



# Building Codes 101 & 102



Building Codes & Regulations Committee of AIA Detroit  
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## Building Codes and Regulations Committee

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## Zoning v Code

- PA 230 Section 125.1502a/Sec. 2a/(1) defines "Construction Regulations" as:  
**"...a law, act, rule, regulation, or code, general or special, or a compilation thereof, enacted or adopted by this state...relating to the design, construction, or use of and the installation of equipment in buildings and structures. Construction regulation does not include a zoning ordinance..."**

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## Zoning v Code

- **Code** = Statewide; typically limited to the building proper
- **Zoning** = Local Ordinances; typically limited to all other elements of the site except the building proper

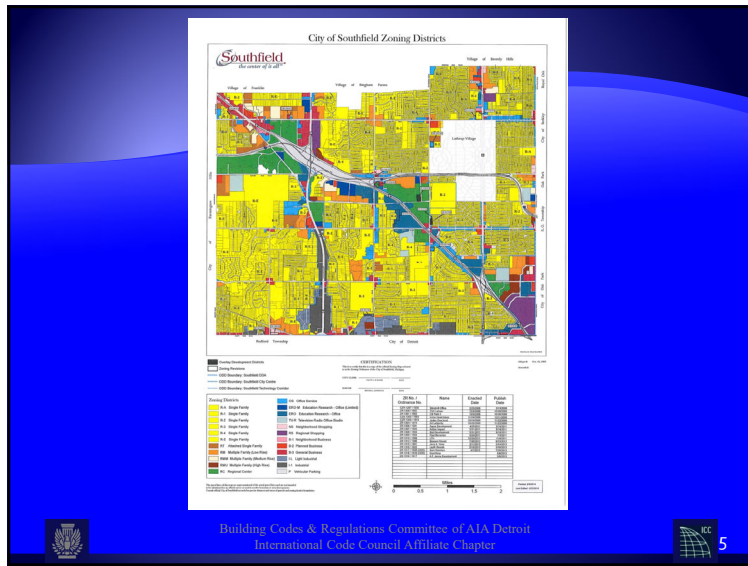
***Should be mutually exclusive with no overlap...should be...***

***Also, zoning requirements should not be construction regulations...should not be...***

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# Drawing Information for: Extent, Use, Size & Type Zoning Information Applicable Codes MBC Chapters 3, 4, 5 & 6

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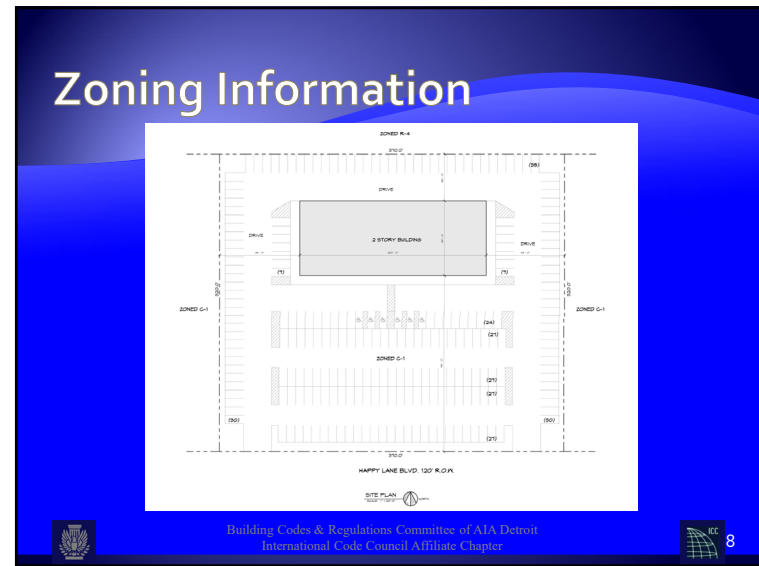
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# Zoning Information

- Zoning Classification
- Site Area & Building Area
- Concept of "Required v Provided":
  - Setbacks
  - Height
  - Parking (ratio, quantity & type)

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# Site/Building Data

**SITE/BUILDING DATA**

ZONING: C-1 COMMERCIAL

SITE AREA: 110,400 SQ. FT. (2.12 ± ACRES)

% LOT COVERAGE 19.51%

% LANDSCAPING 12.32%

SETBACKS: MIN. FT. ACTUAL FT.

FRONT	70	140
SIDE	20	84
REAR	35	50

BLDG. HEIGHT: MAX. FT. ACTUAL FT.

	40	30
--	----	----

BUILDING AREA: 32,000 GROSS SQ. FT.

USE	USABLE SQ. FT.	PARKING RATIO	PARKING REQUIRED
OFFICE	12,240	1/200	= 61
RESTAURANT (211 SEATING)	4,226	1/2 SEATING	= 104
RETAIL	5,116	1/150	= 35
PARKING REQUIRED (IV & BFD/ADA)			= 205
PARKING PROVIDED			= 49

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# Building Code History

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## The Earliest Known Building Codes



### Hammurabi's Code of Laws

Babylonian King Hammurabi (1792-1750 BC) published the first recorded document that can be considered a building code book almost 4,000 years ago. Faulty building practices were no more appreciated then than they are now: Hammurabi's Code of Laws were all-inclusive, a few of them regulated the building contractors of the time. Of the 282 codes, numbers 228 through 233 are those which represent the rules for construction.

Fortunately, it's highly unlikely any of today's building code books call for penalties as harsh as did that first one. Back then, if someone constructed a building for someone else and that building collapsed and killed the homeowner, the builder would also be killed in retribution. If a son or a slave was killed, the builder made retribution in kind.

228. If a builder has built a house for a man, and finished it, he shall pay him a fee of two shekels of silver, for each SAR built on.

229. If a builder has built a house for a man, and has not made his work sound, and the house he built has fallen, and caused the death of its owner, that builder shall be put to death.

230. If it is the owner's son that is killed, the builder's son shall be put to death.


231. If it is the slave of the owner that is killed, the builder shall give slave for slave to the owner of the house.

232. If he has caused the loss of goods, he shall render back whatever he has destroyed. Moreover, because he did not make sound the house he built, and it fell, at his own cost he shall rebuild the house that fell.

233. If a builder has built a house for a man, and has not keyed his work, and the wall has fallen, that builder shall make that wall firm at his own expense.

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The Great Chicago Fire  
October 9, 1871

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## Model Building Codes

- ◆ BOCA- 1915
- ◆ UBC-1922
- ◆ SBC-1940

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## Michigan Construction Regulations History

*What did it used to be?*  
*What is it now?*  
*What is the difference?*

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## “Pre” 1973

- ◆ Best described as “Helter-skelter”...
- ◆ Any local jurisdiction could use anything, most often one of the three U.S. model codes available were selected (**BOCA, UBC, SSBC**)
- ◆ Jurisdictions could ‘modify’ their adopted codes as they liked.
- ◆ Was not a ‘minimum’ statewide building standard established; no Bureau yet...
- ◆ Many areas did not have a code...

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## Jan 1, 1973

- Effective date of new **PA 230 Construction Code Act** and the **Bureau of Construction Codes** was formed.
- Significance was:
  - Enforcement was now 'required' and 'consolidated' at the state level which also established some 'minimums'.
  - Still a bit helter-skelter (no consistency 'required') since although a code was required, specifics were still left to the local jurisdiction.

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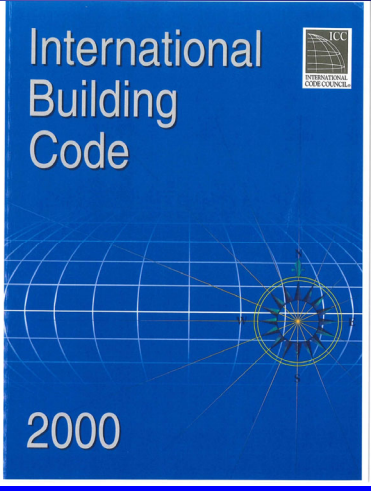
## Dec 28, 1999 "And Beyond"

- Effective date of significant revision to PA 230 of 1972, including renaming to, **Stille-DeRossett-Hale Single State Construction Code Act**
- Two major changes occurred:
  - **#1: Authority to adopt and amend construction regulations (codes) at the local level was eliminated.**
  - **#2: Adopted and amended, statewide, construction regulations based primarily on ICC's model codes (i.e., IBC, IRC, IMC, IPC, IECC and later added IEBC).**

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International Building Code

2000

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## Applicable Codes & Status

- New Building v Existing Building
- Scope of Project / Disciplines Involved
- Current Codes:
  - 2015 Michigan Building Code
  - 2018 Michigan Plumbing Code
  - 2015 Michigan Mechanical Code
  - 2015 Michigan Rehabilitation Code
  - 2015 Michigan Part 8 Electrical Code (MEC)

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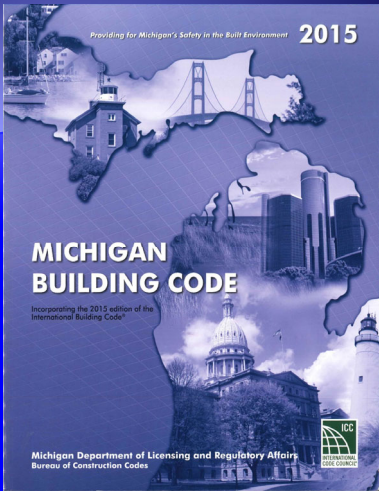
## Other Codes & Regulations

- ◆ Accessibility Code Reqs v Federal Laws...
  - MBC Ch. 11 (scoping) + ICC A117.1 (technical)
  - DOJ's Americans with Disabilities Act (ADA)
  - HUD's Fair Housing Act (FHA)
- ◆ Other Local v State Regulations
  - Fire Code
    - State = PA207 = NFPA 1-2006
    - Local = ? (typically IFC)
  - Property Maintenance Code
    - State = n/a
    - Local = ? (typically IPMC)



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## THE 2015 MICHIGAN BUILDING CODE

### Inside Front Cover.

**R408.30401 Applicable code.** All references to the International (Codes) mean the Michigan Building (Codes).

**Precedence:** Michigan Construction Code Act, PA 230 of 1972 as amended by PA 245 of 1999; Rules, Part 4: R 408.30402.

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## PA 299 of 1980 MICHIGAN OCCUPATIONAL ACT

**Section 339.2001. (e):** "Practice of architecture" means professional services, such as consultation, investigation evaluation, planning, design, or review of material and completed phases of work in construction, alteration, or repair in connection with a public or private structure, building, equipment, works, or project if the professional service requires the application of a principal of architecture or architectural design.

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## THE 2015 MICHIGAN BUILDING CODE

### PART 1-SCOPE AND APPLICATION

**SECTION 101 GENERAL**

**101.1 Title.** These rules shall be known as the Michigan Building Code....



**101.2 Scope:** Essentially all construction  
**Exception:** Detached one and two family dwellings, townhouses less than three stories.

