

APPLYING THE **REHAB CODE** FOR COMMERCIAL BUILDING REPAIRS, ALTERATIONS, CHANGES OF OCCUPANCY, AND ADDITIONS

American Institute of Architects - Detroit (AIAD)
Building Codes & Regulations Committee (BCRC)

June 10, 2020

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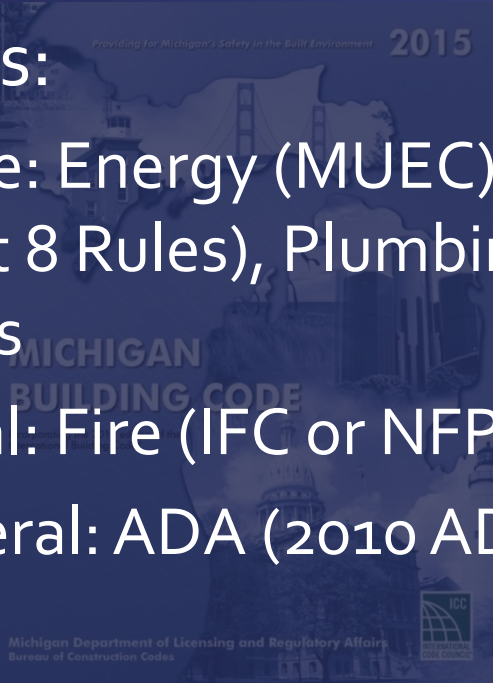
Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Learning Objectives

- ◆ Identify and discuss the **code-compliance options** that exist when designing a 'new building' v performing construction in an 'existing building'
- ◆ Review the **history and rationale** of the 'existing building' code provisions of the Rehab Code (MRCEB)
- ◆ Overview the different compliance options and **methods of application** contained within the MRCEB
- ◆ Review the different requirements of the provisions within the '**work area method**' of the MRCEB

'CODE' – What?

- ◆ 2015 Michigan Building Code (MBC)
- ◆ 2015 Michigan Rehabilitation Code for Existing Buildings (MRCEB or Rehab Code)
- ◆ Others:
 - ◆ State: Energy (MUEC), Mechanical (MMC), Electric (Part 8 Rules), Plumbing (MPC), Residential (MRC), BFS Rules
 - ◆ Local: Fire (IFC or NFPA), Property Maintenance (IPMC)
 - ◆ Federal: ADA (2010 ADA Standards)



ADA vs. MBC/MRCEB

- ◆ The 2015 MBC and 2015 MRCEB have accessibility requirements
- ◆ The 2010 ADA Standards are **not** part of the MBC or MRCEB
- ◆ When performing commercial construction to existing buildings, you must comply with MBC or MRCEB
- ◆ If your entity is a Title III “public accommodation” (or Title II entity), you must also comply with ADA, **regardless** if construction is occurring...
 - ◆ **Has your building been visited by the DOJ lately???**



'CODE' – New v. Existing

- ◆ Think differently...



**New
Building
"Code World"**



**Existing
Building
"Code World"**

'CODE' – New v. Existing

- ◆ In 'Code World' terms, think like this...



'CODE' – Options?

- ◆ New Buildings: **No** options of compliance
 - ◆ MBC
- ◆ Existing Buildings: **Four** options of compliance
 - ◆ MBC
 - ◆ MRCEB (prescriptive method)
 - ◆ **MRCEB (work area method)**
 - ◆ MRCEB (performance method)

'CODE' OPTIONS - Why?

- ◆ It costs more to fully rehab an existing building than to newly construct the same building
- ◆ Different obstacles exist for rehab projects than new building projects
- ◆ To upgrade an existing building to conform to current code requirements has historically proven cost prohibitive



'CODE' OPTIONS - Why?

- ◆ Mid-1960's: Our 36th President, Lyndon B. Johnson, undertook a national study to understand the causes of **urban blight** and to expand available, affordable housing
 - ◆ Study concluded (among other things) two big impediments caused by the Building Codes at the time:



'CODE' OPTIONS - Why?

- ◆ Study ultimately led to U.S. Dept of HUD 'guideline' documents:
 - ◆ 1980 Rehabilitation Guidelines
 - ◆ **1997 Nationally Applicable Recommended Rehabilitation Provisions (NARRP)**

Developed by a Consensus Advisory Committee

- Three U.S. Model Codes: BOCA, UBC, SSBC
- Other Vested Entities: NFPA, BOMA, City & State Fire Marshals, Insurance Institute, Building Officials, NIST, NAHB, Builders/Contractors

Nationally Applicable Recommended Rehabilitation Provisions

Prepared for:
U.S. Department of Housing and Urban Development
Office of Policy Development and Research

Prepared by:
NAHB Research Center, Inc.
Building Technology, Inc.
Koffel Associates, Inc.
Melvyn Green and Associates, Inc.

