Building Codes 102

Conveying Code-Compliance in Construction Documents

Facilitated by the

Building Codes & Regulations Committee

on behalf of:

AIA DETROIT
A chapter of the American Institute of Architects

ICC INTERNATIONAL CODE COUNCIL®

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Program Overview

- **Construction Documents**
  - *What are they; Why are they important; Why do we care?*
- **Michigan Construction Regulations History**
  - *What did it used to be; What is it now; What is the difference?*
- **Plan Review Information to show on Drawings**
  - *Extent, Use, Size & Type*
  - *Fire*
  - *Egress and Capacity*
  - *Other Technical Criteria (i.e., structural, inspections)*

Construction Documents

What are they?

Why are they important?

Why do we care?

Construction Documents – "What"

- **CSI PRM/MOP Section 5.1.1:** "…the written and graphic documents prepared or assembled by the A/E for communicating the project design for construction…"
- **CSI PRM/MOP Section 5.1.4.5** "…graphic representations of the work upon which the contract is based…They show the quantitative extent and relationships of elements to one another."

Construction Documents – "What"

- **AIA A201 Section 1.1.5** defines **Drawings:** "…the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams."
- **AIA A201 Section 1.1.6** defines **Specifications:** "…that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services."

Construction Documents – "Why"

- Can have varying "purposes"…
  - **"Full" Traditional Set:** Show what is necessary to make client's vision a quality built and rewarding, occupiable reality.
  - **Pricing Set:** Show just what is necessary to obtain confident pricing to within an acceptable margin of error or risk tolerance for client.
  - **Permit Set:** Show just what is necessary to obtain plan review approvals so client can legally proceed with the work.

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…"*

"Why" should ~~We~~ Architects & AHJs 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**."*

"Why" should ~~We~~ Architects & AHJs 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)]*

"Why" should ~~We~~ Architects & AHJs 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)]

Michigan Construction Regulations History

What did it used to be?

What is it now?

What is the difference?

"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…

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.

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).**

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…"

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…

Drawing Information for: Extent, Use, Size & Type

Zoning Information

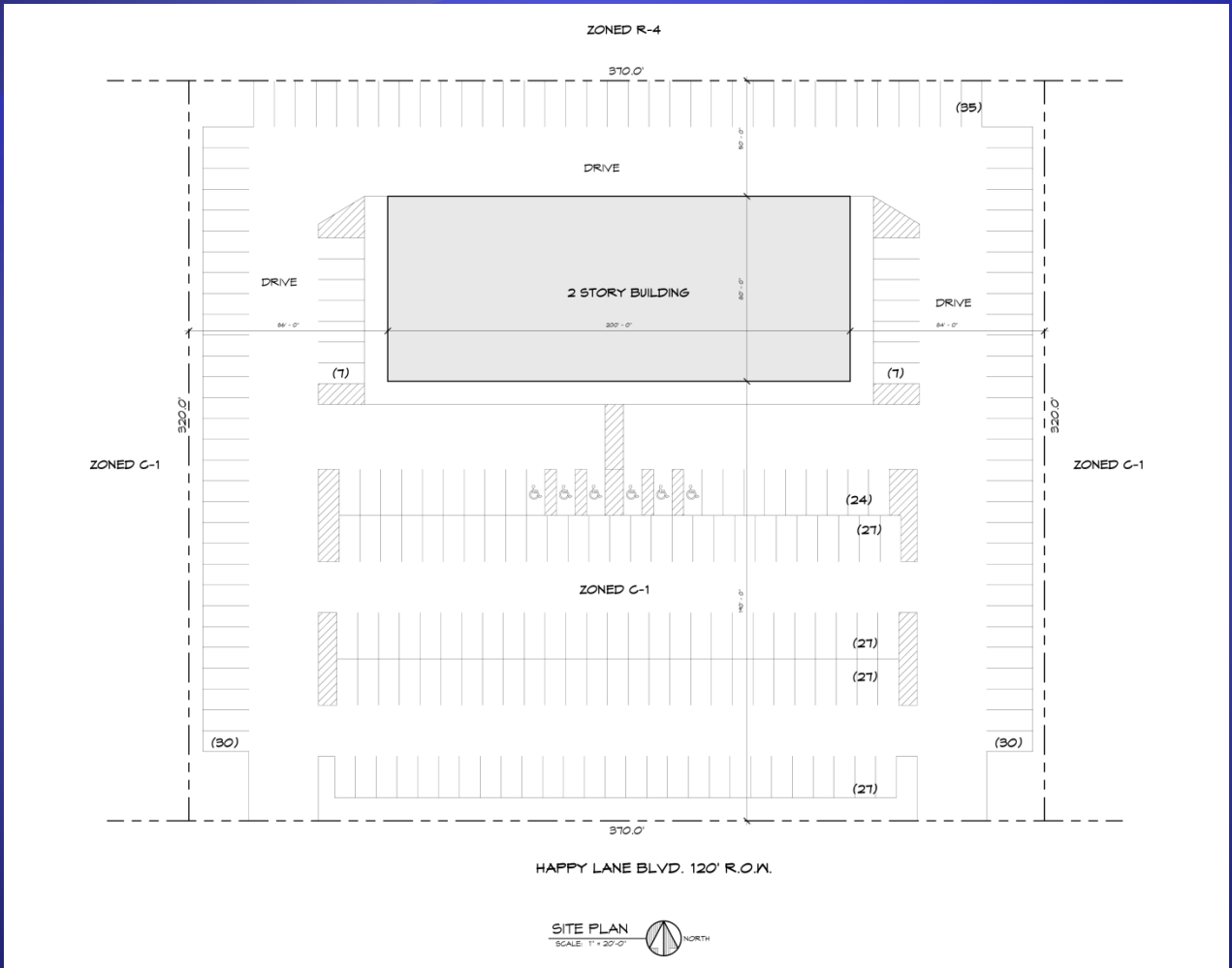
Applicable Codes

MBC Chapters 3, 4, 5 & 6

Zoning Information

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

Zoning Information



Site/Building Data

SITE/BUILDING DATA

ZONING: C-1 COMMERCIAL

SITE AREA: 118,400 SQ. FT. (2.72 ± ACRES)