**101.4 Referenced codes:** Fuel Gas; Mechanical; Plumbing; Property Maintenance; Fire Prevention; Energy; Appendices.

**101.4.7 Existing Buildings.** Work performed in accordance with the *Michigan Rehabilitation Code for Existing Buildings*

**Chapter 27 Electrical: 2701 Scope.** Electrical components, equipment and systems shall be designed and constructed in accordance with the Michigan electrical code. R 408.30448.

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## SECTION 104 DUTIES AND POWERS OF THE BUILDING OFFICIAL

**104.1 General.** The *building official* is hereby authorized and directed to enforce the provisions of this code. The *building official* shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions.

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## SECTION 107 SUBMITTAL DOCUMENTS

**107.1 Submittal documents.** *Construction documents*, special inspection and structural programs and other data shall be submitted in 1 or more sets with each application for a permit. The construction documents shall be prepared by...a registered design professional when required by 1980 PA 299, MCL 339.101 to 339.2919...

Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

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## Construction Documents – “Why”

- ♦ **MBC Section 107.2.1 and MRCEB Section 106.2.1:**

“...*Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations...*”

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**Architects & AHJs**

## "Why" should ~~We~~ Know This?

- **MBC Section 107.1 and MRCEB Section 106.1...**

*"The construction documents shall be prepared by...a registered design professional when required by 1980 PA 299, MCL 339.101."*

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**Architects & AHJs**

## "Why" should ~~We~~ Know This?

- Per **PA 299 of 1980 Michigan Occupational Act**, that means **all** construction projects **except the following two conditions:**

**Exception No. 1 – Small Public Work Projects**

*"This section does not apply to a public work for which the contemplated expenditure for the completed project is **less than \$15,000.00**" [Section 339.2011(2)]*

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**Architects & AHJs**

## "Why" should ~~We~~ Know This?

- Per **PA 299 of 1980 Michigan Occupational Act**, that means **all** construction projects **except the following two conditions:**

**Exception No. 2 – Typical Residence**

*"A person...who is planning, designing, or directing the construction of a residence building **not exceeding 3,500 square feet** in calculated area." [Section 339.2012(d)]*

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## Sign & 10-Digit Architects & Professional Engineers General Rules

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS  
DIRECTOR'S OFFICE  
ARCHITECTS - GENERAL RULES


(By authority conferred on the board of architects by section 338 of the occupational code, 1980 PA 299, MCL 339.308, and on the director of the department of licensing and regulatory affairs by sections 205 and 209 of the occupational code, 1980 PA 299, MCL 339.205 and 339.209, and Executive Reorganization Order Nos. 1991-9, 1996-2, 2001-1, and 2011-4, MCL 338.3501, 445.2001, 445.2011, and 445.2030)

**R 339.1504 Seal design, use, security, and validation.**

Rule 404. (1) Effective 60 days after the promulgation of this rule, the seal of an architect must include the licensee's name and full license number, as shown on the licensee's state-issued architect license and indicate "State of Michigan" and "Licensed Architect" in the legend surrounding the seal. The seal must have a design substantially equivalent to figure 404.

(2) A licensee's seal shall be used by the licensee whose name appears on the seal for as long as the license is in effect. A licensee is responsible for the security of the licensee's seal.

FIGURE 404



History: 2020 AACR, 2022 MR 4, EFF. FEB. 23, 2022

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS  
DIRECTOR'S OFFICE  
PROFESSIONAL ENGINEERS - GENERAL RULES


By authority conferred on the board of professional engineers by section 338 of the occupational code, 1980 PA 299, MCL 339.338, and on the director of the department of licensing and regulatory affairs by sections 205 and 209 of the occupational code, 1980 PA 299, MCL 339.205 and 339.209, and Executive Reorganization Order Nos. 1991-9, 1996-2, 2001-1, and 2011-4, MCL 338.3501, 445.2001, 445.2011, and 445.2030)

**R 339.1603 Professional engineer seal.**

Rule 32. (1) Effective 2 years after the promulgation of this rule, the seal of a professional engineer must include the licensee's full name and license number, as shown on his or her state-issued professional engineer license, and indicate "State of Michigan" and "Licensed Professional Engineer" in the legend surrounding the seal. The seal must have a design substantially similar to figure 32 below.

(2) A licensee's seal shall be used by the licensee whose name appears on the seal for as long as the license remains in effect. A licensee is responsible for the security of his or her seal.

FIGURE 32

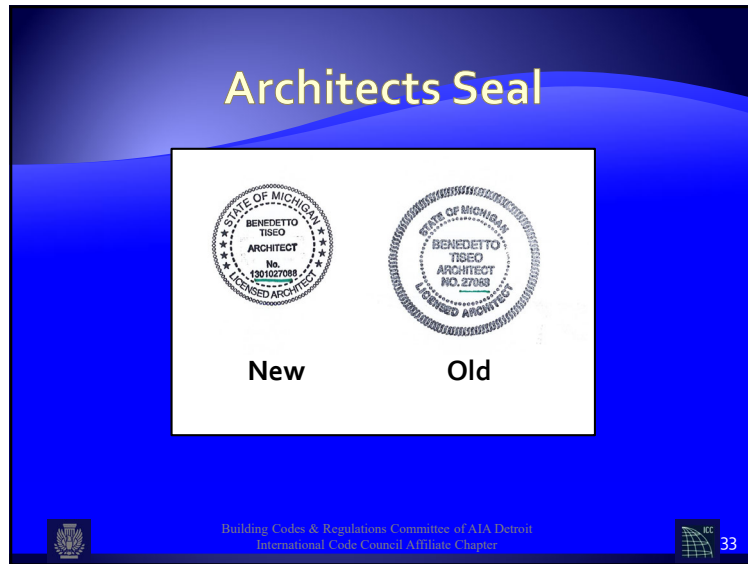


History: 1983 AACR, 2020 MR 23, EFF. DEC. 18, 2020

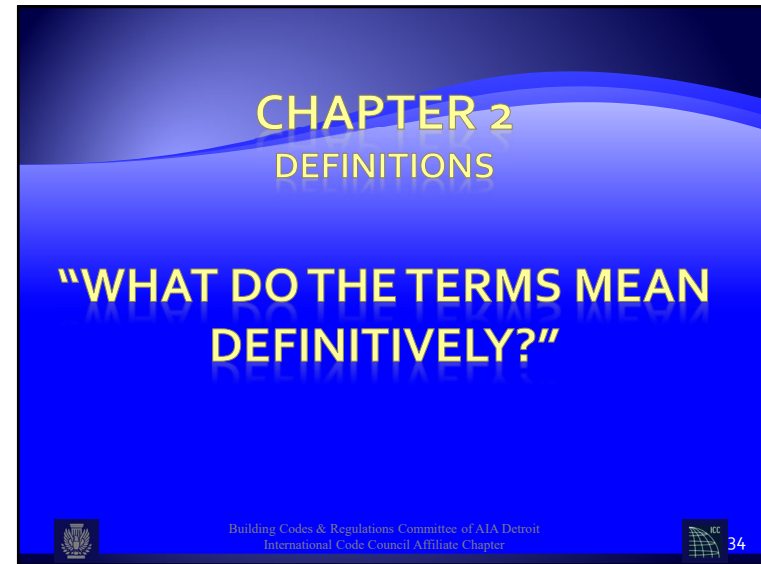
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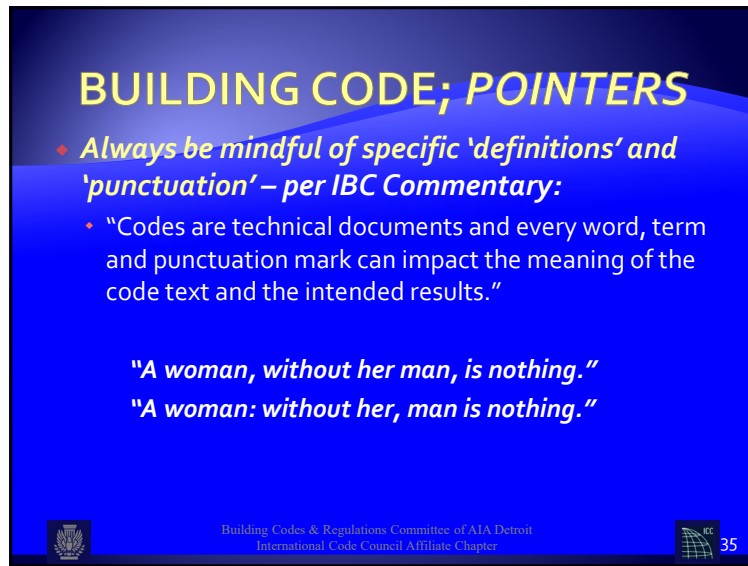




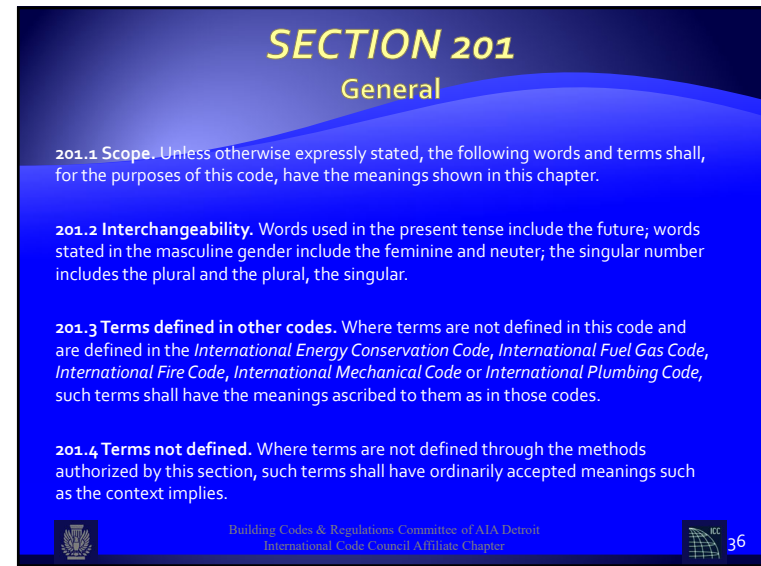
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# CHAPTER 3 USE AND OCCUPANCY CLASSIFICATION

## "WHAT CAN I DESIGN?"

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## BUILDING CODE; POINTERS

- *Always start with the highest level of the 'scoping' provision before applying subsections*

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## SECTION 302.1 *General.*

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5
2. Business (see Section 304): Group B
3. Educational (see Section 305): Group E
4. Factory and Industrial (see Section 306): Groups F-1 and F-2
5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-6
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4
7. Mercantile (see Section 309): Group M
8. Residential (see Section 310): Groups R-1, R-2, R-3 and R-4
9. Storage (see Section 311): Groups S-1 and S-2
10. Utility and Miscellaneous (see Section 312): Group U




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## SECTION 303.1 *ASSEMBLY GROUP A*

Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption or awaiting transportation.