May 1997

'CODE' OPTIONS - Why?

- ◆ “While it is a relatively straightforward procedure to set out requirements for the design and construction of new buildings, the broad spectrum of activities falling under the general heading of “rehabilitation” have proven more difficult to **regulate in a rational, predictable manner.**”
- ◆ “Building officials generally have **wide discretion** in determining the nature and extent of improvements required when buildings are rehabilitated or converted to new uses.”
- ◆ “Owners and designers, even after reviewing the applicable codes, are correspondingly **uncertain** about what they can and cannot do.”
- ◆ The NARRP incorporates “...the philosophy that **improvements required** when work is being done in existing buildings should be **proportional** to the nature and extent of the underlying work.”
- ◆ “The provisions are written to ensure that public health, safety and welfare are **maintained or enhanced** as work is performed, and to **require more upgrades** to be included as more work is performed on a **voluntary basis.**”

'CODE' - NARRP Work Types

- ◆ Recognized **six types of work activities** and with a **cascading philosophy**
- ◆ Repairs, Renovation, Alterations, Reconstruction, Change of Occupancy, Additions

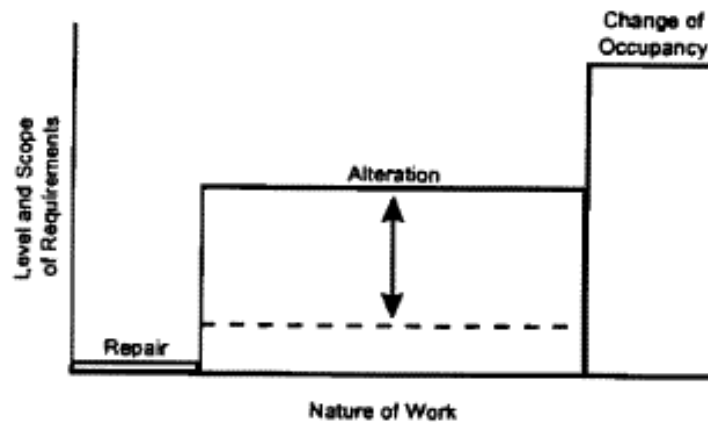


Figure 1
Current Building Codes

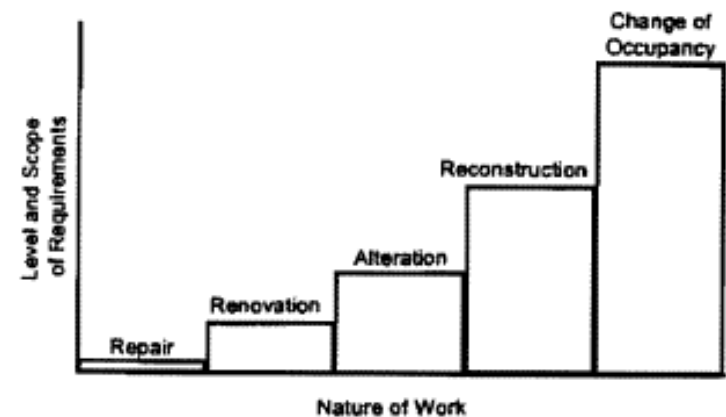


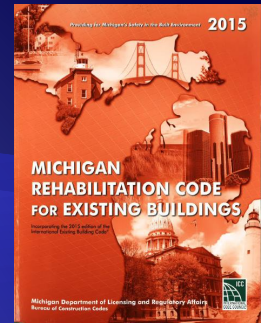
Figure 2
NARRP Proposed Approach

'CODE' - NARRP to MRCEB

- ◆ MRCEB uses same **cascading philosophy** and similar recognized **types of work activities**:

NARRP	MRCEB
Repairs	Repairs
Renovation	Alteration – Level 1
Alterations	Alteration – Level 2
Reconstruction	Alteration – Level 3
Change of Occupancy	Change of Occupancy
Additions	Additions

MRCEB - General Info



◆ Cascading Philosophy

- ◆ The more you 'change' the existing conditions, the more upgrades required...