SETBACKS:	MIN. FT.	ACTUAL FT.
FRONT	70	190
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 (217 SEATING)	4,226	1/2 SEATING	= 109
RETAIL	5,176	1/150	= 35
PARKING REQUIRED			= 205
PARKING PROVIDED (W/ 6 BFD/ADA)			= 214
OVERAGE			= +9

Applicable Codes & Status

- New Building v Existing Building
- Scope of Project / Disciplines Involved
- Current Codes:
  - 2012 Michigan Building Code (MBC) & Michigan Rehabilitation Code for Existing Buildings (MRCEB)
  - 2009 Michigan Residential Code (MRC)
  - 2009 Michigan Uniform Energy Code (MUEC)
  - 2012 Michigan Mechanical Code & (MMC) Michigan Plumbing Code (MPC)
  - 2014 Michigan Part 8 Electrical Code (MEC)

?2015 MBC in Feb 2017 / 2015 MRCEB Jan 2017?

2015 in Feb 8, 2016

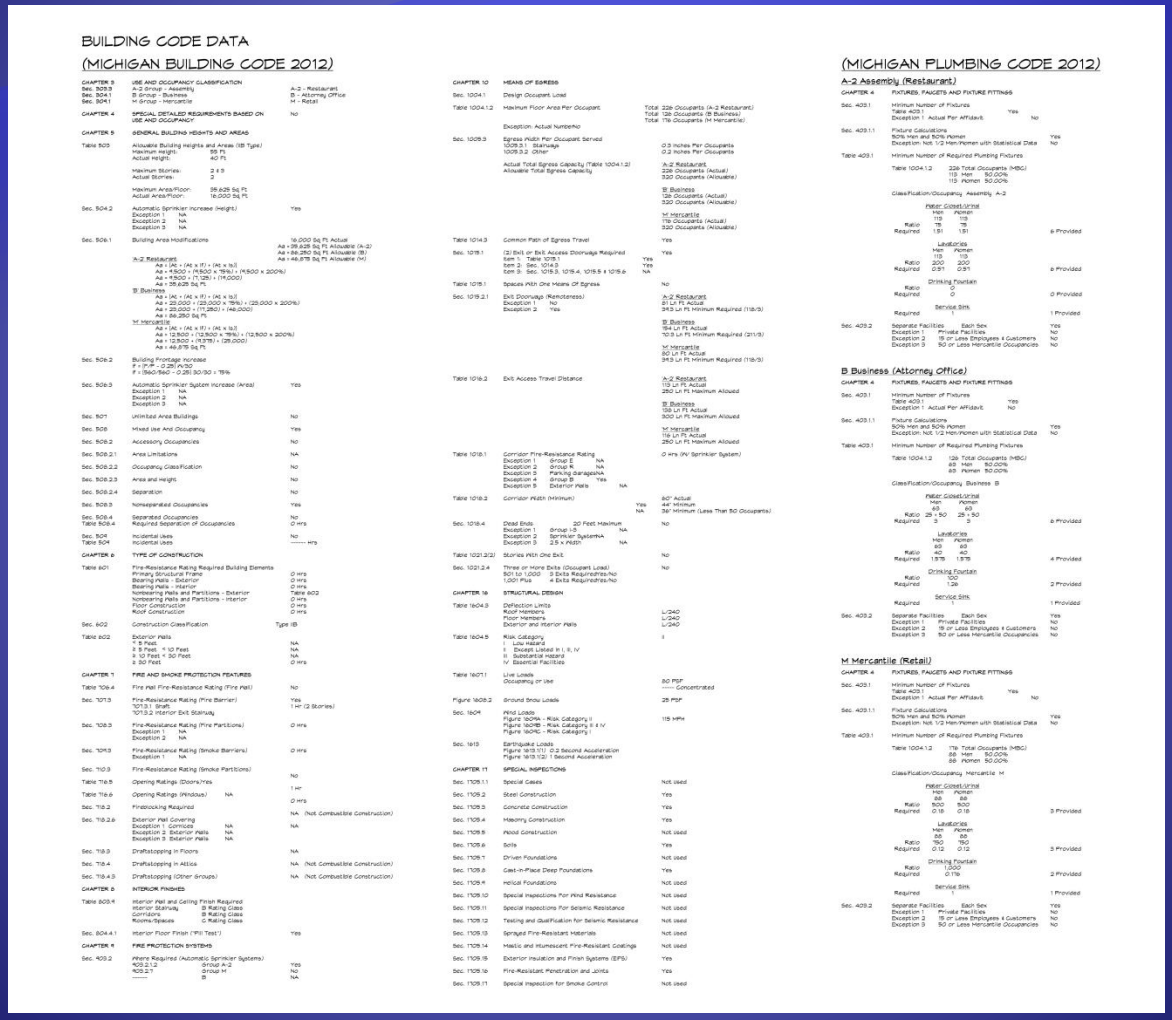
2015 Part 10 in Feb 8, 2016 / ?Part 10a Feb 2017?

?2015 in Feb 2017?