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## SECTION 303.2 Assembly Group A-1.

Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures including, but not limited to:

- Motion picture theaters
- Symphony and concert halls
- Television and radio studios admitting an audience
- Theaters





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## SECTION 303.3 Assembly Group A-2.



Assembly uses intended for food and/or drink consumption including, but not limited to:

- Banquet halls
- Casinos (gaming areas)
- Nightclubs
- Restaurants, cafeterias and similar dining facilities
- Taverns and bars





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## SECTION 303.4 Assembly Group A-3.

Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

- Arcades Art galleries Bowling alleys Community halls Courtrooms
- Dance halls (not including food or drink) Exhibition halls Funeral parlors
- Gymnasiums, Indoor swimming pools, Indoor tennis courts (without seating)
- Lecture halls Libraries Museums Places of religious worship
- Pool and billiard parlors Waiting areas in transportation terminals





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## SECTION 303.5 Assembly Group A-4.



Assembly uses intended for viewing of indoor sporting events and activities with spectator seating including, but not limited to:

- Arenas
- Skating rinks
- Swimming pools
- Tennis courts





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## SECTION 303.6


### Assembly Group A-5.

Assembly uses intended for participation in or viewing outdoor activities including, but not limited to:

- Amusement park structures
- Bleachers
- Grandstands
- Stadiums

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## SECTION 304

### BUSINESS GROUP B

Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

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## SECTION 304

### BUSINESS GROUP B

- Airport traffic control towers
- *Ambulatory care facilities*
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- *Clinic, outpatient*
- Dry cleaning and laundries: pick-up and delivery stations and self-service


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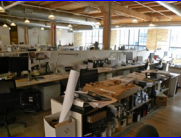


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## SECTION 304

### BUSINESS GROUP B

- Educational occupancies for students above the 12th grade
- Electronic data processing
- Laboratories: testing and research
- Motor vehicle showrooms
- Post offices
- Print shops
- Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
- Radio and television stations
- Telephone exchanges
- Training and skill development not within a school or academic program




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## SECTION 305 EDUCATIONAL GROUP E

Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade.

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## SECTION 306 FACTORY GROUP F

Factory Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous or Group S storage occupancy.

Groups F-1, or F-2.








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## SECTION 307 HIGH-HAZARD GROUP H

High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in *control areas* complying with Section 414, Groups H-1, H-2, H-3, or H-4




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## SECTION 308 INSTITUTIONAL GROUP I

Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which care or supervision is provided to persons who are or are not capable of self-preservation without physical assistance or in which persons are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3, or I-4.

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## SECTION 309 MERCANTILE GROUP M

Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof, for the display and sale of merchandise and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

- Department stores
- Drug stores
- Markets
- Motor fuel-dispensing facilities
- Retail or wholesale stores
- Sales rooms








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## SECTION 310 RESIDENTIAL GROUP R

Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *International Residential Code*.  
Groups R-1, R-2, R-3, or R-4.

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## SECTION 310.3 Residential Group R-1

Residential occupancies containing *sleeping units* where the occupants are primarily *transient* in nature, including:

- *Boarding houses (transient)* with more than 10 occupants
- *Congregate living facilities (transient)* with more than 10 occupants
- *Hotels (transient)*
- *Motels (transient)*

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## SECTION 310.4 Residential Group R-2

Residential occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily *permanent* in nature, including:

- Apartment houses
- *Boarding houses (nontransient)* with more than 16 occupants
- *Congregate living facilities (nontransient)* with more than 16 occupants
- Convents
- *Dormitories*
- Fraternities and sororities
- Hotels (nontransient)
- *Live/work units*
- Monasteries
- Motels (nontransient)
- Vacation timeshare properties

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## SECTION 310.5 Residential Group R-3

Residential occupancies where the occupants are primarily permanent in nature and not classified as group R-1, R-2, R-4, or I, including any of the following:

- (a) Adult foster care family homes or adult foster care, for 6 or fewer persons.
- (b) Buildings that do not contain more than 2 dwelling units.
- (c) Boarding houses (nontransient) with 16 or fewer occupants.
- (d) Boarding houses (transient) with 10 or fewer occupants.
- (e) Congregate living facilities (nontransient) with 16 or fewer occupants.
- (f) Congregate living facilities (transient) with 10 or fewer occupants.
- (g) Foster family homes for not more than 4 minor children.
- (h) Foster care family group homes for more than 4, but fewer than 7 minor children.


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## SECTION 310.6 Residential Group R-4

This occupancy shall include buildings, structures or portions thereof for more than five but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive *custodial care*. The persons receiving care are capable of self-preservation. This group shall include, but not be limited to, the following:

- Alcohol and drug centers
- Assisted living facilities
- Congregate care facilities, Convalescent facilities
- *Group homes*, Halfway houses
- Residential board and *custodial care* facilities
- Social rehabilitation facilities


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## SECTION 311 STORAGE GROUP S

- Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy.
- Group S-1, or S-2.








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## SECTION 311.2 Moderate-hazard storage S-1

- **Group S-1.** Buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:
- Aerosols, Levels 2 and 3, Aircraft hangar (storage and repair), Bags: cloth, burlap and paper, Bamboos and rattan, Baskets, Belting: canvas and leather, Books and paper in rolls or packs, Boots and shoes, Buttons, including cloth covered, pearl or bone, Cardboard and cardboard boxes, Clothing, woolen wearing apparel, Cordage, Dry boat storage (indoor), Furniture, Furs, Glues, mucilage, pastes and size, Grains, Horns and combs, other than celluloid, Leather, Linoleum, Lumber, Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials, listed in Table 307.1(1) (see Section 406.8), Photo engravings, Resilient flooring, Silks, Soaps, Sugar, Tires, bulk storage of, Tobacco, cigars, cigarettes and snuff, Upholstery and mattresses, Wax candles

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## SECTION 311.3

### Low-hazard storage, Group S-2

- Group S-2. Includes, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrap-ping. Group S-2 storage uses shall include, but not be limited, to, storage of the following:
  - Asbestos, Beverages up to and including 16-percent alcohol in, metal, glass or ceramic containers, Cement in bags, Chalk and crayons, Dairy products in non-waxed coated paper containers, Dry cell batteries, Electrical coils, Electrical motors, Empty cans, Food products, Foods in noncombustible containers, Fresh fruits and vegetables in non-plastic trays or, Containers, Frozen foods, Glass, Glass bottles, empty or filled with noncombustible liquids, Gypsum board, Inert pigments, Ivory, Meats, Metal cabinets, Metal desks with plastic tops and trim, Metal parts, Metals, Mirrors, Oil-filled and other types of distribution transformers, Parking garages, open or enclosed, Porcelain and pottery, Stoves, Talc and soap stones, Washers and dryers

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## SECTION 312

### UTILITY AND MISCELLANEOUS GROUP U

Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

- Agricultural buildings Aircraft hangars, accessory to a one- or two-family residence
- Barns Carports Fences more than 6 feet (1829 mm) in height
- Grain silos, accessory to a residential occupancy Greenhouses Livestock shelters
- Private garages Retaining walls Sheds Stables Tanks Towers





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## CHAPTER 4

### SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

### "WHAT UNIQUE CIRCUMSTANCE APPLY?"

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## Chapter 4

### SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

- SECTION 402 COVERED MALL AND OPEN MALL BUILDINGS
- SECTION 403 HIGH-RISE BUILDINGS
- SECTION 204 ATRIUMS
- SECTION 405 UNDERGROUND BUILDINGS
- SECTION 406 MOTOR-VEHICLE-RELATED OCCUPANCIES
- SECTION 407 GROUP I-2
- SECTION 408 GROUP I-3
- SECTION 409 MOTION PICTURE PROJECTION ROOMS
- SECTION 410 STAGES, PLATFORMS AND TECHNICAL PRODUCTION AREAS
- SECTION 411 SPECIAL AMUSEMENT BUILDINGS
- SECTION 412 AIRCRAFT-RELATED OCCUPANCIES
- SECTION 413 COMBUSTIBLE STORAGE
- SECTION 414 HAZARDOUS MATERIALS
- SECTION 415 GROUPS H-1, H-2, H-3, H-4 AND H-5
- SECTION 416 APPLICATION OF FLAMMABLE FINISHES
- SECTION 417 DRYING ROOMS
- SECTION 418 ORGANIC COATINGS
- SECTION 419 LIVE/WORK UNITS
- SECTION 420 GROUPS I-2, R-1, R-2, R-3
- SECTION 421 HYDROGEN CUTOFF ROOMS
- SECTION 422 AMBULATORY CARE FACILITIES
- SECTION 423 STORM SHELTERS
- SECTION 424 CHILDREN'S PLAY STRUCTURES
- SECTION 425 CONSUMER FIREWORKS FACILITIES
- SECTION 426 COMBUSTIBLE DUST
- SECTION 427 CONSUMER FIREWORKS

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# Chapter 4

SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY



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# CHAPTER 5

## GENERAL BUILDING HEIGHTS AND AREAS

### "HOW BIG CAN I DESIGN IT?"

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## SECTION 503

### *General Building Height and Area Limitations.*

- Height in Feet Governed by Table 504.3
- Stories Governed by Table 504.4
- Area Governed by Table 506.2
- Based on Use Group and Type of Construction.
- Area: Gross building area per floor.
- Height: Level of fire fighter access to roof line – feet and stories.