- ◆ **Repairs:** Typically are performed to maintain the integrity of something, therefore, no substantial risk is created since the previously accepted condition is simply being restored or otherwise 'maintained'.

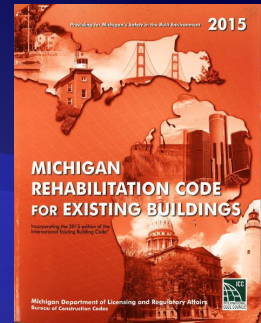


- ◆ **Alterations:** Depending on the amount of 'change', little to substantial risk can be created by the 'change' due to the new conditions that did not previously exist.



- ◆ **Change of Occupancy:** Substantial risk can be created by changing the level of activity or use of a space since what may have been safe previously, may not be true anymore.

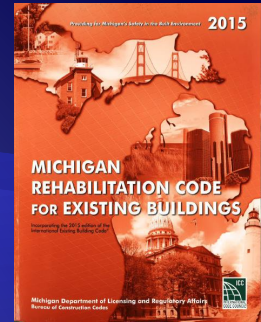
MRCEB - General Info



◆ Section 101.3 Intent

- ◆ The intent of the MRCEB is “...to provide **flexibility** to permit the use of **alternative approaches** to achieve compliance with **minimum requirements** to safeguard the public health, safety and welfare **insofar as they are affected by** the repair, alteration, change of occupancy, addition and relocation of existing buildings.”

MRCEB - General Info



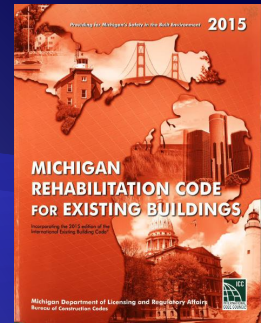
◆ Section 101.4 Applicability

- ◆ “This code shall apply to...existing buildings, regardless of occupancy...”

EXCEPT:

- ◆ Buildings or portions not previously occupied or used for its intended purpose (Section 101.4.1)
- ◆ When local fire code (IFC) or property maintenance code (IPMC) says it cannot continue or when the Code Official deems legal occupancy or use no longer appropriate (Section 101.4.2)

MRCEB - Methods

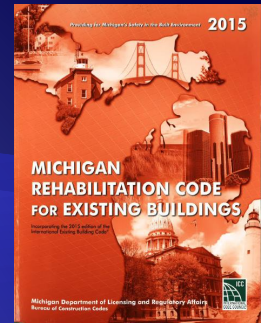


◆ Chapter 3 Compliance Methods

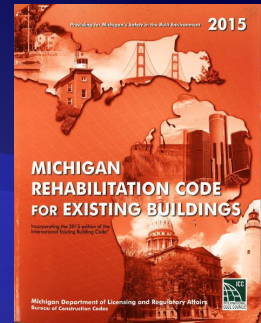
- ◆ “The repair, alteration, change of occupancy, addition or relocation of all existing buildings shall comply with **one of the methods** listed...as selected by the applicant.”
- ◆ “[The methods] **shall not be applied in combination** with each other.”
- ◆ Three Methods Listed: Prescriptive, Work Area, Performance

MRCEB - Methods

- ◆ Section 301.1.1 Prescriptive Method
 - ◆ Comply with **Chapter 4**
 - ◆ Limited exceptions or guidance
 - ◆ Generally based on concept of **updating**, per the new construction requirements of MBC, **whatever you touch**, but what you don't touch, can remain.

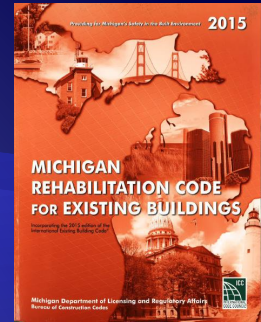


MRCEB - Methods



- ◆ **Section 301.1.2 Work Area Method (WAM)**
 - ◆ Comply with **Chapters 5 thru 13**
 - ◆ This likely will be the **portion most often used** for various construction projects
 - ◆ Generally based on NARRP's **cascading philosophy to voluntary upgrades**
 - ◆ Each Chapter pertains to a different work activity:
 - ◆ Chapter 6: Repairs
 - ◆ Chapters 7, 8 and 9: Alterations
 - ◆ Chapter 10: Change of Occupancy
 - ◆ Chapter 11: Additions
 - ◆ Chapter 12: Historic Buildings
 - ◆ Chapter 13: Relocated or Moved Buildings

