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Fundamentals of Codes and Standards
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What's the Session About?

- Codes/Standards/References/Guidelines - Is there a Difference?
- History of Building Codes
- Standards
- Building Codes – Construction Codes
- Other Codes
- References
- Model Code vs. Adopted Code

Codes & Standards & References & Guidelines - Is there a Difference?

- Generally speaking a Code is something which must be adhered to, but a Standard is a guide, or target to be measured against. To assure acceptable standards are available for use as references in codes, those providing mandatory language (i.e. shall vs. may) are generally preferred.

Codes vs. Standards

- ***Webster's New World Dictionary*** **defines a "code" as "a body of laws, as of a nation, city, etc." and a "standard" as "something established for use as a rule or basis of comparison in measuring, judging capacity, quantity, content, context, extent, value, quality, etc."**

Codes

- "Code" usually implies that document is to be legally binding . . . Code of Federal Regulations, Building codes, Fire codes, etc.
- Essentially, compliance with the code is required since it's the law and a "building code" would be the law as it applies to buildings

Codes (cont)

- **NFPA definition of Code – A standard that is an extensive compilation of provisions covering broad subject matter or that is suitable for adoption into law independently**

Standards

- **"Standard" usually implies it to be voluntary model or a document that provides a basis for testing or accreditation (ANS/ISO/IEC 17025 or ISO/IEC 17020 or ASTM), registration (ISO 9001:2000), or certification (Certified Quality Manager) . . . like ISO 9000 et al.**

Standards (cont)

- NFPA definition of Standard – A document, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements & which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Non- mandatory provisions shall be located in an appendix, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

Standards (cont)

- In the construction industry, standards typically address quality of materials (through testing methods or minimum prescriptive requirements), installation methods, classification, and design criteria.

Standards (cont)

- Standards are often narrow in scope, and usually focus on a particular product or system.
- For example, NFPA 13 addresses the design and installation of most fire sprinkler systems while ACI 318 speaks to the design and installation of reinforced concrete