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## New Footnotes

### Table 504.3, 504.4, 506.2

- UL = Unlimited
- NP = Not permitted
- NS = Buildings not equipped throughout with an automatic sprinkler system
- S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1
- S<sub>1</sub> = Buildings a maximum of one story above grade plane equipped throughout with an automatic sprinkler system
- SM = Buildings two or more stories above grade plane equipped throughout with an automatic sprinkler system
- S<sub>13R</sub> = Buildings equipped throughout with an automatic sprinkler system installed in Group 'R'

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## Table 504.3: Allowable Building Height in Feet (Partial Table)

GROUP		FOOTNOTES		TYPE OF CONSTRUCTION								
				TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
				A	B	A	B	A	B	HT	A	B
A, B, E, F, M, SU	NS	UL	160	65	55	65	55	65	85	50	40	
	S	UL	180	85	75	85	75	85	85	70	60	

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## Table 504.4: Allowable Number of Stories (Partial Table)

GROUP		FOOTNOTES		TYPE OF CONSTRUCTION								
				TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
				A	B	A	B	A	B	HT	A	B
A-3	NS	UL	11	3	2	3	2	3	2	1		
	S	UL	12	4	3	4	3	4	3	2		
B	NS	UL	11	5	3	5	3	5	3	2		
	S	UL	12	6	4	6	4	6	4	3		
S-2	NS	UL	11	5	3	4	3	4	4	2		
	S	UL	12	6	4	5	4	5	5	3		

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## Table 506.2: Allowable Building Area (Partial Table)

GROUP		HEIGHT (FEET)		FOOTNOTES		TYPE OF CONSTRUCTION								
						TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
						A	B	A	B	A	B	HT	A	B
A-3	NS	UL	UL	15,500	9,500	14,000	9,500	15,000	11,500	6,000				
	S <sub>1</sub>	UL	UL	62,000	38,000	56,000	38,000	60,000	46,000	24,000				
	SM	UL	UL	46,500	28,500	42,000	28,500	45,000	34,500	18,000				
B	NS	UL	UL	37,500	23,000	28,500	19,000	36,000	18,000	9,000				
	S <sub>1</sub>	UL	UL	150,000	92,000	114,000	76,000	144,000	108,000	36,000				
	SM	UL	UL	112,500	69,000	85,500	57,000	108,000	72,000	27,000				
S-2	NS	UL	UL	79,000	39,000	26,000	39,000	26,000	38,500	21,000				
	S <sub>1</sub>	UL	UL	318,000	158,000	104,000	158,000	104,000	154,000	84,000				
	SM	UL	UL	237,000	117,000	78,000	117,000	78,000	115,500	63,000				

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**"I WANT IT BIGGER!"**

- The code loves sprinkler systems!
- Automatic sprinkler system increase:
  - Height – Feet
  - Height – Stories
  - Area Per Floor



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**Table 504.3**  
**Building Height Increase**

Automatic Sprinkler System Increase

- Increase height by 20'
- Exception: I-2 and High Hazard occupancies (increase not allowed).
- Exception: R


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**Table 504.4**  
**Building Stories Increase**

Automatic Sprinkler System Increase

- Increase number of stories by one.
- Exception: I-2 and High Hazard occupancies (increase not allowed).


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**Table 506.2**  
**Building Area Modifications**

Automatic Sprinkler System Increase

- 200% Increase
- 300% Increase (One-story buildings)
- Exceptions for High Hazard occupancies.


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## SECTION 506

### Building Area (Modifications)

Section 506.3.2	Frontage Increase
Section 506.3.3	Area Increase
Section 506.2	Occupancy & Stories

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## Example Equations

**Chapter 5**      **General Building Heights and Areas**

**Section 506.2**      **Allowable Area**

Section 506.2.1      Single-Occupancy - One Story  
Equation 5-1       $Aa = At + (NS \times lf)$

Section 506.2.2      Mixed-Occupancy - One Story  
Equation 5-1       $Aa = At + (NS \times lf)$

Section 506.2.3      Single-Occupancy - Multi Story  
Equation 5-2       $Aa = [At + (NS \times lf)] \times Sa$

Section 506.2.4      Mixed-Occupancy - Multi Story  
Equation 5-3       $Aa = At + (NS \times lf)$

**Section 506.3**      **Frontage Increase**

Equation 5-4       $W = [(L1 \times w1) + (L2 \times w2) + (L3 \times w3) + (L4 \times w4)]/F$

Section 506.3.3      Amount of Increase  
Equation 5-5       $lf = [F/P - 0.25] W/30$

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## Example of Calculation

1. Selected Construction Type: 3B  
Occupancy: A-2 (Most Restrictive)  
M  
B
2. Section 506.3      **Frontage Increase**  
Section 506.3.2      Minimum Frontage Distance  
Equation 5-4       $W = [(L1 \times w1) + (L2 \times w2) + (L3 \times w3) + (L4 \times w4)]/F$   
 $W = [(80 \times 86) + (80 \times 84) + (200 \times 190) + (200 \times 50)]/560 = 110\%$   
Where W value greater than 30 W shall be 30
3. Section 506.3.3      **Amount of Increase**  
Equation 5-5       $lf = [F/P - 0.25] W/30$   
 $lf = [560/560 - 0.25] 30/30 = 75\%$  (Area Factor)
4. Section 506.2.4      **Mixed-Occupancy - Multi Story**  
Equation 5-3       $Aa = At + (NS \times lf)$   
 $Aa = 28,500 + (28,500 \times 75\%) = 35,625$  Sq. Ft. (Allowable)

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## Other Increases

- Fire Wall: (Chapter 7 and Section 510)
  - Creates two or more separate buildings. Each which can contain the maximum allowable area.
  - Must be free standing.
  - Limited openings allowed must be protected.
- Unlimited area buildings (Section 507)
  - Typical: One or two stories, fully fire suppressed and 60' yards or public ways on all sides.
  - Must still meet egress limits.
- Special Provisions (Section 510)
  - Parking garages with other uses.
- Mezzanines and equipment platforms (Section 505)

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## SECTION 508 Mixed Use and Occupancy

- More than one occupancy group in a building.
- Three situations/Options
  - Accessory Occupancies
  - Non-separated Occupancies
  - Separated Occupancies

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## SECTION 508.2 Accessory Occupancies

- Ancillary to main occupancy (i.e. offices in factory or school).
- Less than 10% of main occupancy area.
- No separation required.

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## Accessory Occupancy Example

BUSINESS GROUP "B" OCCUPANCY		OFFICE	50,000 SF
2,000	S-2	AUDITORIUM	2,000 SF
+ 2,000	A-3	DOCK/STORAGE	2,000 SF
<hr/>		TOTAL	54,000 SF
4,000	ACCESSORY		
/ 54,000			
<hr/>			
= 7.4% < 10%			

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## Non-Separated Occupancies

- Allowable height and area based on the most restrictive occupancy group for type of construction.
- The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space.
- Most restrictive egress requirements (Chapter 9) apply to total non-separated occupancy area.
- No separation required.

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## Non-Separated Occupancy Example

FULLY SPRINKLERED  
 TYPE IIB CONSTRUCTION  
 3 STORIES (60')

USE A-3 OCCUPANCY FOR HEIGHT & AREA  
 IT IS THE MOST RESTRICTIVE OF THE THREE.  
 TABLE 503: 11 STORIES, UNLIMITED AREA

OFFICE	40,000 SF
AUDITORIUM	8,000 SF
DOCK/STORAGE	6,000 SF
<b>TOTAL</b>	<b>54,000 SF</b>

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## Separated Occupancies

- Each area individually classified based on its occupancy and follows all code requirements for that occupancy.
- Allowable area in each story: sum of ratios of building area for each separated occupancy divided by allowable building area for each separated occupancy shall not exceed 1.
- Allowable height: Limited based on construction type for each separated occupancy.
- Separations (“Fire Barriers” or “Horizontal Assemblies”) required per table 508.4

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## Separated Occupancies Example

FULLY SPRINKLERED  
 TYPE IIB CONSTRUCTION  
 3 STORIES (60')

OFFICE 40,000 SF  
 AUDITORIUM 8,000 SF  
 DOCK/STORAGE 6,000 SF  
**TOTAL 54,000 SF**

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## Separated Occupancy Calculation

A-3 Occupancy: 8,000/28,500 =	0.28
B Occupancy: 40,000/69,000 =	0.57
S-2 Occupancy: 6,000/78,000 =	0.08
<b>Total (Complies):</b>	<b>0.93 &lt; 1.00</b>

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### Table 508.4 Required Separation of Occupancies (Partial Table)

OCCUPANCY	A, E		I-1, I-3, I-4		I-2		R		F-2, S-2, U		B, F-1, M, S-1	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A, E	N	N	1	2	2	NP	1	2	N	1	1	2
I-1, I-3, I-4	-	-	N	N	2	NP	1	NP	1	2	1	2
I-2	-	-	-	-	N	N	2	NP	2	NP	2	NP
R	-	-	-	-	-	-	N	N	1	2	1	2
F-2, S-2, U	-	-	-	-	-	-	-	-	N	N	1	2
B, F-1, M, S-1	-	-	-	-	-	-	-	-	-	-	N	N

\*Footnotes not shown\*  
\*High Hazard omitted for clarity\*

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## SECTION 509 Incidental Uses

- Ancillary functions associated with a given occupancy that generally pose a greater level of risk to that occupancy.”
- Must be enclosed with fire barrier or a smoke-tight partition with fire suppression per table 509.
- Examples: Some boiler rooms (15 PSI / 10HP), some furnace rooms (over 400,000 BTU), paint shop, lab, some laundry rooms (over 100 SF)

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## CHAPTER 6 TYPES OF CONSTRUCTION

### “WHAT IS IT MADE OF?”

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## Basic Concepts

- Noncombustible Construction
  - Defined by Code
  - Will not ignite or burn
  - Tested (ASTM)
  - Examples: Concrete, steel, masonry, stone, precast concrete
- Combustible Construction
  - NOT defined by Code
  - Examples: Wood, plastics, foam plastics

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## Basic Concepts

- ◆ “Passive” Fire Protection
  - ◆ Use of non-combustible construction
  - ◆ Protection by use of fire resistant enclosures such as gypsum board, fire-proofing, masonry, etc.
- ◆ “Active” Fire Protection
  - ◆ Fire suppression (sprinkler) systems



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## SECTION 602 Construction Classification

- ◆ Construction type is based on fire resistance of structural elements (columns, floors, roof and bearing walls).
- ◆ It's all about compliance with Table 601.



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## Five Construction Classifications

- ◆ Types I & II: Noncombustible materials
- ◆ Types III, IV & V: Mix of noncombustible materials and any material permitted by this code.
- ◆ Generally, the higher the classification, the larger the allowable area and taller the building height.
- ◆ Higher classifications generally require higher fire rated assemblies.



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## Type I & II Construction

- ◆ Noncombustible materials
- ◆ Examples:
  - ◆ Type IA, IB, IIA: Concrete structure or fireproofed “protected” steel or masonry.
  - ◆ Type IIB “Unprotected”: Steel



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## Type I Construction



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## Type II Construction (With fireproofing, could be Type IIA, IA or IB)



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## Type III Construction


- Exterior walls are noncombustible materials.
- Interior elements are any material permitted by this code.
- Examples:
  - Exterior masonry bearing walls & steel frame.

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## Type III Construction



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## Type III Construction



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## Type IV Construction


- “Heavy Timber”
- Exterior walls are noncombustible materials.
- Interior elements are solid or laminated wood.
  - 4x6 min sawed lumber
  - 3x6 7/8 min glue-lam

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## Type IV Construction

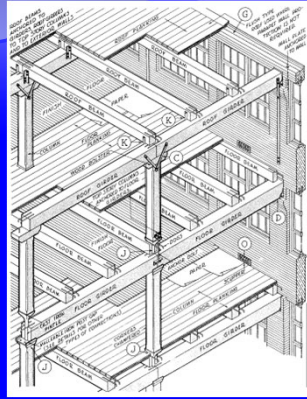


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## Type IV Construction




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## Type V Construction

- ◆ “Light wood framing”
- ◆ Exterior and interior elements are any materials permitted by this code.