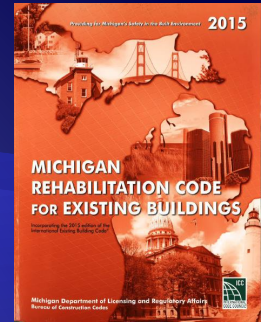
MRCEB - Methods



◆ Section 301.1.3 Performance Method

- ◆ Comply with **Chapter 14**
- ◆ Detailed component or system evaluation for rating the fire safety, means of egress, and general safety aspects of an existing building
- ◆ Results in a 'scorecard' to which the existing level of compliance can be judged as 'Pass' or 'Fail' for the specific categories reviewed
- ◆ Mainly intended for use for buildings that may have been built when no code was formally enforced. But in Michigan, not limited to only those buildings.

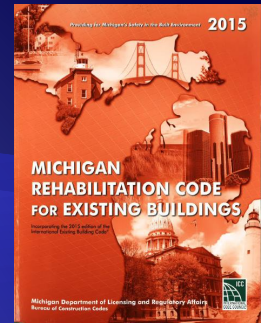
MRCEB - "WAM" Scoping



◆ Chapter 5 Classification of Work

- ◆ It all starts here when choosing this method
- ◆ Using the **work activity definitions** in combination with the **scoping requirements for each work activity**, will determine which subsequent Chapter(s) you need to comply with
- ◆ Mostly clear when to apply: "Change of Occupancy", "Addition", or "Relocated Building"
- ◆ Sometimes, not so clear when to apply:
 - ◆ "Repair" v. "Alteration"
 - ◆ "Alteration" levels

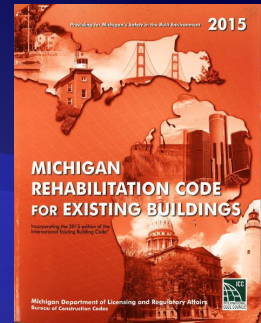
MRCEB - "WAM" Scoping



◆ Section 502 Repairs

- ◆ “Repairs, as defined in Chapter 2, include the **patching** or **restoration** or **replacement** of **damaged materials**, elements, equipment or fixtures **for the purpose of maintaining** such components **in good or sound condition** with respect to **existing loads or performance requirements.**”
- ◆ *Necessary work resulting from failure or distress...*

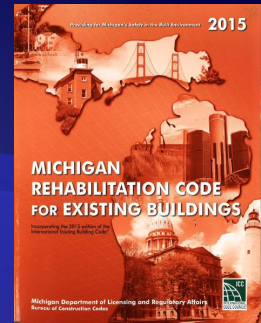
MRCEB - "WAM" Scoping



◆ Section 503 Alteration - 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.**”
- ◆ Very similar to “Repairs”; however language indicates more than a ‘restoration to sound or good condition’ is taking place and does not tie the work back to incurred damage, load or performance requirements
- ◆ **Voluntary action to ‘change’ (improve) something...**

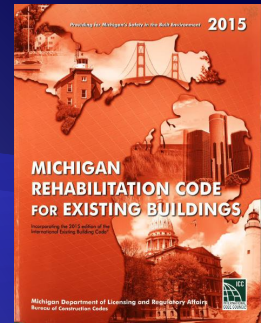
MRCEB - "WAM" Scoping



◆ Section 504 Alteration - 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.**"
- ◆ *Voluntary action to 'change' the existing conditions, potentially in a significant way...*