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)

Building Code Data (Michigan Building Code 2012)



BUILDING CODE DATA

(MICHIGAN BUILDING CODE 2012)

CHAPTER 3	USE AND OCCUPANCY CLASSIFICATION	
Sec. 303.3	A-2 Group - Assembly	A-2 - Restaurant
Sec. 304.1	B Group - Business	B - Attorney Office
Sec. 309.1	M Group - Mercantile	M - Retail
CHAPTER 4	SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY	No
CHAPTER 5	GENERAL BUILDING HEIGHTS AND AREAS	
Table 503	Allowable Building Heights and Areas (IIB Type)	
	Maximum Height:	55 Ft
	Actual Height:	40 Ft
	Maximum Stories:	2 # 9
	Actual Stories:	2
	Maximum Area/Floor:	36,625 Sq Ft
	Actual Area/Floor:	16,000 Sq Ft
Sec. 504.2	Automatic Sprinkler Increase (Height)	Yes
	Exception 1 NA	
	Exception 2 NA	
	Exception 3 NA	
Sec. 506.1	Building Area Modifications	16,000 Sq Ft Actual
		A-2 = 36,625 Sq Ft Allowable (A-2)
		A-2 = 58,250 Sq Ft Allowable (B)
		A-2 = 46,875 Sq Ft Allowable (M)
	A-2 Restaurant	
	As = (Ac + (Ac x If) + (Ac x Is))	
	As = 4,500 + (4,500 x 78%) + (4,500 x 200%)	
	As = 4,500 + (7,125) + (14,000)	
	As = 35,625 Sq Ft	
	B Business	
	As = (Ac + (Ac x If) + (Ac x Is))	
	As = 23,000 + (23,000 x 78%) + (23,000 x 200%)	
	As = 23,000 + (17,250) + (46,000)	
	As = 86,250 Sq Ft	
	M Mercantile	
	As = (Ac + (Ac x If) + (Ac x Is))	
	As = 12,500 + (12,500 x 78%) + (12,500 x 200%)	
	As = 12,500 + (9,375) + (25,000)	
	As = 46,875 Sq Ft	
Sec. 506.2	Building Frontage Increase	
	If = (P-P - 0.25) W/30	
	If = (560-560 - 0.25) 30/30 = 78%	
Sec. 506.3	Automatic Sprinkler System Increase (Area)	Yes
	Exception 1 NA	
	Exception 2 NA	
	Exception 3 NA	
Sec. 507	Unlimited Area Buildings	No
Sec. 508	Mixed Use And Occupancy	Yes
Sec. 508.2	Accessory Occupancies	No
Sec. 508.2.1	Area Limitations	NA
Sec. 508.2.2	Occupancy Classification	No
Sec. 508.2.3	Area and Height	No
Sec. 508.2.4	Separation	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	No
Table 509	Incidental Uses	------ Hrs
CHAPTER 6	TYPE 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 IIB
Table 602	Exterior Walls	
	< 5 Feet	NA
	≥ 5 Feet, < 10 Feet	NA
	≥ 10 Feet < 30 Feet	NA
	≥ 30 Feet	0 Hrs
CHAPTER 7	FIRE AND SMOKE PROTECTION FEATURES	
Table 706.4	Fire Wall Fire-Resistance Rating (Fire Wall)	No
Sec. 707.3	Fire-Resistance Rating (Fire Barrier)	Yes
	707.3.1 Shaft:	1 Hr (2 Stories)
	1015.2 Interior Exit Stairway	
Sec. 708.3	Fire-Resistance Rating (Fire Partitions)	0 Hrs
	Exception 1 NA	
	Exception 2 NA	
Sec. 709.3	Fire-Resistance Rating (Smoke Barriers)	0 Hrs
	Exception 1 NA	
Sec. 710.3	Fire-Resistance Rating (Smoke Partitions)	No
Table 716.5	Opening Ratings (Doors/Hr)	1 Hr
Table 716.6	Opening Ratings (Windows) NA	0 Hrs
Sec. 718.2	Firestopping 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
Sec. 718.4	Draftstopping in Attics	NA (Not Combustible Construction)
Sec. 718.4.3	Draftstopping (Other Groups)	NA (Not Combustible Construction)
CHAPTER 8	INTERIOR FINISHES	
Table 803.4	Interior Wall and Ceiling Finish Required	
	Interior Stairway B Rating Class	
	Corridors B Rating Class	
	Rooms/Spaces C Rating Class	
Sec. 804.4.1	Interior Floor Finish ("Fit Test")	Yes
CHAPTER 9	FIRE PROTECTION SYSTEMS	
Sec. 903.2	Where Required (Automatic Sprinkler Systems)	
	903.2.1.2 Group A-2	Yes
	903.2.7 Group M	No
	------ B	NA