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## Type V Construction





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## Table 601

### Fire Rating of Structural Elements

- ◆ Provides fire-resistance rating requirements for building elements.
- ◆ Based on “hours” of protection.
- ◆ Building elements:
  - ◆ Primary structure
  - ◆ Bearing & nonbearing walls and partitions.
  - ◆ Floor construction
  - ◆ Roof construction



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## Table 601

### Fire-Resistance Rating Requirements for Building Elements

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A	B	A	B	HT	A	B
Primary Structural Frame (See Section 202)	3	2	1	0	1	0	HT	1	0
Bearing Walls									
Exterior	3	2	1	0	2	2	2	1	0
Interior	3	2	1	0	1	0	1/HT	1	0
Nonbearing Walls and Partitions	See Table 602								
Exterior	See Table 602								
Interior	0	0	0	0	0	0	See Section 602.4, 6	0	0
Floor Construction and Secondary Members (See Section 202)	2	2	1	0	1	0	HT	1	0
Roof Construction and Secondary Members (See Section 202)	1½	1	1	0	1	0	HT	1	0



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## Important Note

- You can always use a more fire resistant construction, but classify your building as a lower construction type on your drawings.
- Example: Use a fireproofed steel frame (Type IIA) construction but classify your building as Type IIB.
- It's all about compliance with Table 601 and how you identify it on your drawings.

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## Table 602

Exterior wall rating based on fire separation distance.

- Exterior walls less than 30' from a property line may be required to be fire-rated.
- Requirements are based on:
  - Distance from property line
  - Type of construction
  - Use group

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## Table 602

Fire-Resistance Rating Requirements for Exterior Walls  
Based on Fire Separation Distance

FIRE SEPARATION DISTANCE = X (feet)	TYPES OF CONSTRUCTION	OCCUPANCY GROUP H	OCCUPANCY GROUP F-1, M, S-1	OCCUPANCY GROUP A, B, E, F-2, I, R, S-2, U
X < 5	All	3	2	1
5 ≤ X < 10	IA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB,	2	1	1
	IIB, VB	1	0	0
	Others	1	1	1
X ≥ 30	All	0	0	0

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## Beware!

- Openings (windows and doors) in fire-rated exterior walls are controlled by section 705.
- Buildings on the same lot also controlled by Section 705.
  - Imaginary property line required between them to determine requirements.

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## SECTION 603

### Combustible Materials in Type I & II Construction

- Some combustible materials are allowed in Type I and II "Noncombustible" construction as outlined and controlled in this section.
- Examples:
  - Wood Blocking & Trim
  - Stages
  - Insulation
  - Plastics
  - Foam Plastics
  - Electrical Wiring

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## CHAPTER 10

### MEANS OF EGRESS

**PT Barnum posted This Way to the Egress in his museum's**

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## SECTION 202

### Definitions

- **Exit Access:** From any occupied room/space to an Exit
- **Exit:** Between Exit Access & Exit Discharge – Stairways or Exterior
- **Exit Discharge:** From Exit to Public ROW

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## Table 1004.1.2

### Design Occupant Load

Function of Space Based on Use/Group of Sq Ft Gross or Net

- **Business:** 1/100 Gross Sq Ft
- **Classroom:** 1/20 Net Sq Ft
- **Assembly – Tables & Chairs:** 1/15 Net Sq Ft
- **Assembly – Concentrated:** 1/7 Net Sq Ft
- **Assembly – Standing:** 1/5 Net Sq Ft
- **Storage:** 1/300 Gross Sq Ft
- **Mercantile:** 1/60 Gross Sq Ft

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**Section 1005.3: Egress Width Sizing**

- Stairway:  $0.3"/\text{occupancy}$  ( $220 \text{ occupants} \times 0.3" = 66"$ )
- Other:  $0.2"/\text{occupancy}$  ( $220 \text{ occupants} \times 0.2" = 44"$ )

**Section 1010.1.1: Doors**

- Minimum Clear Width Opening = 32"
- Maximum Swinging Door Width = 48"
- I-2 (Beds) =  $41\frac{1}{2}"$  Minimum Clear Width Opening
- Minimum Height = 80" (6'-8")

**Table 1020.2: Corridor Width: Per Occupancy**

- Typical = 44" Minimum
- Less than 50 Occupants = 36"
- Educational = 72"
- Hospital Bed Movement = 96"



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**Table 1006.2.1: Spaces One Exit**

- Occupancy: A, B, E, F, M, U – Maximum = 49 Occupants

**Table 1006.3.2(1): Stories with One Exit (R-2 Occupancies)**


- Basement, First, Second or Third Story

**Table 1006.3.2(2): Stories with One Exit**

- Occupancy: A, B, E, F, M, U, S with Maximum Occupants = 49 & Maximum Length of Travel = 75 Ft (with Sprinklers Maximum Length of Travel = 100 Ft)
- Occupancy: B, F, M, S with Maximum Occupants = 29 & Maximum Length of Travel = 75 Ft

**Table 1014.3: Common Path of Travel (2 Exits)**

- Occupancy & With & Without Sprinklers: Typically 75 Ft Without Sprinklers or 100 Ft With Sprinklers



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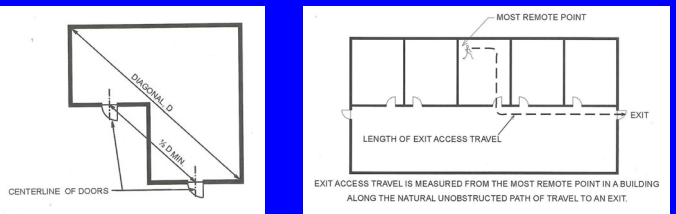
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**Section 1007.1.1: Doors Configuration (Remoteness)**

- Without Sprinklers: Minimum  $\frac{1}{2}$  the overall diagonal distance
- With Sprinklers: Minimum  $\frac{1}{3}$  the overall diagonal distance

**Table 1017.2: Exit-Access Travel Distance**

- Occupancy: A, E, F-1, M, R, S-1 = 200 Ft without Sprinklers or 250 Ft with Sprinklers
- Occupancy: B = 200 Ft without Sprinklers or 300 Ft with Sprinklers
- Occupancy: F-2, S-2, U = 300 Ft without Sprinklers or 400 Ft with Sprinklers
- Others: 75 Ft to 205 Ft



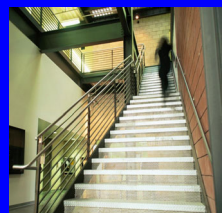
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**SECTION 1011**

**Stairs**

- Minimum Width = 44" (or 36" with Occupant Load of 50 or less)
- Minimum Headroom = 6'-8" (Vertical)
- Treads & Risers = 7" Maximum Riser, 4" Minimum Riser, Minimum Tread 11"
- Minimum Nosing =  $1\frac{1}{4}"$  Maximum & Solid Only or  $30^\circ$  Angle
- Minimum Landing Width = Least dimension not less than required stair width
- Maximum Vertical Rise Between Landings = 12'-0"



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## SECTIONS 1014 & 1015 Handrails & Guardrails

**Handrails:**

- Continuous Handrails on Both Sides (less than 44" wide: one handrail)
- **Maximum Projection into Minimum Stair** = 4 1/2" (both sides), Clear Space 1 1/2" to Wall, Minimum Height = 34" and Maximum Height = 38" (Grip 1 1/4" to 2"Ø)
- Extend 12" beyond top & one tread width at bottom & ends return to wall or post

**Guards:**

- Shall be located along open floors, mezzanines & landings 30" above floor
- Minimum Height = 42", Maximum between construction = 4"Ø sphere up to 34" & 8" Ø sphere from 34" to 42"

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**Section 1018: Aisles**

- 36" Minimum or 30" Minimum Mercantile or 28" Minimum Non-Public

**Section 1029: Assembly**

- **Occupant Load Greater Than 300:** 1/2 Accommodated through Main Exit
- **Travel Distance:** 200 Ft without Sprinklers or 250 Ft with Sprinklers

**Table 1020.1: Corridor Fire-Resistance Rating**

- **Occupancy A, B, E, F, M, S, U:** Greater than 30 Occupants without Sprinkler = 1 Hr or with Sprinkler = 0 Hr

**Section 1020.4: Dead End Corridors**

- 20 Ft without Sprinkler or 50 Ft with Sprinkler





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## Building Code Data (Michigan Building Code 2015)

**REFERENCE CODES**

BUILDING: 2015 Michigan Building Code  
 MECHANICAL: 2015 Michigan Mechanical Code  
 PLUMBING: 2015 Michigan Plumbing Code  
 ELECTRICAL: 2014 Michigan Electrical Code  
 ACCESSIBILITY: Michigan Barrier Free Design & The Americans with Disabilities Act

**BUILDING CODE DATA (MICHIGAN BUILDING CODE 2015)**

CHAPTER 1  
Sec. 1013.4.1

**SCOPE AND ADMINISTRATION**  
 Deferred Submittals  
 1. Concrete Masonry Unit  
 2. Structural Steel Framing  
 3. Steel Joist Framing  
 4. Metal Decking  
 5. Metal Fabrications  
 6. Architectural Woodwork  
 7. Solid Surface Fabrications  
 8. Elastomeric Membrane Roofing  
 9. Metal Doors and Frames  
 10. Wood Doors  
 11. Aluminum Framed Entrances and Storefronts  
 12. Door Hardware  
 13. Liner Metal Ceiling  
 14. HVAC Exhaust Fan Ductwork, Grilles/Registers/Diffusers  
 15. Plumbing Fixtures, Fittings, Water Heaters, Floor Drains, Clean Outs  
 16. Electrical Fixtures, Equipment, Panels, Motor Starters, Switches

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## Building Code Data (Michigan Building Code 2015)

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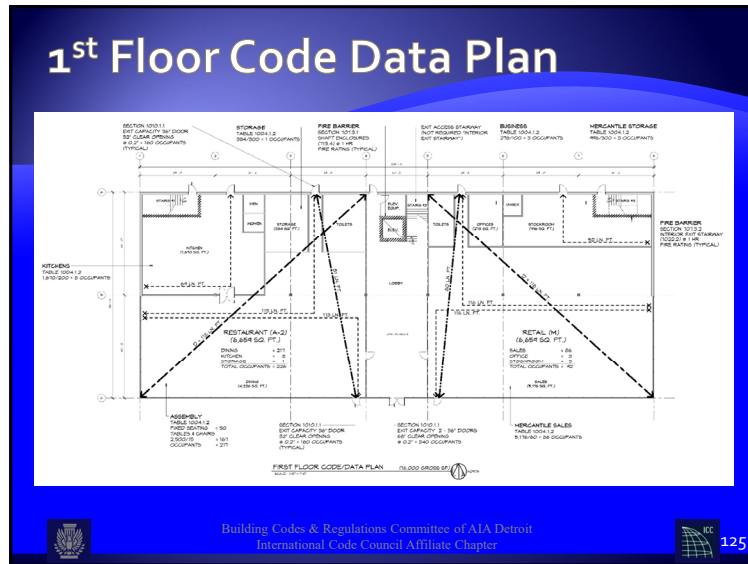
**BUILDING CODE DATA (MICHIGAN BUILDING CODE 2015)**