MRCEB - "WAM" Scoping

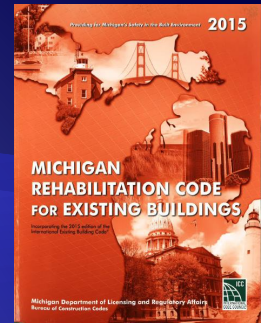


◆ Section 505 Alteration - Level 3

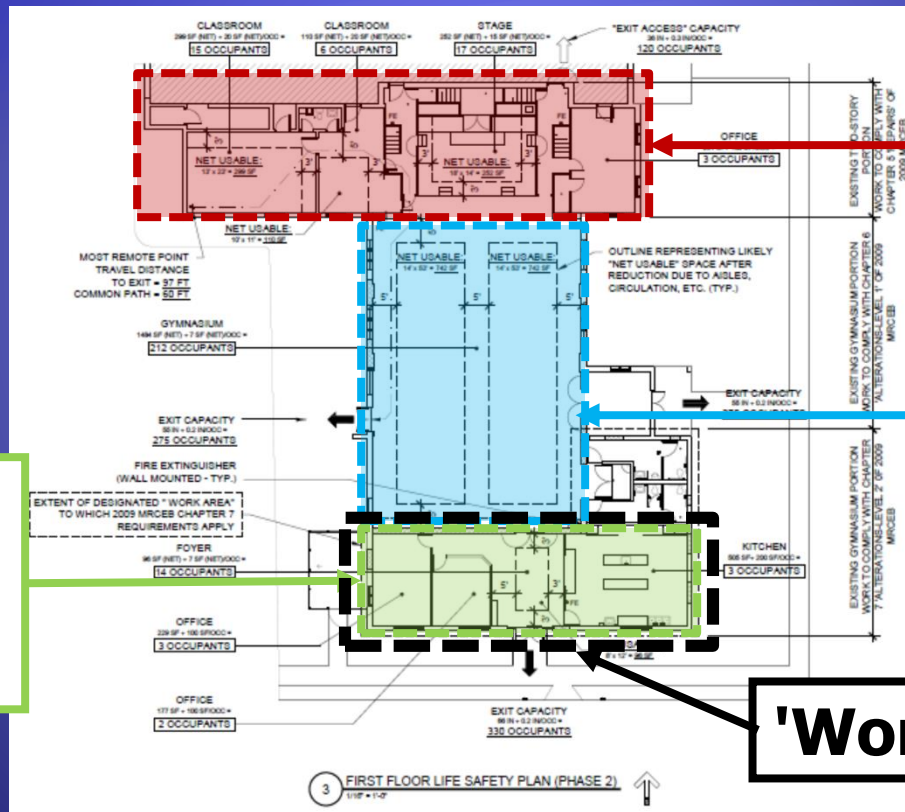
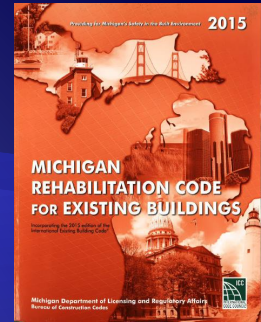
- ◆ "Level 3 alterations apply where the **work area** exceeds **50 percent** of the **building area**."
- ◆ Section 202 defines "Work Area" as: "That portion or portions of a building consisting of all **reconfigured spaces**..."
- ◆ *Voluntary action to 'change' a significant amount of the existing area, in a significant way...*

MRCEB - "WAM" Scoping

- ◆ Keep in mind that the 'Work Area Method' includes all applicable provisions in Chapters 5 thru 13, as such, **your project may need to comply with different Chapters in different parts of the building** depending on the amount of 'change' you are proposing.



MRCEB - "WAM" Scoping



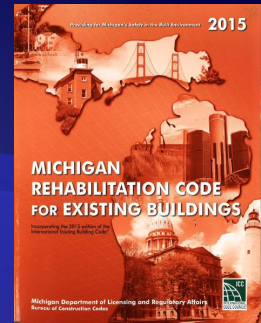
**Chapter 6
Repairs**

**Chapter 7
Alterations
Level 1**

**Chapter 8
Alterations
Level 2**

'Work Area'

MRCEB WAM – “Repairs”



◆ Chapter 6

◆ Main Philosophy:

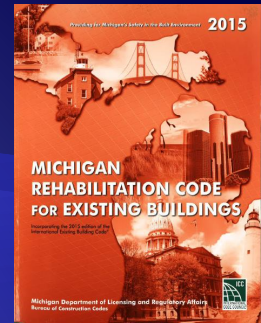
- ◆ Recreate the conditions that existed prior to the damage in order to maintain the same use, purpose, function and configuration.
- ◆ Don't make the building less conforming than it was prior to the work (i.e., at a minimum, maintain the level of protections provided)
- ◆ Can use like materials or new materials consistent with MBC

◆ Summary:

- ◆ No 'changes' required as a result of 'code' influence for 1) fire protection, 2) means of egress, 3) accessibility and 4) energy
- ◆ Very little 'change' required for MEP **“ADA” Caution**
- ◆ Could have significant 'change' required to structural system elements depending on extent of 'structural damage' (SSD)

MRCEB WAM – “Repairs”

- ◆ Auto-dealership built in 1976
- ◆ Two-stories, 20,000+/- sqft footprint
- ◆ Fire on 2nd floor in July 2014
- ◆ **Fire damage:** 2nd flr, limited 1st flr, roof'g
- ◆ **Soot/smoke damage:** 1st floor areas
- ◆ Developed 'repair' drawings based, in part, on **Ch. 6 “Repairs”**