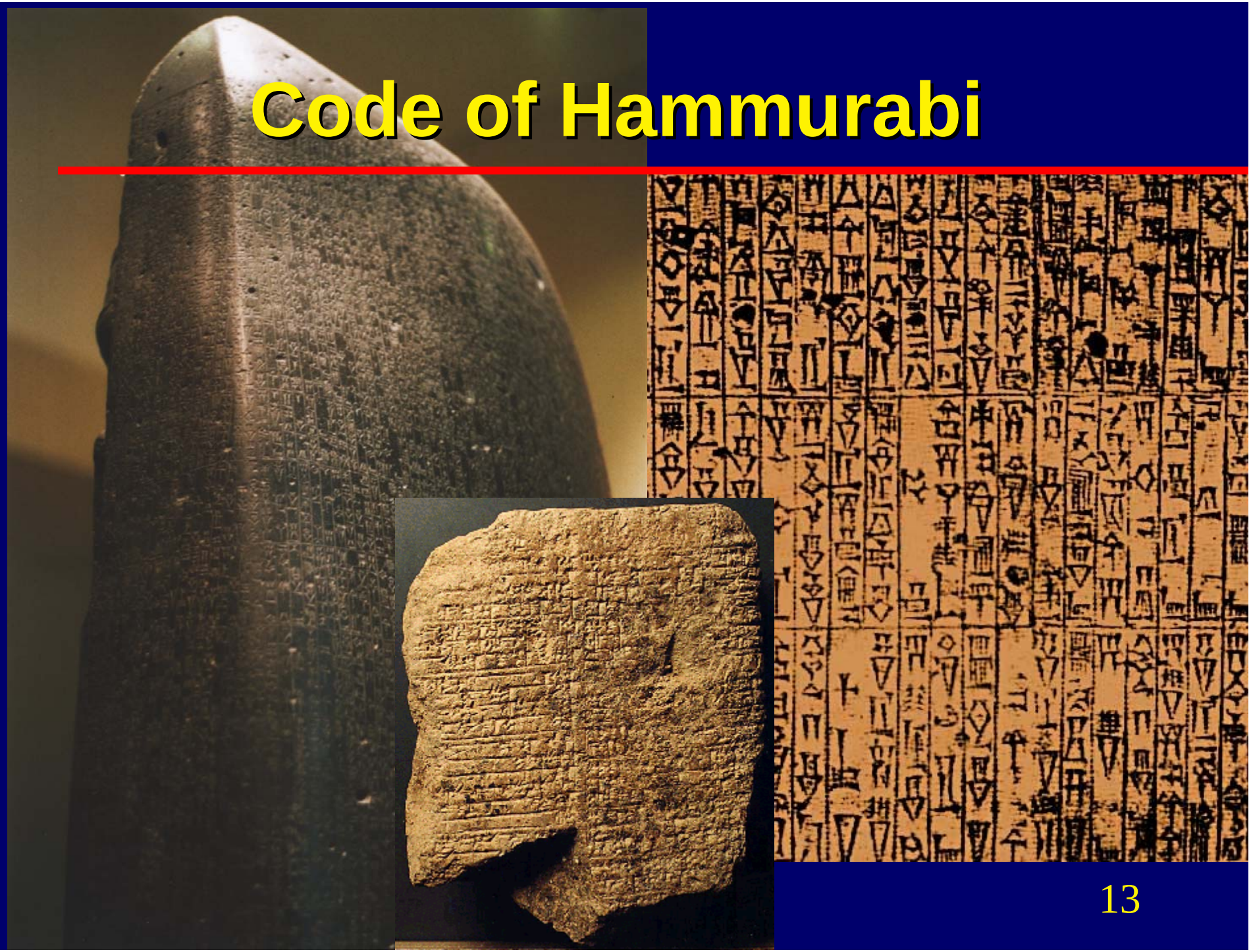
Standards (cont)

- It is not uncommon for a “standard” to be defined as a set of technical definitions and guidelines that function as instructions for designers, manufacturers, operators, or users of equipment. Those same “standards” are often considered to have become a Code when they have been adopted by one or more governmental bodies and in so doing become enforceable by law.

History of Building Codes

- Probably the earliest known building code was found in the Code of Hammurabi. Hammurabi was ruler of Babylon from 1795-1750 BC
- Essentially the code consists of 282 articles bookended by a Prologue and an Epilogue.
- Those provisions considered to be the building code are found towards the end in 229 - 233

Code of Hammurabi



Code of Hammurabi (cont)

- ***229. If a builder build a house for some one, and does not construct it properly, and the house which he built fall in and kill its owner, then that builder shall be put to death.***
- ***230. If it kill the son of the owner the son of that builder shall be put to death.***
- ***231. If it kill a slave of the owner, then he shall pay slave for slave to the owner of the house.***

Code of Hammurabi (cont)

- ***232. If it ruin goods, he shall make compensation for all that has been ruined, and inasmuch as he did not construct properly this house which he built and it fell, he shall re-erect the house from his own means.***
- ***233. If a builder build a house for some one, even though he has not yet completed it; if then the walls seem toppling, the builder must make the walls solid from his own means***

History of Codes (cont)

- Modern building codes shifted from outlining punishment for poor construction to mandating reqmt's that would make buildings safe and sanitary to occupy.
- One early example is the London Building Act of 1844.
- In Paris, in the mid-nineteenth century (the 2nd Empire – 1852 to 1870), the height of buildings were limited by law to five or six stories at most.

History of Codes (cont)

- The growth of American cities fueled by the tremendous influx of immigrants led to the creation of huge apartment buildings called tenements. Tenement living conditions in the mid 1800's were barely tolerable. As a result, in 1867, the City of New York enacted the First Tenement Housing Act, which required fire escapes and a window for every room. The requirements of the Second Tenement Housing Act, enacted in 1879, included the installation of toilets inside the building, and that windows face a source of fresh air and light, not an interior hallway.