CHAPTER 1  
Sec. 1013.4.1

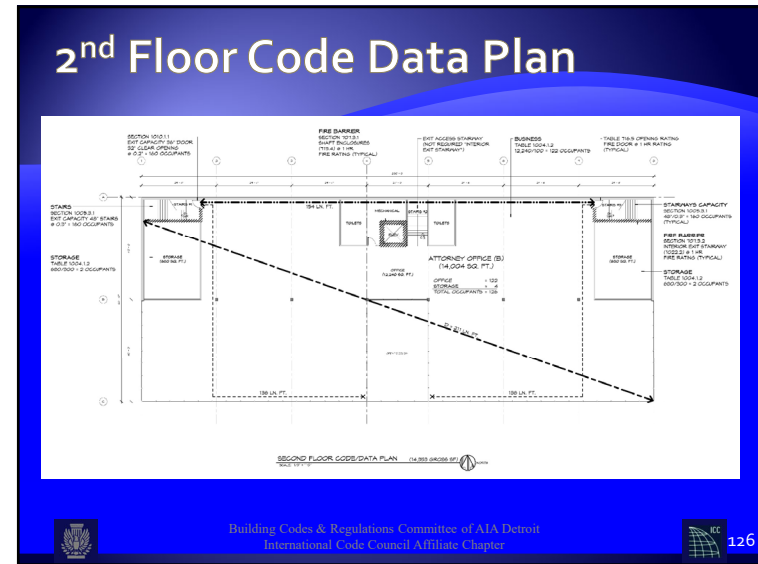
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 2. Structural Steel Framing  
 3. Steel Joist Framing  
 4. Metal Decking  
 5. Metal Fabrications  
 6. Architectural Woodwork  
 7. Solid Surface Fabrications  
 8. Elastomeric Membrane Roofing  
 9. Metal Doors and Frames  
 10. Wood Doors  
 11. Aluminum Framed Entrances and Storefronts  
 12. Door Hardware  
 13. Liner Metal Ceiling  
 14. HVAC Exhaust Fan Ductwork, Grilles/Registers/Diffusers  
 15. Plumbing Fixtures, Fittings, Water Heaters, Floor Drains, Clean Outs  
 16. Electrical Fixtures, Equipment, Panels, Motor Starters, Switches

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## Ch. 3 & 4 Use/Occupancy & Special

<b>CHAPTER 3</b>	<b>USE AND OCCUPANCY CLASSIFICATION</b>	
Sec. 303.3	A-2 Group - Assembly	A-2 - Restaurant
Sec. 304.1	B Group - Business	B - Attorney Office
Sec. 304.1	M Group - Mercantile	M - Retail
<b>CHAPTER 4</b>	<b>SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY</b>	No

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## Ch. 5 Height & Area

<b>CHAPTER 5</b>	<b>GENERAL BUILDING HEIGHTS AND AREAS</b>
	<i>Actual Building Information</i>
	Use Group = Restaurant (A-2), Business (B), Mercantile (M)
	Height = 40 Ft
	Floors = 2 Story
	Area/Floor = 10,000 Sq Ft
	Sprinklered = Yes
	Construction Type = IB
	* Most Restrictive = A-2
Table 504.3	Allowable Building Height
	Occupancy: A-2 Allowable Height 75 Ft
	Type of Construction IB Actual Height 40 Ft
	Ns = Building not sprinklered No
	S = Building Sprinklered Yes
Table 504.4	Allowable Number of Stories
	Occupancy: A-2 Allowable Stories 3
	Type of Construction IB Actual Stories 2
	Ns = Building not sprinklered No
	S = Building Sprinklered Yes

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## Ch. 5 Height & Area

Table 506.2	Allowable Area in Square Feet	A-2	Allowable Sq Ft 35,625
Type of Construction	IEB		Actual Sq Ft 16,000
NS = Building not sprinklered	No		
SI = Building sprinklered - 1 story	No		
SM = Building sprinklered - 2+ story	Yes		
Sec. 506.2	Allowable Area		
	16,000 Sq Ft Actual		
	Aa = 35,625 Sq Ft Allowable (A-2) *Most Restrictive		
	Aa = 26,250 Sq Ft Allowable (B)		
	Aa = 46,875 Sq Ft Allowable (M)		
Section 506.2.1	Single - Occupancy - One Story	No	
Equation 5-1	AaA1 + (Ns x If)		
Section 506.2.2	Mixed - Occupancy - One Story	No	
Equation 5-1	AaA1 + (Ns x If)		
Section 506.2.3	Single - Occupancy - Multi Story	No	
Equation 5-2	Aa1 (A1 + (Ns x If)) x Sa		
Section 506.2.4	Mixed - Occupancy - Multi Story	Yes	
Equation 5-3	AaA1 + (Ns x If)		
	Aa1 = 26,250 + (1500 x 75%)		
	Aa1 = 35,625 Sq Ft		
Section 506.3	Frontage Increase		
Equation 5-4	$Xi = (L1 \times M1) + (L2 \times M2) + (L3 \times M3) + (L4 \times M4) / F$		
	$Xi = (180 \times 86) + (80 \times 84) + (200 \times 140) + (200 \times 50) / 560$		
	$Xi = 112%$		
	Where 'Xi' Value is Greater Than 30 'Xi' Shall Be 30		
Section 506.3.3	Amount of Increase		
Equation 5-5	$If = [F/P - 0.25] \times 30$		
	$If = [(860/560) - 0.25] \times 30 = 75%$		

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## Ch. 5 Height & Area

Sec. 507	Unlimited Area Buildings	No
Sec. 508	Mixed Use And Occupancy	Yes
Sec. 508.2	Accessory Occupancies (Ancillary to Main)	No
Sec. 508.2.1	Occupancy Classification	NA
Sec. 508.2.2	Allowable Building Height	Yes
Sec. 508.2.3	Area Limitations	No
Sec. 508.2.4	Separation of Occupancies	No
Sec. 508.3	Nonseparated Occupancies	Yes
Sec. 508.4	Separated Occupancies	No
Table 508.4	Required Separation of Occupancies	0 Hrs
Sec. 509	Incidental Uses (Greater Level of Risk)	No
Table 509	Incidental Uses	0 Hrs

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## Ch. 6 Construction Type

**CHAPTER 6 TYPES OF CONSTRUCTION**

Table 601	Fire-Resistance Rating Required Building Elements		
	Primary Structural Frame		0 Hrs
	Bearing Walls - Exterior		0 Hrs
	Bearing Walls - Interior		0 Hrs
	Nonbearing Walls and Partitions - Exterior		Table 602
	Nonbearing Walls and Partitions - Interior		0 Hrs
	Floor Construction		0 Hrs
	Roof Construction		0 Hrs
Sec. 602	Construction Classification	Type	IEB
Table 602	Fire Resistive Rating Exterior Walls		
	< 5 Feet		NA
	≥ 5 Feet < 10 Feet		NA
	≥ 10 Feet < 30 Feet		NA
	≥ 30 Feet		0 Hrs

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## Drawing Information for: Fire

*MBC Chapters 7, 8 & 9*

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## Ch. 7 Fire/Smoke Protection

CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES		
Table 706.4	Fire Wall Fire-Resistance Rating (Fire Wall)	No
Sec. 707.9	Fire-Resistance Rating (Fire Barrier)	Yes
Sec. 707.3.1	Shaft	1 Hrs
Sec. 707.3.2	Interior Exit Stairway	1 Hrs (2 Stories)
Sec. 708.9	Fire-Resistance Rating (Fire Partitions)	0 Hrs
	1. Groups I & R	NA
	2. Open Mall	NA
	3. Corridor	NA
	4. Elevator Lobby	NA
	5. Egress Balconies	NA
Sec. 704.3	Fire-Resistance Rating (Smoke Barriers)	0 Hrs
	Exception	NA
Sec. 710.3	Fire-Resistance Rating (Smoke Partitions)	No
Table 716.5	Opening Ratings (Doors)	Yes
Table 716.6	Opening Ratings (Windows)	NA
Sec. 718.2	Fireblocking Required	NA (Not Combustible Construction)
Sec. 718.2.6	Exterior Wall Covering	NA
	Exception 1 Cornices	NA
	Exception 2 Exterior walls	NA
	Exception 3 Exterior walls	NA
Sec. 718.3	Draftstopping in Floors	NA (Not Combustible Construction)
Sec. 718.4	Draftstopping in Attics	NA (Not Combustible Construction)
Sec. 718.4.3	Draftstopping (Other Groups)	NA (Not Combustible Construction)
	Maximum	3,000 Sq Ft
	Exception (Sprinkler System)	Yes

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## Ch. 8 Interior Finishes

CHAPTER 8 INTERIOR FINISHES		
Table 803.11	Interior Wall and Ceiling Finish Required	
	Sprinklered	Yes
	Interior Stairway	B Rating Class
	Corridors	B Rating Class
	Rooms/Spaces	C Rating Class
Sec. 804.4.1	Interior Floor Finish ("Pill Test")	Yes

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## Ch. 8 Interior Finishes

**INTERIOR FLOOR FINISHES LEGEND**

←XXX | XXX→ SYMBOL REPRESENTING FLOOR FINISH SYSTEM (XXX) TRANSITION LOCATION

VCT VINYL COMPOSITION TILE (ADHERED). AT AREAS OF EXISTING WOOD PLANK SUBFLOOR, PROVIDE NEW 1/4" THICK LAYER OF PLYWOOD SUBFLOOR AS PART OF PREPARATION FOR NEW VCT.

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## Ch. 8 Interior Finishes

**INTERIOR FINISHES NOTES (U.N.O.)**

- GYPSUM BOARD, WOOD WINDOW FRAMES AND WOOD DOOR LEAF AND FRAMES PAINT FINISH SYSTEM:  
3-COAT SYSTEM CONSISTING OF:  
1. FIRST COAT = PPG PRIMER 'SPEEDHIDE 6-2' AT 1.0 MILS DFT.  
2. SECOND COAT = PPG LATEX FLAT 'SPEEDHIDE 6-70' AT 1.3 MILS DFT.  
3. THIRD COAT = PPG LATEX FLAT 'SPEEDHIDE 6-70' AT 1.3 MILS DFT.
- CONCRETE MASONRY PAINT FINISH SYSTEM:  
3- OR 4- COAT SYSTEM CONSISTING OF:  
1A. FIRST COAT ON NEW CMU = PPG BLOCK FILLER '4-100' AT 1.0 MILS DFT.  
1B. FIRST COAT ON EXISTING CMU AND OVERCOAT ON NEW CMU = PPG PRIMER '4-503' AT 1.0 MILS DFT.  
2. SECOND COAT = PPG LATEX SEMI-GLOSS 'SPEEDHIDE 6-8524' AT 1.2 MILS DFT.  
3. THIRD COAT = PPG LATEX SEMI-GLOSS 'SPEEDHIDE 6-8524' AT 1.2 MILS DFT.
- ALL INTERIOR WALLS TO RECEIVE NEW 4" TALL COVE VINYL BASE COMPLIANT WITH NFPA 253 'CLASS' IF (0.22 WATTS/CM<sup>2</sup> OR GREATER) UNLESS NOTED OTHERWISE.
- ALL INTERIOR WALL AND CEILING FINISHES SHALL BE 'CLASS A' (FLAME SPREAD INDEX OF 0-25 AND SMOKE-DEVELOPED INDEX OF 0-450).
- ALL INTERIOR SHEET CARPET (SC) SHALL BE CLASSIFIED AS 'CLASS IF' (0.22 WATTS/CM<sup>2</sup> OR GREATER) PER NFPA 253 AND COMPLY WITH DOCFF-1 'PILL TEST' (CPSC 16 CFR, PART 1630).