Rolling Hills Auto Plaza
2015 Fire Damage Repairs and Alterations
1607 N. Belt Hwy
St. Joseph, Missouri 64506

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ARCHITECTS

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Travellers Insurance
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Overland Park, Kansas 66213

General Project & Life Safety Information
A0.0

4. FIRE PROTECTION FEATURES AND FIRE-RATED CONSTRUCTION :

A. "NON-SPRINKLERED BUILDING" (REF: 2012 IEBC SECTION 603 AND 703 REGARDING "MAINTAINING LEVEL OF FIRE PROTECTION PROVIDED," THEREFORE, NO "NEW" SPRINKLER SYSTEM IS REQUIRED TO BE ADDED IF NONE EXISTED PRIOR). ALSO, SINCE THE EXTENT OF THE LEVEL 2 ALTERATIONS (I.E., WORK AREA) DOES NOT EXCEED 50% OF THE FLOOR AREA, NO "NEW" SPRINKLER SYSTEM IS REQUIRED TO BE ADDED (REF: 2012 IEBC SECTION 804.2.2).

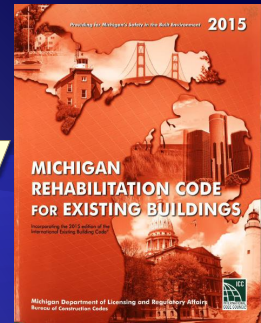


6. ACCESSIBILITY:

A. PER 2012 IEBC SECTION 605, THE REPAIR WORK SHALL BE DONE TO "MAINTAIN THE LEVEL OF ACCESSIBILITY PROVIDED" AND THE LEVEL OF ACCESSIBILITY SHALL NOT BE REDUCED.



MRCEB WAM – “Alt Level 1”



◆ Chapter 7

◆ Main Philosophy:

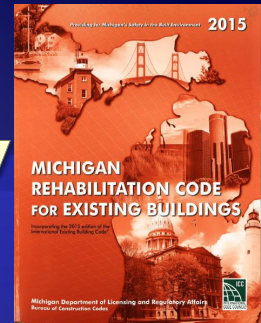
- ◆ Similar to repairs, don't make it less conforming but now must **comply with 'materials and methods'** per MBC (some like materials still allowed)

◆ Summary:

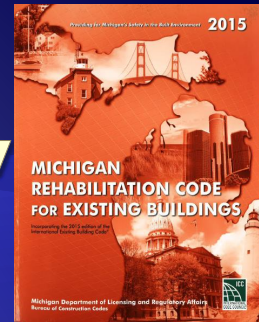
- ◆ No 'changes' required as a result of 'code' influence for 1) fire protection and 2) means of egress
- ◆ Some 'change' required for accessibility (what you touch + 20% for route updates if primary function space affected)
- ◆ Some 'change' required for MEP (what you touch)
- ◆ Some 'change' may be required for structural (support of new loads and roof-to-wall bracing/connections)
- ◆ Required 'change' for energy (what you touch)

MRCEB WAM – “Alt Level 1”

- ◆ Public, civic building built in late 1800s
- ◆ Four-stories, 9,000+/- sqft footprint
- ◆ Fire during reroofing in October 2010
- ◆ **Fire damage:** roof & attic portions
- ◆ **Soot/smoke damage:** upper floor areas
- ◆ **Water damage:** historic plaster, all floors
- ◆ Assessed how MRCEB could be used to address damage
- ◆ Worked with City, design & construction team
- ◆ Although Ch. 6 “Repairs” was viable, City wanted to also make some limited changes related to preservation to return some elements (i.e., wall finishes) to their historic state
- ◆ So, **Ch. 7 “Alterations Level 1”** appropriate for certain portions



MRCEB WAM – “Alt Level 2”



◆ Chapter 8

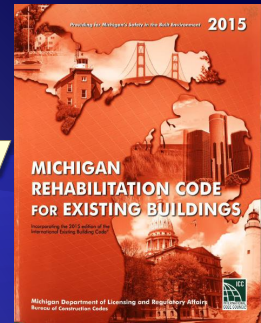
◆ Main Philosophy:

- ◆ Builds upon requirements for ‘repairs’ or ‘alteration level 1’, with a **targeted approach focused** on the project’s ‘**work areas**’ (reconfigured spaces).
- ◆ All new construction elements, components, systems and spaces to comply with MBC (not just limited to ‘materials & methods’)