CHAPTER 10	MEANS OF EGRESS	
Sec. 1004.1	Design Occupant Load	
Table 1004.1.2	Maximum Floor Area Per Occupant	Total: 226 Occupants (A-2 Restaurant)
		Total: 128 Occupants (B Business)
		Total: 176 Occupants (M Mercantile)
	Exception: Actual Numbers	
Sec. 1005.3	Egress Width Per Occupant Served	
	1005.3.1 Stairways	0.3 Inches Per Occupants
	1005.3.2 Other	0.2 Inches Per Occupants
	Actual Total Egress Capacity (Table 1004.1.2)	A-2 Restaurant
	Allowable Total Egress Capacity	226 Occupants (Actual)
		330 Occupants (Allowable)
		B Business
		128 Occupants (Actual)
		330 Occupants (Allowable)
		M Mercantile
		176 Occupants (Actual)
		330 Occupants (Allowable)
Table 1014.3	Common Path of Egress Travel	Yes
Sec. 1015.1	(2) Exit or Exit Access Doorways Required	Yes
	Item 1: Table 1015.1	Yes
	Item 2: Sec. 1014.3	Yes
	Item 3: Sec. 1015.3, 1015.4, 1015.5 # 1015.6	NA
Table 1015.1	Spaces With One Means Of Egress	No
Sec. 1015.2.1	Exit Doorways (Remoteness)	A-2 Restaurant
	Exception 1 No	81 Ln Ft Actual
	Exception 2 Yes	343 Ln Ft Minimum Required (118/3)
		B Business
		194 Ln Ft Actual
		103 Ln Ft Minimum Required (211/3)
		M Mercantile
		80 Ln Ft Actual
		343 Ln Ft Minimum Required (118/3)
Table 1016.2	Exit Access Travel Distance	A-2 Restaurant
		113 Ln Ft Actual
		250 Ln Ft Maximum Allowed
		B Business
		138 Ln Ft Actual
		300 Ln Ft Maximum Allowed
		M Mercantile
		116 Ln Ft Actual
		250 Ln Ft Maximum Allowed
Table 1018.1	Corridor Fire-Resistance Rating	0 Hrs (W/ Sprinkler System)
	Exception 1 Group E NA	
	Exception 2 Group R NA	
	Exception 3 Parking GaragesNA	
	Exception 4 Group B Yes	
	Exception 5 Exterior Walls NA	
Table 1018.2	Corridor Width (Minimum)	60" Actual
	Yes	44" Minimum
	NA	36" Minimum (Less Than 50 Occupants)
Sec. 1018.4	Dead Ends 20 Feet Maximum	No
	Exception 1 Group I-3 NA	
	Exception 2 Sprinkler SystemNA	
	Exception 3 2.5 x Width NA	
Table 1021.2(2)	Stories With One Exit	No
Sec. 1021.2.4	Three or More Exits (Occupant Load)	No
	501 to 1,000 3 Exits Required=Yes/No	
	1,001 Plus 4 Exits Required=Yes/No	
CHAPTER 16	STRUCTURAL DESIGN	
Table 1604.3	Deflection Limits	
	Roof Members	L/240
	Floor Members	L/240
	Exterior and Interior Walls	L/240
Table 1604.5	Risk Category	II
	I Low Hazard	
	II Except Listed in I, III, IV	
	III Substantial Hazard	
	IV Essential Facilities	
Table 1607.1	Live Loads	
	Occupancy or Use	50 PSF
		------ Concentrated
Figure 1608.2	Ground Snow Loads	25 PSF
Sec. 1609	Wind Loads	115 MPH
	Figure 1609A - Risk Category II	
	Figure 1609B - Risk Category III & IV	
	Figure 1609C - Risk Category I	
Sec. 1613	Earthquake Loads	
	Figure 1613.1(1) 0.2 Second Acceleration	
	Figure 1613.1(2) 1 Second Acceleration	
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	Soils	Yes
Sec. 1705.7	Driven Foundations	Not Used
Sec. 1705.8	Cast-in-Place Deep Foundations	Yes
Sec. 1705.9	Helical Foundations	Not Used
Sec. 1705.10	Special Inspections For Wind Resistance	Not Used
Sec. 1705.11	Special Inspections For Seismic Resistance	Not Used
Sec. 1705.12	Testing and Qualification for Seismic Resistance	Not Used
Sec. 1705.13	Sprayed Fire-Resistant Materials	Not Used
Sec. 1705.14	Mastic and Intumescent Fire-Resistant Coatings	Not Used
Sec. 1705.15	Exterior Insulation and Finish Systems (EIFS)	Yes
Sec. 1705.16	Fire-Resistant Penetration and Joints	Yes
Sec. 1705.17	Special Inspection for Smoke Control	Not Used

(MICHIGAN PLUMBING CODE 2012)

A-2 Assembly (Restaurant)

CHAPTER 4	FIXTURES, FAUCETS AND FIXTURE FITTINGS	
Sec. 403.1	Minimum Number of Fixtures	
	Table 403.1	Yes
	Exception 1 Actual Per Affidavit	No
Sec. 403.1.1	Fixture Calculations	
	50% Men and 50% Women	Yes
	Exception: Not 1/2 Men/Women with Statistical Data	No
Table 403.1	Minimum Number of Required Plumbing Fixtures	
	Table 1004.1.2 226 Total Occupants (MBC)	
	113 Men 50.00%	
	113 Women 50.00%	
	Classification/Occupancy Assembly, A-2	
	Water Closet/Urinal	
	Men Women	
	113 113	
	Ratio 75 75	
	Required 1.51 1.51	6 Provided
	Lavatories	
	Men Women	
	113 113	
	Ratio 200 200	
	Required 0.57 0.57	6 Provided
	Drinking Fountain	
	Ratio 0	
	Required 0	0 Provided
	Service Sink	
	Required 1	1 Provided
Sec. 403.2	Separate Facilities Each Sex	Yes
	Exception 1 Private Facilities	No
	Exception 2 15 or Less Employees # Customers	No
	Exception 3 50 or Less Mercantile Occupancies	No