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# Ch. 9 Fire Protection

**CHAPTER 9 FIRE PROTECTION SYSTEMS**

Sec. 903.2	Where Required (Automatic Sprinkler Systems) 903.2.1.2 Group A-2	Yes
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# Ch. 9 Fire Protection

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# Drawing Information for: Egress & Capacity

MBC Chapter 10  
MPC Chapter 4

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# Table 1006.2.1: Spaces with One Exit or Exit Access Doorway (Partial Table)

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A, M	49	75	75	75 <sup>a</sup>
B	49	100	75	100 <sup>a</sup>

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### Table 1006.3.2(2): Spaces with One Exit or Access to One Exit for Other Occupancies

STORY	OCCUPANCY	MAXIMUM OCCUPANT LOAD PER STORY	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)
First story above or below grade plane	A, B <sub>1</sub> , E, F <sub>1</sub> , M, U	49	75
	H-2, H-3	3	25
	H-4, H-5, I, R-1, R-2, R-3, R-4	10	75
	S <sub>1</sub> , d	29	75
Second story above grade plane	B, F, M, S <sub>1</sub>	29	75
Third story above grade plane and higher	NP	NA	NA

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### Table 1006.3.1: Minimum Number of Exits or Access to Exits Per Story

OCCUPANT LOAD PER STORY	MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS FROM STORY
1-500	2
501-1,000	3
More than 1,000	4

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## Ch. 10 Means of Egress

CHAPTER 10 MEANS OF EGRESS	
Sec. 1004.1	Design Occupant Load
Table 1004.1.2	Maximum Floor Area Per Occupant
Sec. 1004.1.2	Exception: Actual Number
Sec. 1005.3	Egress Width Per Occupant Served
1005.3.1	Stairways
1005.3.2	Other
	Actual Total Egress Capacity (Table 1004.1.2)
	Allowable Total Egress Capacity
Table 1006.2.1	Spaces With One Means Of Egress
Sec. 1006.2.1	(2) Exit or Exit Access Doorways Required
Table 1006.2.1.1	Three or More Exits (Occupant Load)
	501 to 1,000 3 Exits Required
	1,001 Plus 4 Exits Required
Table 1006.3.1	Stories With One Exit

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## Ch. 10 Means of Egress

Sec. 1007.1.1	Exit Doorways (Configuration)	Yes	<u>A-2 Restaurant</u>
Exception 1	Stairway	Yes	81 Ln Ft Actual
Exception 2	Automatic Sprinkler	Yes	94.9 Ln Ft Minimum Required (118/3)
			<u>B Business</u>
			154 Ln Ft Actual
			170.9 Ln Ft Minimum Required (211/3)
			<u>M Mercantile</u>
			80 Ln Ft Actual
			94.9 Ln Ft Minimum Required (118/3)
Table 1017.2	Exit Access Travel Distance		<u>A-2 Restaurant</u>
			119 Ln Ft Actual
			250 Ln Ft Maximum Allowed
			<u>B Business</u>
			139 Ln Ft Actual
			300 Ln Ft Maximum Allowed
			<u>M Mercantile</u>
			116 Ln Ft Actual
			250 Ln Ft Maximum Allowed

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## Ch. 10 Means of Egress

Table 1020.1	Corridor Fire-Resistance Rating	NA	0 Hrs (With Sprinkler System)
	Exception 1 Group E	NA	
	Exception 2 Group R	NA	
	Exception 3 Parking Garages	NA	
	Exception 4 Group B	Yes	
	Exception 5 Exterior Walls	NA	
Table 1020.2	Corridor Width (Minimum)	60" Actual	
		Yes 44" Minimum	
		NA 36" Minimum (Less Than 50 Occupants)	
Sec. 1020.4	Dead Ends	20 Feet Maximum	No
	Exception 1 Group I-3	NA	
	Exception 2 Sprinkler System	NA	
	Exception 3 2.5 x Width	NA	

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## Ch. 10 Means of Egress

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## Ch. 10 Means of Egress

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## Ch. 4 (MPC) Fixture Quantities

(MICHIGAN PLUMBING CODE 2015)

A-2 Assembly (Restaurant)

CHAPTER 4: FIXTURES, FIXTURES AND FIXTURE FITTINGS

Sec. 403.1 Minimum Number of Fixtures

Table 403.1	Actual Per Affidavit	Yes	No
Exception 1	Actual Per Affidavit	Yes	No

Sec. 403.1.1 Fixture Calculations

80% Men and 20% Women

Exception 1 Not 1/2 Men/Women with Statistical Data

Table 403.1 Minimum Number of Required Plumbing Fixtures

Table 1004.1.2	228 Total Occupants (MPC)	113 Men	50.00%	115 Women	50.00%
----------------	---------------------------	---------	--------	-----------	--------

Classification/Occupancy Assembly A-2

Male		Female		
Min	113	Min	115	
Ratio	1/3	Ratio	1/3	
Required	1/31	Required	1/31	6 Provided
Lavatories		Toilets		
Min	113	Min	115	
Ratio	200	Ratio	200	
Required	0/31	Required	0/31	6 Provided
Drinking Fountains		Drinking Fountains		
Ratio	0	Ratio	0	0 Provided
Required	0	Required	0	0 Provided
Sinks		Sinks		
Required	1	Required	1	1 Provided

Sec. 403.2 Separate Facilities Each Sex

Exception 1 Private Facilities

Exception 2 15 or Less Employees + Customers

Exception 3 50 or Less Mercantile Occupancies

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## Ch. 4 (MPC) Fixture Quantities

**(MICHIGAN PLUMBING CODE 2015)**

**B Business (Attorney Office)**

CHAPTER 4 FIXTURES, FAUCETS AND FIXTURE FITTINGS

Sec. 409.1 Minimum Number of Fixtures  
Table 409.1 Yes  
Exception 1 Actual Per Affixavit No

Sec. 409.1.1 Fixture Calculations  
50% Men and 50% Women Yes  
Exception N6: 1/2 Men/Women with Statistical Data No

Table 409.1 Minimum Number of Required Plumbing Fixtures

Table 1004.1.2 128 Total Occupants (MBC)		46 Men 50.00%		62 Women 50.00%	
Classification/Occupancy Business B					
Diner/Restaurant					
Men	Women	46	46		
Ratio 25 x 50	25 x 50				
Required		3	3	6	Provided
Laboratory					
Men	Women	46	46		
Ratio 40 x 40	1.575 1.575				4 Provided
Drinking Fountains					
Ratio	100				2 Provided
Required	126				
Service Sinks					
Required	1				1 Provided

Sec. 409.2 Separate Facilities Each Sex Yes  
Exception 1 Private Facilities No  
Exception 2 18 or Less Employees 4 Customers No  
Exception 3 50 or Less Mercantile Occupancies No

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## Ch. 4 (MPC) Fixture Quantities

**(MICHIGAN PLUMBING CODE 2015)**

**M Mercantile (Retail)**

CHAPTER 4 FIXTURES, FAUCETS AND FIXTURE FITTINGS

Sec. 409.1 Minimum Number of Fixtures  
Table 409.1 Yes  
Exception 1 Actual Per Affixavit No

Sec. 409.1.1 Fixture Calculations  
50% Men and 50% Women Yes  
Exception N6: 1/2 Men/Women with Statistical Data No

Table 409.1 Minimum Number of Required Plumbing Fixtures

Table 1004.1.2 40 Total Occupants (MBC)		16 Men 50.00%		24 Women 50.00%	
Classification/Occupancy Mercantile M					
Retail - Clothing Store					
Men	Women	16	16		
Ratio 800 x 800	800 x 800				3 Provided
Required	O.042 O.042				
Laboratory					
Men	Women	16	16		
Ratio 750 x 750	1.061 1.061				3 Provided
Required	O.061 O.061				
Drinking Fountains					
Ratio	1000				2 Provided
Required	O.052				
Service Sinks					
Required	1				1 Provided

Sec. 409.2 Separate Facilities Each Sex Yes  
Exception 1 Private Facilities No  
Exception 2 18 or Less Employees 4 Customers No  
Exception 3 50 or Less Mercantile Occupancies No

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## Drawing Information for: Other Technical Criteria

*MBC Chapters 13, 16 & 17*

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## Ch. 13 Energy Efficiency

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# Ch. 13 Energy Efficiency

**Roofs**

Insulation Entirely above Deck

Metal Building<sup>a</sup>

Attic and Other

**Walls, above Grade**

Mass

Metal Building

Steel Framed

Wood Framed and Other

**Nonresidential**

Assembly	Maximum	Insulation Min. R-Value
U-0.032		R-30 c.i.
U-0.037		R-19 + R-11 Ls or R-25 + R-8 Ls
U-0.021		R-49
U-0.090		R-11.4 c.i.
U-0.050		R-0 + R-19 c.i.
U-0.055		R-13 + R-10 c.i.
U-0.051		R-13 + R-7.5 c.i. or R-19 + R-5 c.i.