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History of Codes (cont)

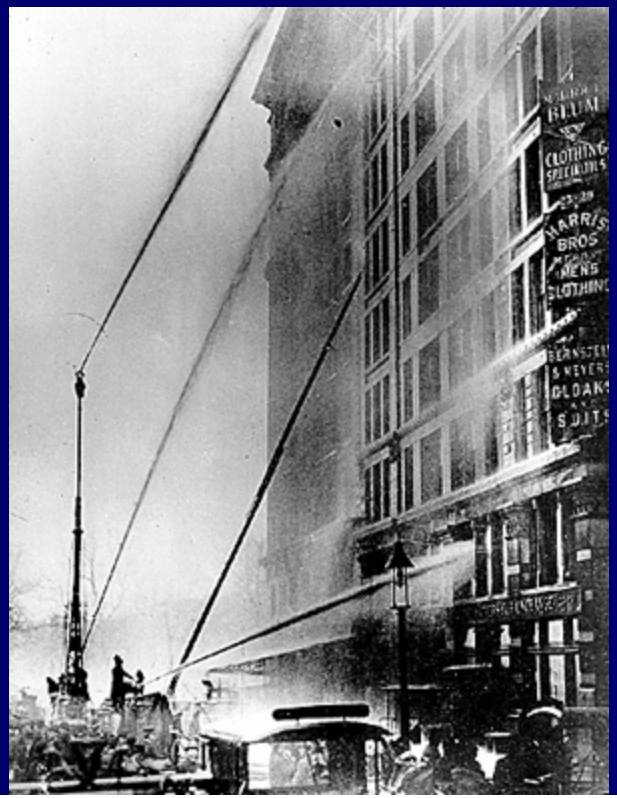
- Tragedies also have a significant role in the history of building codes in the U.S.
- Iriquois Theater Fire - Chicago 1903
- The Triangle Shirtwaist Factory fire – New York 1911
- Collinwood School fire – Cleveland 1908
- Consolidated School – New London, TX 1937
- Cocoanut Grove Nightclub – Boston 1947

Iriquois Theater Fire - Chicago 1903

- Iriquois Theater Fire – (602 dead)

The Triangle Shirtwaist Factory fire New York 1911

- **The Triangle Shirtwaist Factory fire – (146 dead)**



Photograph by the International Ladies' Garment Workers' Union

Collinwood School fire Cleveland 1908

- **Collinwood School fire 176 dead (173 children)**

Consolidated School New London, TX 1937

- Consolidated School – New London, TX 1937 (294 dead)

Cocoanut Grove Nightclub Boston 1947

- Cocoanut Grove Nightclub – (492 dead)

History of Codes (cont)

- By 1905 the Fire Underwriters Association put together one of the first codes, titled the “National Electric Code.”
- Wisconsin created the first state wide building code following direction provided within the “Safe Place Statutes” [1913]
- The Wisconsin Commercial Building Code went into effect in 1914 and was followed in 1915 by the “Existing Buildings Code”

History of Codes (cont)

- Uniform Building Code (ICBO) - First 1927
- Standard Building Code (SBCCI) - First 1945
- National Building Code (BOCA) - First 1950

History of Codes (cont)

- 1999 - International Building Code Compilation of the 3 existing model building codes. The I-Codes are on a 3 year cycle and currently there are 4 editions [2000, 2003, 2006 & 2009]
- 2002 - NFPA 5000 Building Construction and Safety Code - Currently 3 editions [2003, 2006 & 2009]

Standards

- As touched on earlier standards are generally voluntary in nature and are not regulated by the government, nor are they required to be used by the industry until incorporated into or referenced from within a code

Standards (cont)

- Standards are developed using a process that allows participation by all interested stakeholders including representatives of producers, manufacturers, users, consumers, and government agencies.