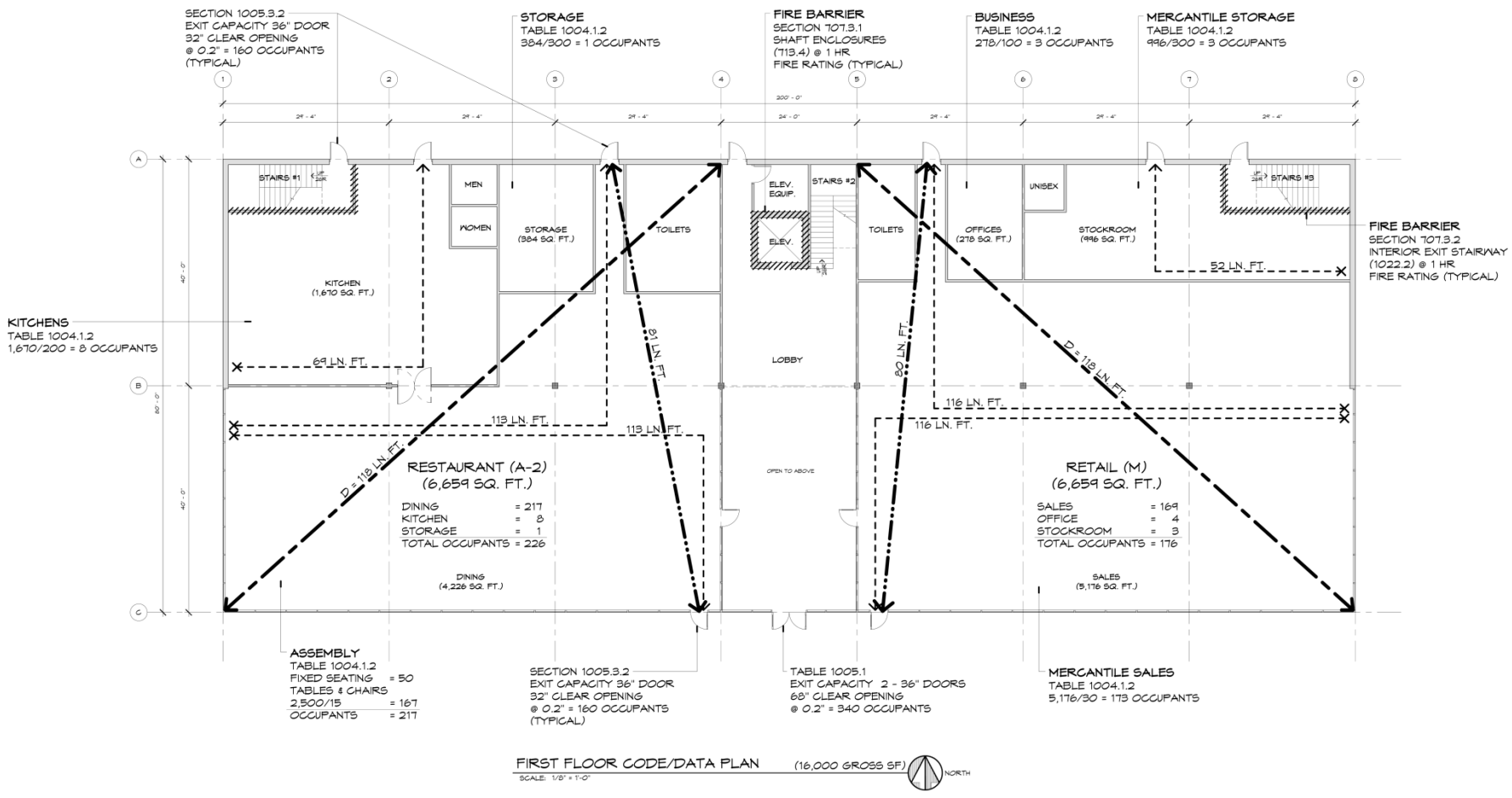
B Business (Attorney Office)

CHAPTER 4	FIXTURES, FAUCETS AND FIXTURE FITTINGS	
Sec. 403.1	Minimum Number of Fixtures	
	Table 403.1	Yes
	Exception 1 Actual Per Affidavit	No
Sec. 403.1.1	Fixture Calculations	
	50% Men and 50% Women	Yes
	Exception: Not 1/2 Men/Women with Statistical Data	No
Table 403.1	Minimum Number of Required Plumbing Fixtures	
	Table 1004.1.2 128 Total Occupants (MBC)	
	64 Men 50.00%	
	64 Women 50.00%	
	Classification/Occupancy, Business B	
	Water Closet/Urinal	
	Men Women	
	60 60	
	Ratio 25 # 50 25 # 50	
	Required 3 3	6 Provided
	Lavatories	
	Men Women	
	60 60	
	Ratio 40 40	
	Required 1.575 1.575	4 Provided
	Drinking Fountain	
	Ratio 100	
	Required 1.28	2 Provided
	Service Sink	
	Required 1	1 Provided
Sec. 403.2	Separate Facilities Each Sex	Yes
	Exception 1 Private Facilities	No
	Exception 2 15 or Less Employees # Customers	No
	Exception 3 50 or Less Mercantile Occupancies	No

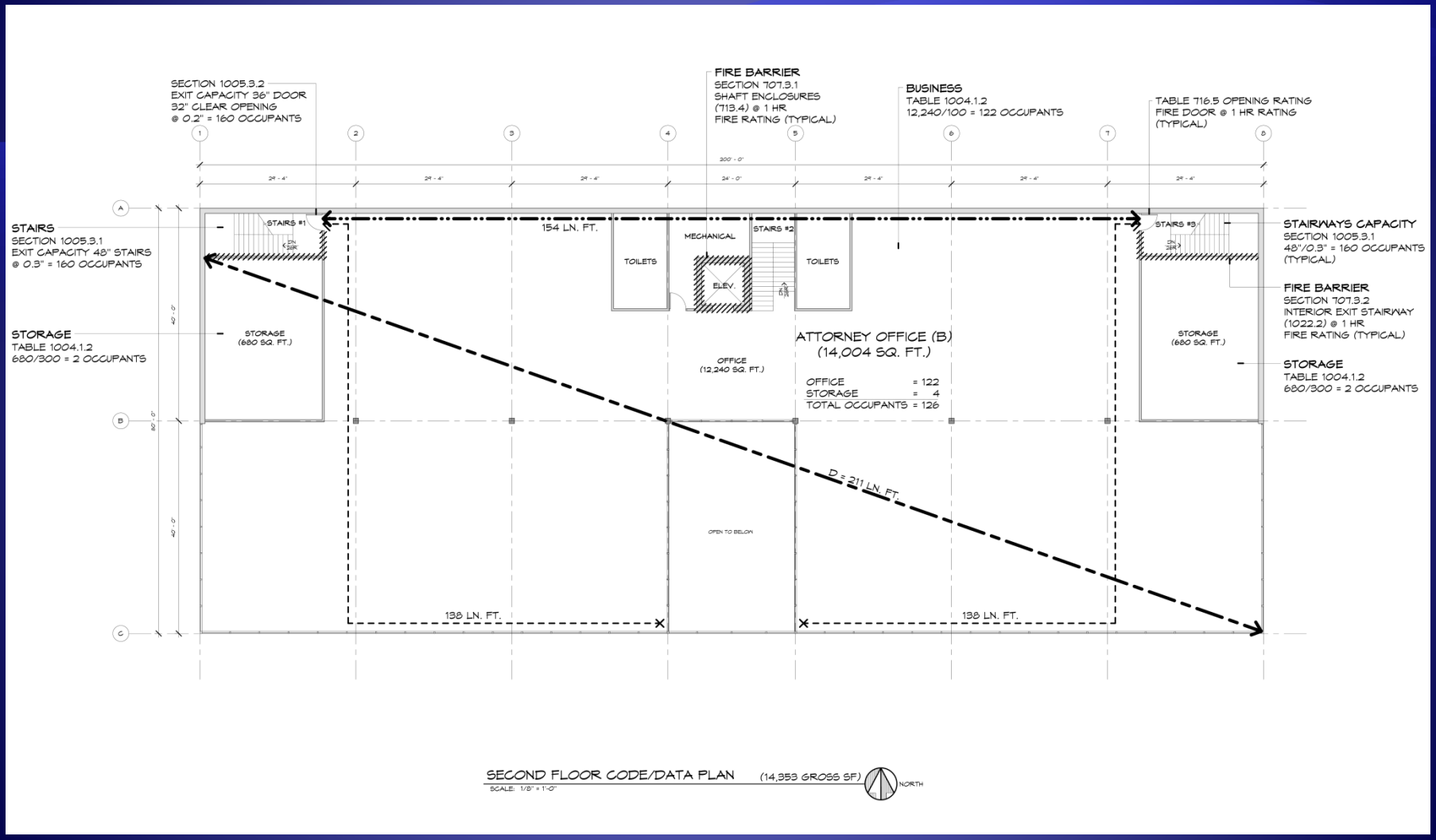
M Mercantile (Retail)

