ways and Prop.
- Fire Extinguishers
- Exits
- Standpipe Systems
- Automatic Sprinkler Systems
- Accessibility

IEBC Summary

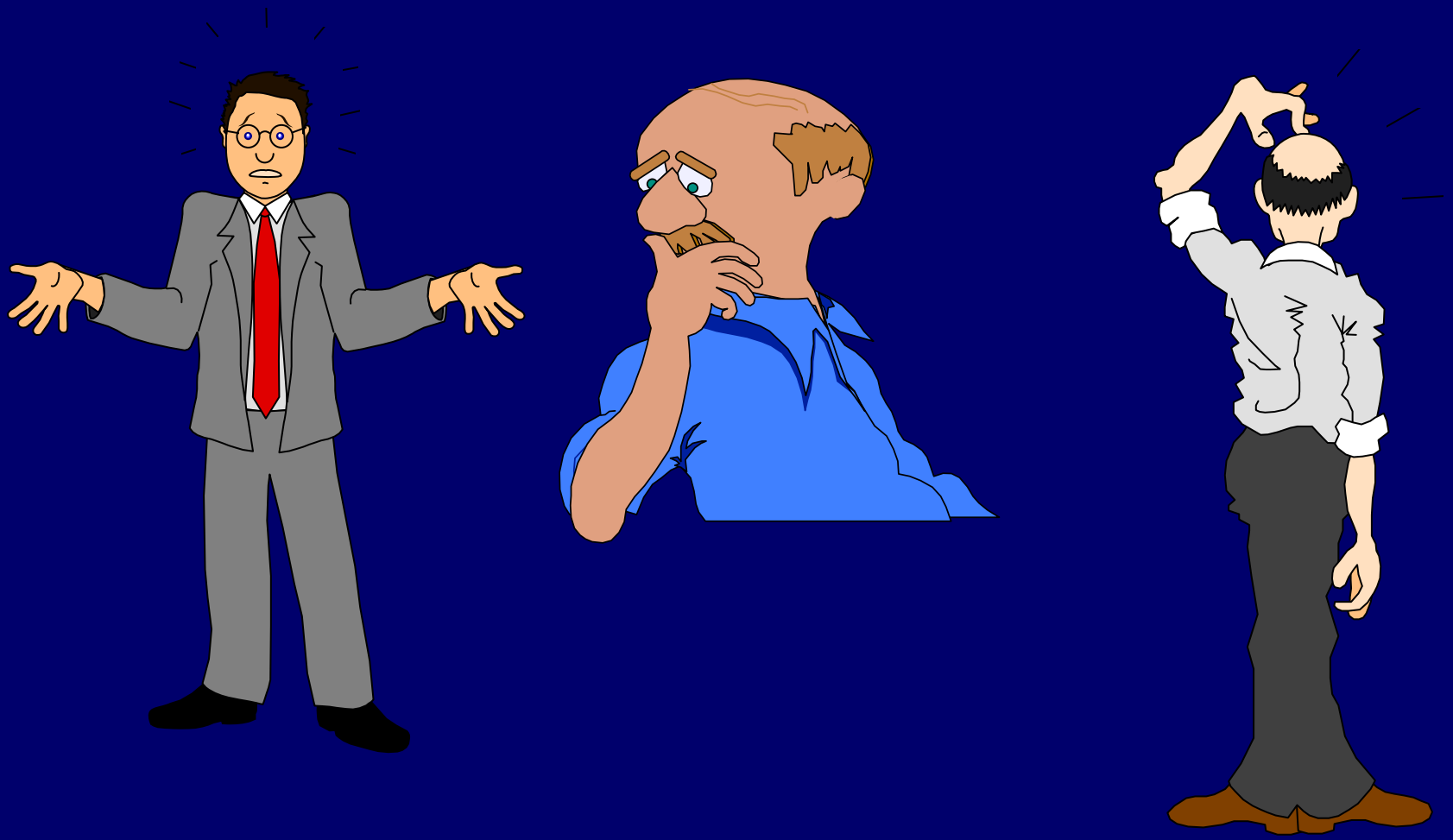
- The goal of Comm 66 [IEBC] is to encourage the continued use & re-use of existing buildings.
- Comm 66 [IEBC] Includes all provisos regulating all aspects of existing bldgs ranging from structural to mechanicals.
- Brings the reqmt's of each category of work into one spot for easy use



IEBC Summary (cont)

- Comm 66 [IEBC] provides alternate methods for compliance by means of the administrative provisions found in Chapter Comm 61 & the compliance alternative provisions of IEBC Ch 13

Questions ???




thank you