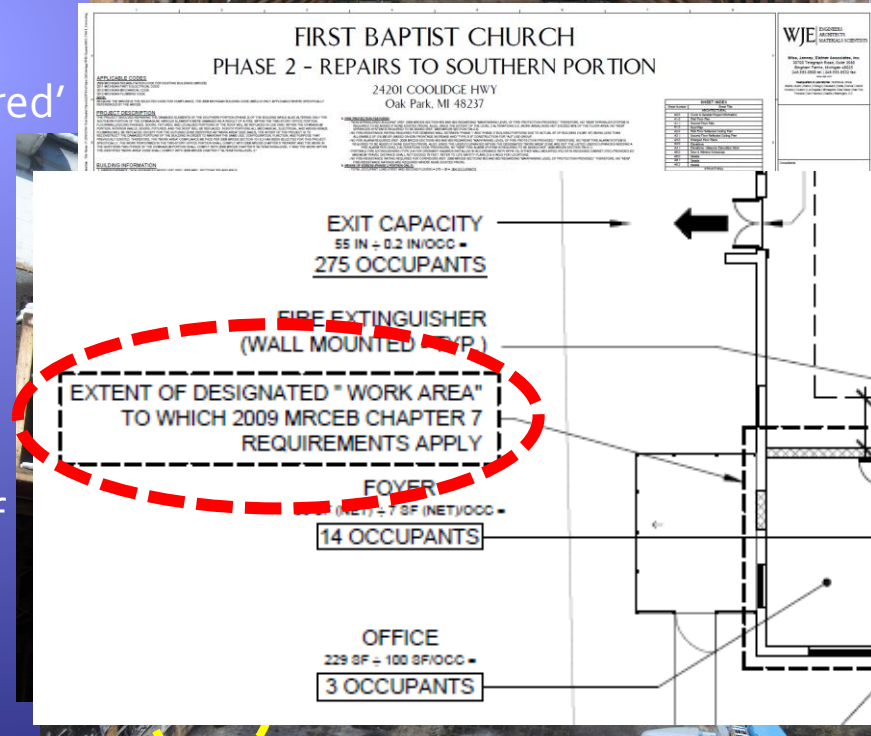
◆ Summary:

- ◆ **Some** ‘change’ may be required to improve vertical openings and passive fire control systems (add fire-rated enclosures, add guards, improve finish ratings)
- ◆ **Some** ‘change’ may be required to add fire protection (sprinkler and/or fire alarm systems)
- ◆ **Some** ‘change’ may be required to improve means of egress systems (add exits, add or manipulate doors, modify corridor openings and dead-ends, improve egress lighting/signage, improve handrail/guard conditions in stairways)
- ◆ **Some more extensive** ‘change’ for accessibility beyond ‘work area’ (improve entrance, improve or add toilet room, potentially add accessible route)
- ◆ **Some** ‘change’ may be required to the structural systems (gravity and lateral) and design generally needs to comply with MBC req’s
- ◆ **Some more extensive** ‘change’ for MEP (changing existing wiring for ‘A’, ‘H’ and ‘I’ uses, OCPDs and additional outlets for most ‘R’ uses, CFM and exhaust req’s for mechanicals, add plumbing fixtures if occupant load increased by 20 percent)
- ◆ **Required** ‘change’ for energy req’s (what you touch)

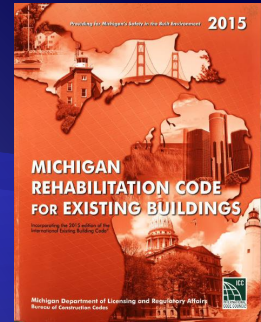
MRCEB WAM – “Alt Level 2”



- ◆ Church built in late 1950s
- ◆ Two-stories, 14,500+/- sqft footprint
- ◆ Fire during mechanical upgrade in Oct 2013
- ◆ **Fire damage:** roof/attic, 2nd/1st floor portions
- ◆ **Soot/smoke/water damage:** remaining areas
- ◆ Worked with City, owners, design & construction team to get sanctuary ‘repaired’ and occupied for Christmas services
- ◆ Congregation wanted to ‘change’ things (i.e., increase kitchen size, increase gymnasium, add/relocate office space)
- ◆ So **Ch. 8 “Alteration Level 2”** appropriate and worked with Pastor to ‘limit’ extent of changes **to avoid Alteration Level 3** reqs