CHAPTER 4	FIXTURES, FAUCETS AND FIXTURE FITTINGS	
Sec. 403.1	Minimum Number of Fixtures	
	Table 403.1	Yes
	Exception 1 Actual Per Affidavit	No
Sec. 403.1.1	Fixture Calculations	
	50% Men and 50% Women	Yes
	Exception: Not 1/2 Men/Women with Statistical Data	No
Table 403.1	Minimum Number of Required Plumbing Fixtures	
	Table 1004.1.2 176 Total Occupants (MBC)	
	88 Men 50.00%	
	88 Women 50.00%	
	Classification/Occupancy Mercantile, M	
	Water Closet/Urinal	
	Men Women	
	88 88	
	Ratio 500 500	
	Required 0.18 0.18	3 Provided
	Lavatories	
	Men Women	
	88 88	
	Ratio 750 750	
	Required 0.12 0.12	3 Provided
	Drinking Fountain	
	Ratio 1,000	
	Required 0.176	2 Provided
	Service Sink	
	Required	1 Provided
Sec. 403.2	Separate Facilities Each Sex	Yes
	Exception 1 Private Facilities	No
	Exception 2 15 or Less Employees # Customers	No
	Exception 3 50 or Less Mercantile Occupancies	No

1st Floor Code Data Plan



2nd Floor Code Data Plan



Ch. 3 & 4 Use/Occupancy & Special

CHAPTER 3	USE AND OCCUPANCY CLASSIFICATION	
Sec. 303.3	A-2 Group - Assembly	A-2 - Restaurant
Sec. 304.1	B Group - Business	B - Attorney Office
Sec. 309.1	M Group - Mercantile	M - Retail
CHAPTER 4	SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY	No

Ch. 5 Height & Area

CHAPTER 5 GENERAL BUILDING HEIGHTS AND AREAS

Table 503 Allowable Building Heights and Areas (IIB Type)

Maximum Height: 55 Ft
Actual Height: 40 Ft

Maximum Stories: 2 & 3
Actual Stories: 2

Maximum Area/Floor: 35,625 Sq Ft (Most Restrictive)
Actual Area/Floor: 16,000 Sq Ft

Sec. 504.2 Automatic Sprinkler Increase (Height) Yes

Exception 1 NA
Exception 2 NA
Exception 3 NA

Sec. 506.1 Building Area Modifications

16,000 Sq Ft Actual
Aa = 35,625 Sq Ft Allowable (A-2)
Aa = 86,250 Sq Ft Allowable (B)
Aa = 46,875 Sq Ft Allowable (M)

'A-2' Restaurant

Aa = [At + (At x If) + (At x Is)]
Aa = 9,500 + (9,500 x 75%) + (9,500 x 200%)
Aa = 9,500 + (7,125) + (19,000)
Aa = 35,625 Sq Ft

'B' Business

Aa = [At + (At x If) + (At x Is)]
Aa = 23,000 + (23,000 x 75%) + (23,000 x 200%)
Aa = 23,000 + (17,250) + (46,000)
Aa = 86,250 Sq Ft

'M' Mercantile

Aa = [At + (At x If) + (At x Is)]
Aa = 12,500 + (12,500 x 75%) + (12,500 x 200%)
Aa = 12,500 + (9,375) + (25,000)
Aa = 46,875 Sq Ft