Standards (cont)

- Voluntary standards in the United States include those developed by the American National Standards Institute (ANSI), the American Society for Testing and Materials (ASTM), the National Institute of Standards and Technology (NIST), and over 400 other organizations.

Standards (cont)

- The U.S. Government in the past has been a major participant in the development of voluntary standards. However, since the "National Technology Transfer and Advancement Act of 1995," the Government has made a move to reduce its own standards development activities, and rely more on the private sector.

Standards (cont)

- Some of the more common acronyms of the standards found within the IBC include the following:
- ANSI, ASTM, AISC, ACI, ASME.
- Of particular interest to this group would be the 2003 Ed. of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities

Building Codes – Construction Codes

- International Building Code
- NFPA 5000 – Building Construction and Safety Code
- International Energy Conservation Code
- International Mechanical Code
- International Fuel Gas Code
- International Existing Building Code
- NFPA 101 – Life Safety Code

Building Codes (cont)

- NFPA 1 – Uniform Fire Code
- International Fire Code
- International Plumbing Code
- International Private Sewage Disposal Code
- International Property Maintenance Code
- International Zoning Code
- International Wildland-Urban Interface Code

Other Codes

- AWS D1.1 - Structural Welding Code Steel
- NFPA 30 - Flammable and Combustible Liquids Code
- NFPA 70 - National Electrical Code
- NFPA 72 - National Fire Alarm Code
- NFPA 85 - Boiler and Combustion System Hazards Code

References

- References can be Codes, Standards or “Guidelines”.
- References will be specific in nature and there is usually scoping language that captures the reference and outlines the extent to which the reference is to be used.

References (cont)

- It is very common to have one of the "building codes" reference another and vice versa.
- A good example is the reference to the International Fire Code from within the International Building Code.

References (cont)

- It is also common for one set of Administrative Rules to reference another
- A good example is where the rules of the Department of Health Services to reference the Wisconsin Commercial Building Code or NFPA's Life Safety Code for Hospital and Nursing Home licensing

References (cont)

- **Some references are titled a "Guideline" and may for that reason include language that is "permissive" (consider *may* versus *shall*). Such language is generally not considered enforceable even though they are sometimes used**
- **An example is the reference to the AIA Guidelines for Design and Construction of Health Care Facilities**

Model Code vs. Adopted Code

- In order for a model code to become the "law of the land", that model must be adopted or otherwise put into play by a governmental entity.
- Wisconsin is one of the few States with State wide building codes. Others include New York, Michigan

MODEL CODE FOR WI

- Early 70's Users say keep the home written Wisconsin Commercial Building Code
- Mid 80's Users split
- Early 90's Users say Model Code
  - Debate . . . which model code is best?
- Mid 90's ICC & single model code
  - Coordinated Suite of Codes

INTERNATIONAL CODE COUNCIL BACKGROUND

- BOCA - Since 1915
- ICBO - Since 1922
- SBCCI - Since 1940
- 1994 - Three model code groups “get it together”
- 2002 - BOCA, ICBO & SBCCI become ICC

ICC BACKGROUND (cont.)