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# Ch. 16 Structural Design

CHAPTER 16	STRUCTURAL DESIGN	
Table 1604.3	Deflection Limits	
	Roof Members	L/240
	Floor Members	L/240
	Exterior Walls	L/240
	Interior Partitions	L/200
Table 1604.5	Risk Category	II
	I - Low Hazard	
	II - Except Listed in Categories I, III, IV	
	III - Substantial Hazard	
	IV - Essential Facilities	
Table 1607.1	Live Loads	80 PSF
Figure 1608.2	Ground Snow Loads	25 PSF
Sec. 1609	Wind Loads	
	Figure 1609.3(1) - Risk Category II	
	Figure 1609.3(2) - Risk Category III & IV	115 MPH
	Figure 1609.3(3) - Risk Category I	
Sec. 1613	Earthquake Loads	NA
	Figure 1613.1(1) 0.2 Second Acceleration	
	Figure 1613.1(2) 1 Second Acceleration	

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# Ch. 17 Special Inspections

CHAPTER 17	SPECIAL INSPECTIONS	
Sec. 1705.1.1	Special Cases	Not Used
Sec. 1705.2	Steel Construction	Yes
Sec. 1705.3	Concrete Construction	Yes
Sec. 1705.4	Masonry Construction	Yes
Sec. 1705.5	Wood Construction	Not Used
Sec. 1705.6	Bolts	Yes
Sec. 1705.7	Driven Deep Foundations	Not Used
Sec. 1705.8	Cast-in-Place Deep Foundations	Yes
Sec. 1705.9	Helical Pile Foundations	Not Used
Sec. 1705.10	Fabricated Items	Not Used
Sec. 1705.11	Special Inspections For Wind Resistance	Not Used
Sec. 1705.12	Special Inspections For Seismic Resistance	Not Used
Sec. 1705.13	Testing and Qualification For Seismic Resistance	Not Used
Sec. 1705.14	Sprayed Fire-Resistant Materials	Not Used
Sec. 1705.15	Mastic and Intumescent Fire-Resistant Coatings	Not Used
Sec. 1705.16	Exterior Insulation and Finish Systems (EIFS)	Not Used
Sec. 1705.17	Fire-Resistant Penetration and Joints	Yes
Sec. 1705.18	Smoke Control	Not Used

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# Ch. 17 Special Inspections

## Type of Special Inspections & Testing

**Seismic Resistance:**

- Buildings assigned to Seismic Design Category B added in 2015
- Structural Steel
- Seismic Force- Resisting systems
- Structural Wood
- Plumbing, Mechanical, and Electrical Components

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## Ch. 17 Special Inspections

### Type of Special Inspections & Testing

#### Seismic Resistance

**How to Determine Seismic Design Category:**

- First Need to Determine:
  - Building Risk Category I, II, III, or IV Table 1604.5
    - Risk Category I: Agricultural, Temporary Buildings, Minor Storage
    - Risk Category II: Most Other Buildings
    - Risk Category III: Public Assembly > 300
      - Group E > 250
      - Group I-2 > 50 No Surgery
      - Group I-3
      - Water Treatment and Power Generating Facilities
    - Risk Category IV: Group I-2 Surgery
      - Fire, Police, and Emergency Vehicle Garages
      - Designate EOC's
      - Buildings with Toxic Material in Large Amounts
      - Aviation Towers
      - Water Storage and Pump Stations

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## Ch. 17 Special Inspections

### Type of Special Inspections & Testing

#### Seismic Resistance

**How to Determine Seismic Design Category:**

- Need  $S_{D5}$  and  $S_{D1}$  Values
  - Google "USGS Earth Quake Hazards Program" and click on [US Seismic Design Maps](#)
    - Use  $S_{D5}$  Value in Table 1613.3.5 (1) to Determine Seismic Design Category (SDC)
    - Use  $S_{D1}$  Value in Table 1613.3.5 (2) to Determine Seismic Design Category (SDC)
    - Most Restrictive Applies to Building

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## Ch. 17 Special Inspections

### Type of Special Inspections & Testing

#### Seismic Resistance

**How to Determine Seismic Design Category:**

- Example - Rochester Hills  $S_{D5} = 0.092 g$  and  $S_{D1} = 0.071 g$ 
  - Table 1613.3.5(1)= SDC A for Risk Category I, II, III, IV
  - Table 1613.3.5(2)= SDC B for Risk Category I, II, III  
SDC C for Risk Category IV
    - SDC B or C Apply

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## Ch. 17 Special Inspections

### Type of Special Inspections & Testing

#### Seismic Resistance

**How Does This Effect Your Area?**

	City Location in Michigan	SDC on Risk Category I or II or III	SDC Based on Risk Category IV (Essential Facilities)
1	Iron Mountain	A	A
2	Sault St. Marie	A	A
3	Gaylord	A	A
4	Traverse City	A	A
5	Bay City	A	A
6	Muskegon	B	B
7	Grand Rapids	B	C
8	Lansing	B	C
9	Rochester Hills	B	C
10	Detroit	B	C
11	Benton Harbor	B	C
12	Monroe	B	C




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## Chapter 11 Accessibility

- Michigan Barrier Free Design Law (State Building Code Law, 1966 & 1976)
- Michigan Building Code (2012 Edition) Chapter 11: Accessibility
- Reference: ICC/ANSI A117.1 Accessible & Usable Buildings & Facilities (2009)
- Americans with Disabilities Act (ADA) (Federal Civil Rights Law, 1990, Effective 1992)
- Use Department of Justice: ADA Standards for Accessible Design latest dated September 15, 2010 & Effective March 15, 2012
- Wheelchair Access, Hearing Impaired & Seeing Impaired

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## ANSI Chapter 3 Building Blocks

**ANSI 304 Turning Space:**

- 60" Diameter or 60" T-Shaped

**ANSI 305 Clear Floor Space:**

- 30" x 48"

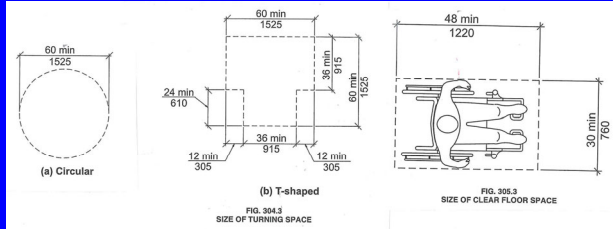


FIG. 304.3 SIZE OF TURNING SPACE

FIG. 305.3 SIZE OF CLEAR FLOOR SPACE

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**ANSI 306 Knee & Toe Clearance:**

- Knee: 25" under & 27" high
- Toe: 17" to 25" under & 9" high with 6" in

**ANSI 307 Projecting Objects:**

- 4" max horizontal projection from 27" to 80" A.F.F.

**ANSI 308 Reach Ranges:**

- Forward: 20" counter at 48" high or 20+" to 25" counter at 44" high
- Side: 10" from wall x 15" high at 15" to 48"
- Side: 10" from wall x 34" high at 34" to 48"
- Side: 10+" to 25" from wall x 34" high at 34" to 46"




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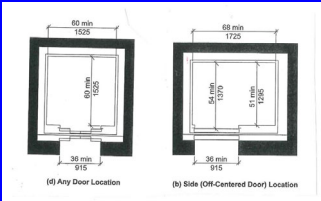

## ANSI Chapter 4 Accessible Routes

**ANSI 402 Accessible Route:**

- A continuous and unobstructed route from public ROW to building entrance

**ANSI 407 Elevators:**

- Car: 36" Center Door = 60" x 60", 36" Side Door = 68" W x 51" D
- Call Buttons: Centerline top 15" to 48" A.F.F.
- Signals: 72" A.F.F. to centerline (Up/Down Arrows)

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## ANSI Chapter 5 General Site & Building Elements

**ANSI 502 Parking Spaces:**

- 8'-0" wide w/ 60" (5'-0") aisle & or 96" (8'-0") aisle width at van, signage

**MBC Table 1106.1 Parking Spaces:**

- 1/25 spaces up to 100 spaces provided
- 1/50 spaces up to 200 spaces provided
- 1/100 spaces up to 500 spaces provided
- 2% for 501 to 1000 spaces provided
- 20 + 1/100 over 1000 spaces provided

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**MBC 1106.5 Van Spaces:**

- 1 van / 6 accessible spaces

**MBC 1106.6 Location:**

- On the shortest accessible route of travel from parking to building entrance

**MBC 1105 Accessible Entrances:**

- Minimum required 60% public entrances

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**MBC Table 1108.2.2.1 Assemble Wheelchair Spaces:**

- 1/25 seats, 6 up to 500, 6 + 1/150 up to 5,000, 36 + 1/200 over 5,000
- 2007 Lawsuit U of M Stadium at 110,000 seats: 36 + 110,000/200 at 550 = 586 seats required. March 10, 2008 Settlement at 329 seats & toilet room modifications.
- Lawsuit Palace of Auburn Hills Settlement August 21, 2013
- Lawsuit Joe Louis Arena Settlement August 6, 2014

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## ANSI Section 404 Doors and Doorways

**ANSI 404.2.2 Clear Width:**

- 32" clear opening

**ANSI Table 404.2.3.2 Maneuvering Clearances:**

- Push & Pull approach and from hinge side or latch side approach

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**ANSI 404.2.4 Thresholds:**


- 1/2" maximum height with 1:2 bevel edge

**ANSI 404.2.5 Two Doors in Series:**


- 48" minimum + width of door & 60" diameter turning space

**ANSI 404.2.6 Door Hardware:**

- Easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate



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**ANSI 405 Ramps:**

- Running Slope: 1:20 to 1:12 maximum
- Cross Slope: 1:48 maximum
- Clear Width: 36" minimum
- Raise: 30" maximum
- Landings: 60" minimum length

**ANSI 406 Curb Ramps:**

- Ramp Slope: 1:12 maximum
- Flared Slope: 1:10 maximum
- Clear Width: 36" minimum
- Top Landing: 36" minimum



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**ANSI Chapter 6**  
**Plumbing Fixtures and Facilities**

**ANSI 602 Drinking Fountains:**

- Drinking Fountains (high & low, 27" clear under)

**ANSI 603 Toilet Rooms:**


- 60" Diameter Turning Space
- Door swing not into required clear floor area of fixtures



**ANSI 604 Water Closets & Toilet Compartments:**

- Water Closets & Water Closet Stalls: 60" x 59" inside clear
- Compartment Door: 32" door & at open side water closet
- Water Closet Seat: 17" to 19" A.F.F.
- Ambulatory Stall: 36" wide, 42" grab bars both sides, 32" door

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**ANSI 605 Urinals:**

- Urinals: 17" to lip & 30" x 48" clear front area

**ANSI 606 Lavatories & Sinks:**

- Lavatories & Sinks: 2'-10" to top, 27" clear under & 30" x 48" clear front area

**ANSI 609 Grab Bars:**

- Grab Bars:
  - Rear: 36" & 12" from center line water closet, 33" to 36" height
  - Side: 42" & 12" from wall, 33" to 36" height & 18" vertical & 39" to 41" bottom & 39" to 41" from back wall




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**Not Covered Today:**

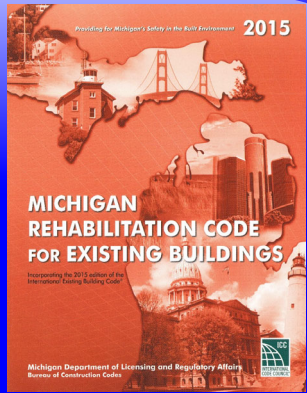
- ANSI 607 Bathtub
- ANSI 608 Shower Compartments
- ANSI 610 Bathtub & Shower Seats
- ANSI 611 Washing Machines & Clothes Dryers
- ANSI 612 Saunas & Steam Rooms

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**EXISTING BUILDINGS AND STRUCTURES USE THE MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS**



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**Thank You!**

**Benedetto Tiseo, FAIA, NCARB**  
*President*  
Tiseo Architects, Inc.  
(p) 248.888.1300  
(e) ben@tiseo.com

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