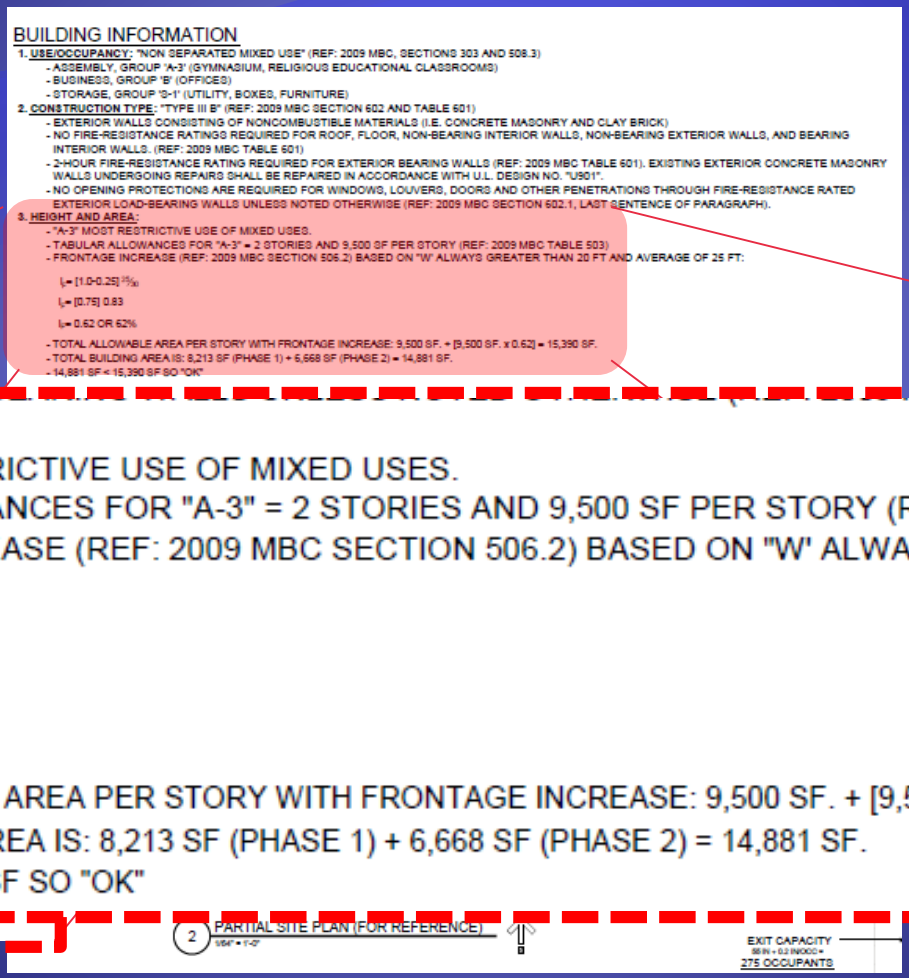
Sec. 506.2 Building Frontage Increase

If = [F/P - 0.25] W/30
If = [560/560 - 0.25] 30/30 = 75%

Ch. 5 Height & Area

Sec. 506.3	Automatic Sprinkler System Increase (Area) Exception 1 NA Exception 2 NA Exception 3 NA	Yes
Sec. 507	Unlimited Area Buildings	No
Sec. 508	Mixed Use And Occupancy	Yes
Sec. 508.2	Accessory Occupancies	No
Sec. 508.2.1	Area Limitations	NA
Sec. 508.2.2	Occupancy Classification	No
Sec. 508.2.3	Area and Height	No
Sec. 508.2.4	Separation	No
Sec. 508.3	Nonseparated Occupancies	Yes
Sec. 508.4 Table 508.4	Separated Occupancies Required Separation of Occupancies	No 0 Hrs
Sec. 509 Table 509	Incidental Uses Incidental Uses	No 0 Hrs

Ch. 5 Height & Area



BUILDING INFORMATION

1. **USE/OCCUPANCY:** "NON SEPARATED MIXED USE" (REF: 2009 MBC, SECTIONS 303 AND 508.3)
   - ASSEMBLY, GROUP 'A-3' (GYMNASIUM, RELIGIOUS EDUCATIONAL CLASSROOMS)
   - BUSINESS, GROUP 'B' (OFFICES)
   - STORAGE, GROUP 'S-1' (UTILITY, BOXES, FURNITURE)
2. **CONSTRUCTION TYPE:** "TYPE III B" (REF: 2009 MBC SECTION 602 AND TABLE 601)
   - EXTERIOR WALLS CONSISTING OF NONCOMBUSTIBLE MATERIALS (I.E. CONCRETE MASONRY AND CLAY BRICK)
   - NO FIRE-RESISTANCE RATINGS REQUIRED FOR ROOF, FLOOR, NON-BEARING INTERIOR WALLS, NON-BEARING EXTERIOR WALLS, AND BEARING INTERIOR WALLS. (REF: 2009 MBC TABLE 601)
   - 2-HOUR FIRE-RESISTANCE RATING REQUIRED FOR EXTERIOR BEARING WALLS (REF: 2009 MBC TABLE 601). EXISTING EXTERIOR CONCRETE MASONRY WALLS UNDERGOING REPAIRS SHALL BE REPAIRED IN ACCORDANCE WITH U.L. DESIGN NO. "U901".
   - NO OPENING PROTECTIONS ARE REQUIRED FOR WINDOWS, LOUVERS, DOORS AND OTHER PENETRATIONS THROUGH FIRE-RESISTANCE RATED EXTERIOR LOAD-BEARING WALLS UNLESS NOTED OTHERWISE (REF: 2009 MBC SECTION 602.1, LAST SENTENCE OF PARAGRAPH).
3. **HEIGHT AND AREA:**
   - "A-3" MOST RESTRICTIVE USE OF MIXED USES.
   - TABULAR ALLOWANCES FOR "A-3" = 2 STORIES AND 9,500 SF PER STORY (REF: 2009 MBC TABLE 503)
   - FRONTAGE INCREASE (REF: 2009 MBC SECTION 506.2) BASED ON "W' ALWAYS GREATER THAN 20 FT AND AVERAGE OF 25 FT:

     I_F= [1.0-0.25] $^{25}/_{30}$

     I_F= [0.75] 0.83

     I_F= 0.62 OR 62%

   - TOTAL ALLOWABLE AREA PER STORY WITH FRONTAGE INCREASE: 9,500 SF. + [9,500 SF. x 0.62] = 15,390 SF.
   - TOTAL BUILDING AREA IS: 8,213 SF (PHASE 1) + 6,668 SF (PHASE 2) = 14,881 SF.
   - 14,881 SF < 15,390 SF SO "OK"