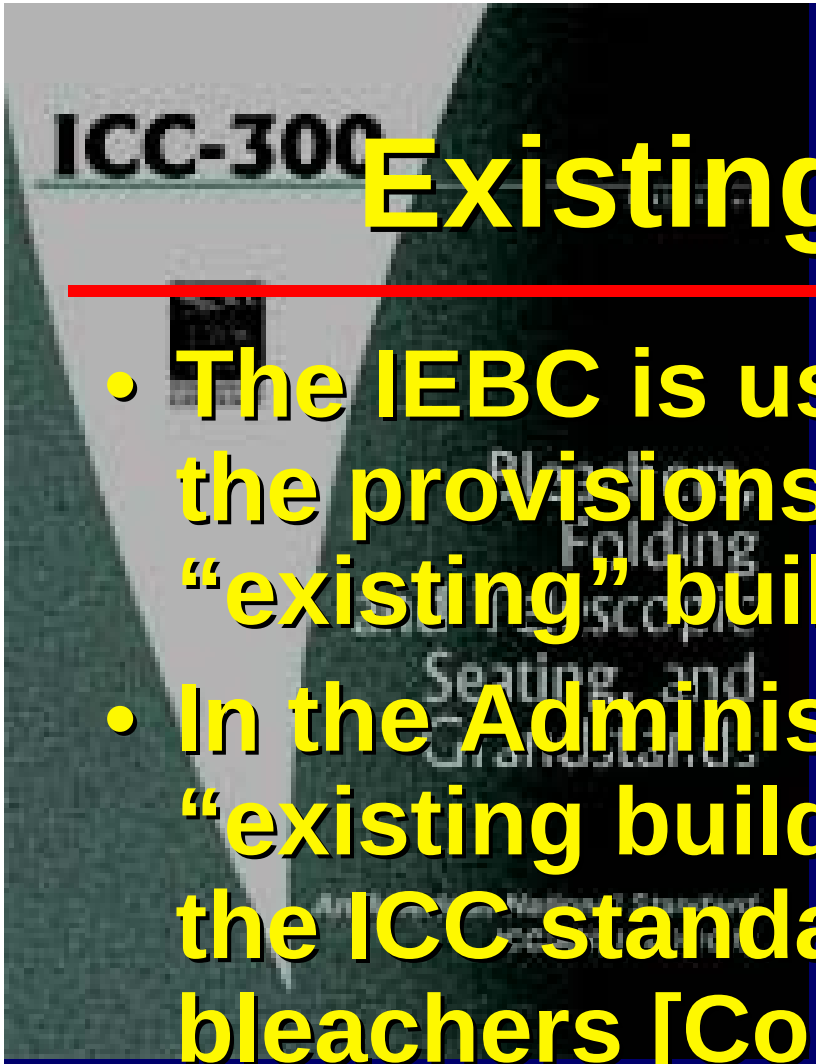
- IBC 2000 - Compilation of the 3 existing model building codes
- National Building Code (BOCA) - First 1950
- Standard Building Code (SBCCI) - First 1945
- Uniform Building Code (ICBO) - First 1927

MODEL CODES FOR WI (cont.)

- One Coordinated Set of Codes for the Built Environment
- Model Building Codes Used Across Nation
- In 2001, Wisconsin & New York the only 2 States NOT Using One of 3 model Building Codes

Wisconsin Adoption of the Model Codes

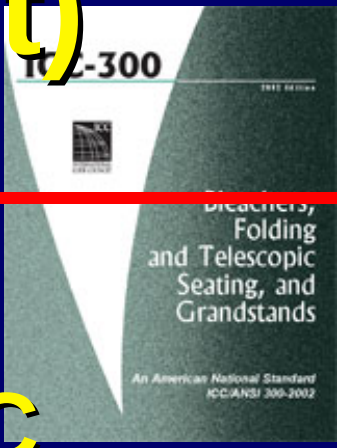
- *(1) IBC.*
- *(2) IECC*
- *(3) IMC*
- *(4) IFGC*
- *(5) IEBC*



Existing Buildings

- The IEBC is used for the majority of the provisions associated with “existing” buildings
- In the Administrative 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

Existing Buildings (cont)