MRCEB WAM – “Occ Chg”



◆ Chapter 10

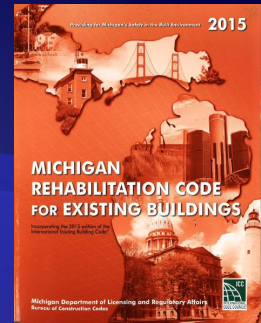
◆ Main Philosophy:

- ◆ Differentiates between changes resulting in just **“change in use”** (*i.e., A-3 Community Hall to an A-3 Museum*) v. changes resulting in a change of the MBC’s **“Occupancy Classification”** (*i.e., A-2 to A-3, B to R-2, etc.*)
- ◆ Based on the above, some seemingly straight forward “Alt 2” or “Alt 3” projects **may also need to comply** with this chapter too..

◆ Summary:

- ◆ If just a **‘use’ change**, then comply with the applicable ‘repair’ and ‘alteration’ req’s per the previous chapters
- ◆ If an **‘occupancy classification’ change**, then comply as noted above + potentially upgrade 1) fire protection, 2) means of egress, 3) accessibility, 4) structural, and 5) MEP systems

MRCEB WAM – “Additions”



◆ Chapter 11

◆ Main Philosophy:

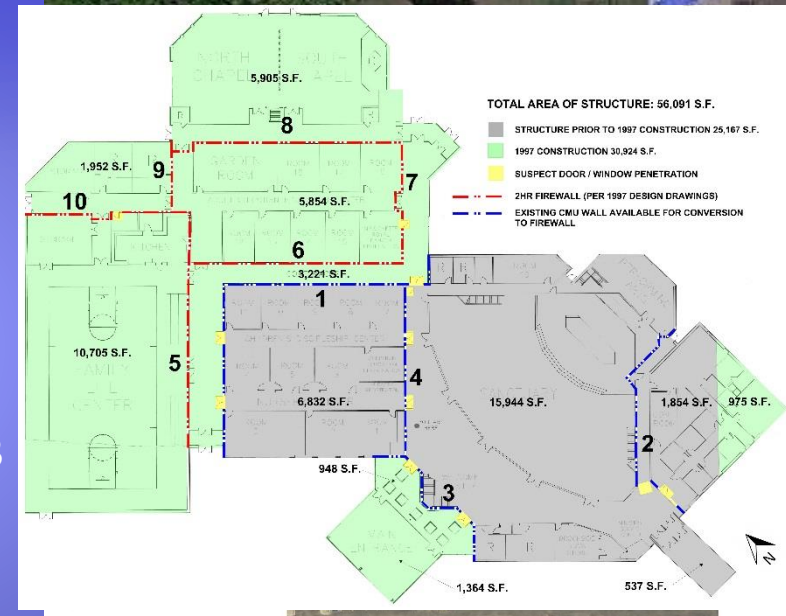
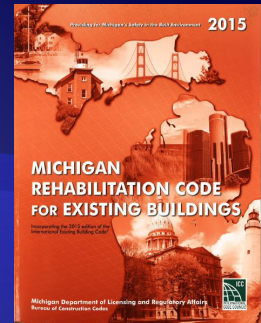
- ◆ The ‘**addition**’ shall comply with the **MBC** while existing building portions not affected by (i.e., fire separated or within allowance w/o separation) the addition, can remain as-is.
- ◆ **Cannot ‘extend’** a nonconformity of the existing building related to 1) accessibility, 2) structural strength, 3) fire safety, 4) means of egress, or 5) the capacity of MEP systems.

◆ Summary:

- ◆ Generally, all addition work will need to comply with MBC and if not ‘fire separated’, other MBC or MRCEB requirements will apply to the **affected existing building portions**.

MRCEB WAM – “Additions”

- ◆ Church built in 1989 with large addition in 1997
- ◆ Two-stories, 56,000+/- sqft footprint
- ◆ Congregation wanted to improve the building by adding **three ‘additions’**
- ◆ Architect/City concerned, no clear fire walls and building too large without
- ◆ We assessed original code (1983 BOCA), code for 1st addition (1993 BOCA), and MRCEB
- ◆ Determined that fire walls are present, but need minor modifications to restore integrity
- ◆ Recommended two additions be fire-separated from existing Church to avoid other work
- ◆ Helped design/construction team achieve ‘open’ feel for other addition



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Other Helpful References

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Thank you

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