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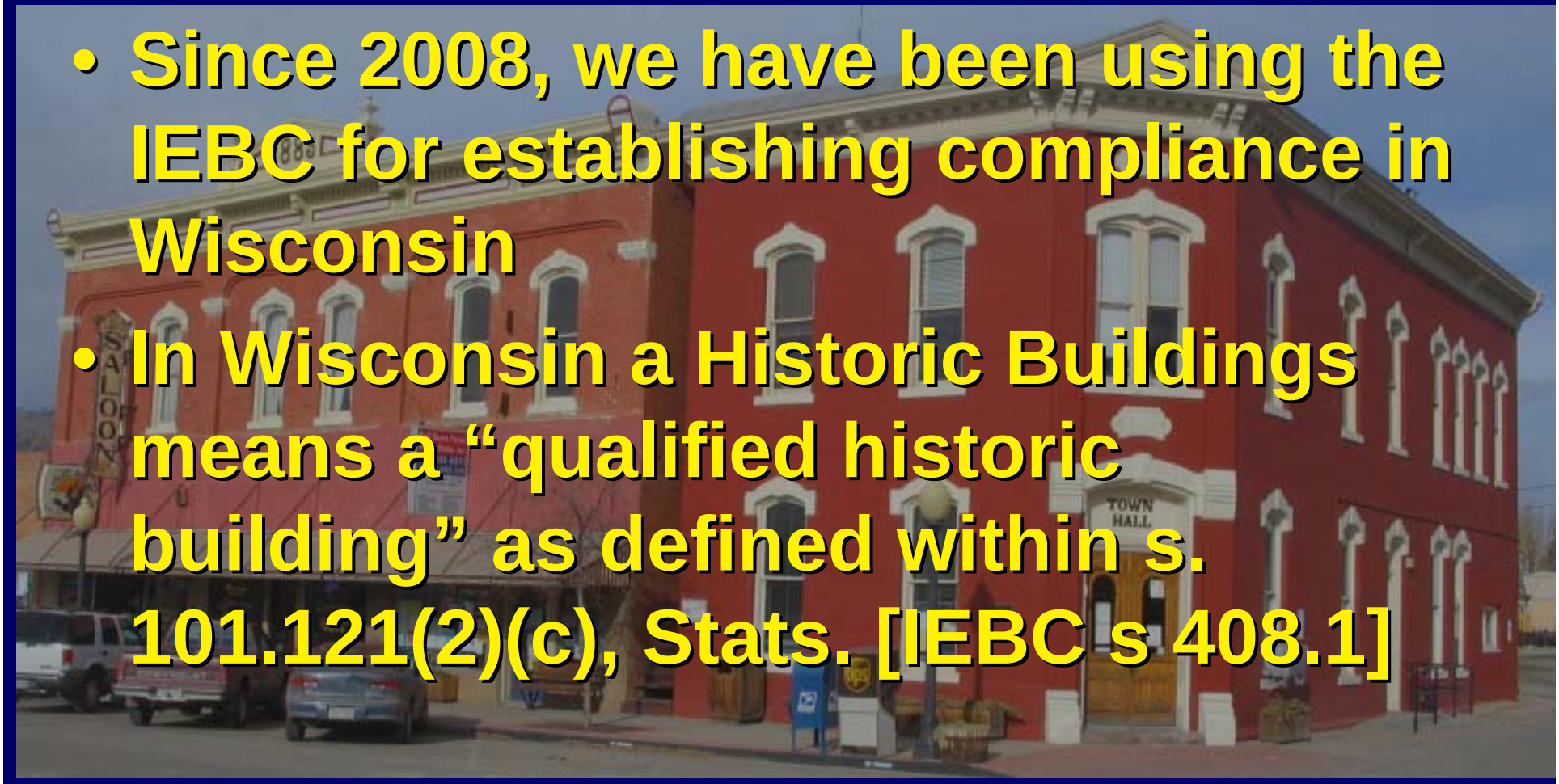
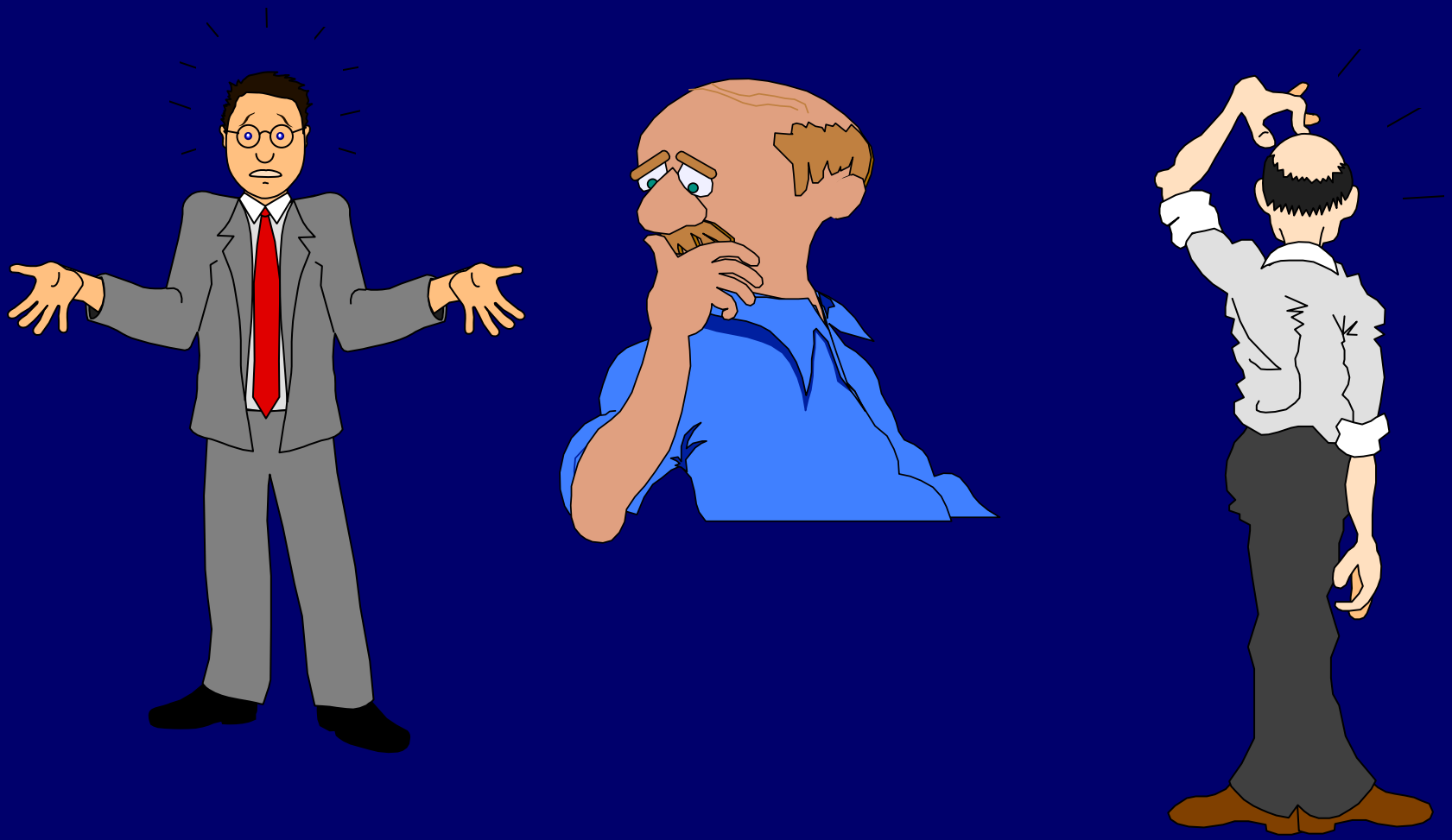
Historic Buildings



- Since 2008, we have been using the IEBC for establishing compliance in Wisconsin
- In Wisconsin a Historic Buildings means a “qualified historic building” as defined within s. 101.121(2)(c), Stats. [IEBC s 408.1]

Questions ???




thank you