2 PARTIAL SITE PLAN (FOR REFERENCE)

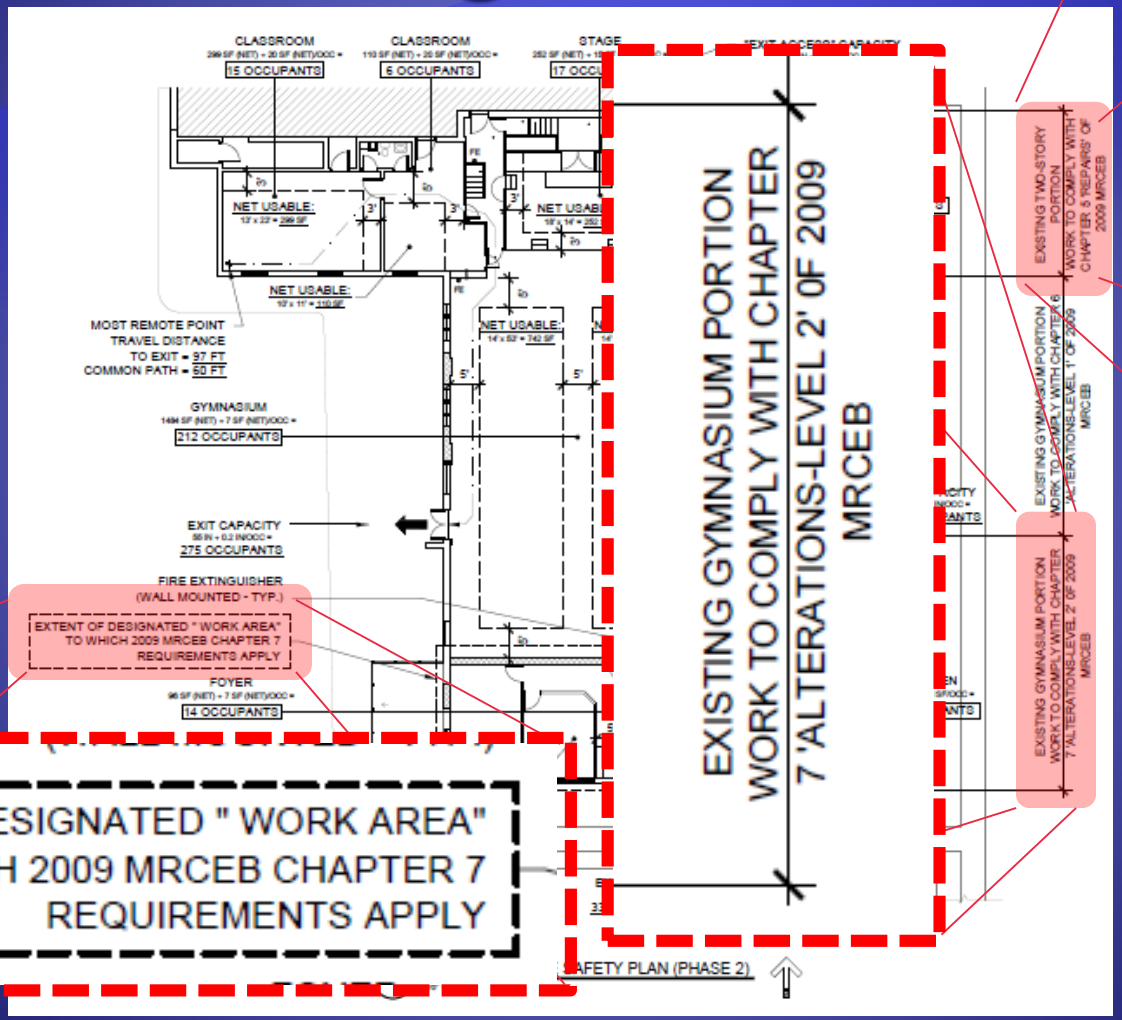
EXIT CAPACITY

275 OCCUPANTS

Ch. 6 Construction Type

CHAPTER 6	TYPE 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 IIB
Table 602	Exterior Walls	
	< 5 Feet	NA
	≥ 5 Feet < 10 Feet	NA
	≥ 10 Feet < 30 Feet	NA
	≥ 30 Feet	0 Hrs

MRCEB – Ch. 5 "C.O.W."



EXTENT OF DESIGNATED " WORK AREA"
TO WHICH 2009 MRCEB CHAPTER 7
REQUIREMENTS APPLY

EXISTING TWO-STORY
PORTION
WORK TO COMPLY WITH
CHAPTER 5 'REPAIRS' OF
2009 MRCEB

Drawing Information for: Fire

MBC Chapters 7, 8 & 9

Ch. 7 Fire/Smoke Protection

CHAPTER 7	FIRE AND SMOKE PROTECTION FEATURES	
Table 706.4	Fire Wall Fire-Resistance Rating (Fire Wall)	No
Sec. 707.3	Fire-Resistance Rating (Fire Barrier) 707.3.1 Shaft 707.3.2 Interior Exit Stairway	Yes 1 Hr (2 Stories)
Sec. 708.3	Fire-Resistance Rating (Fire Partitions) Exception 1 NA Exception 2 NA	0 Hrs
Sec. 709.3	Fire-Resistance Rating (Smoke Barriers) Exception 1 NA	0 Hrs
Sec. 710.3	Fire-Resistance Rating (Smoke Partitions)	No
Table 716.5	Opening Ratings (Doors)Yes	1 Hr
Table 716.6	Opening Ratings (Windows) NA	0 Hrs
Sec. 718.2	Fireblocking Required	NA (Not Combustible Construction)
Sec. 718.2.6	Exterior Wall Covering Exception 1 Cornices NA Exception 2 Exterior Walls NA Exception 3 Exterior Walls NA	NA
Sec. 718.3	Draftstopping in Floors	NA
Sec. 718.4	Draftstopping in Attics	NA (Not Combustible Construction)
Sec. 718.4.3	Draftstopping (Other Groups)	NA (Not Combustible Construction)

Ch. 8 Interior Finishes

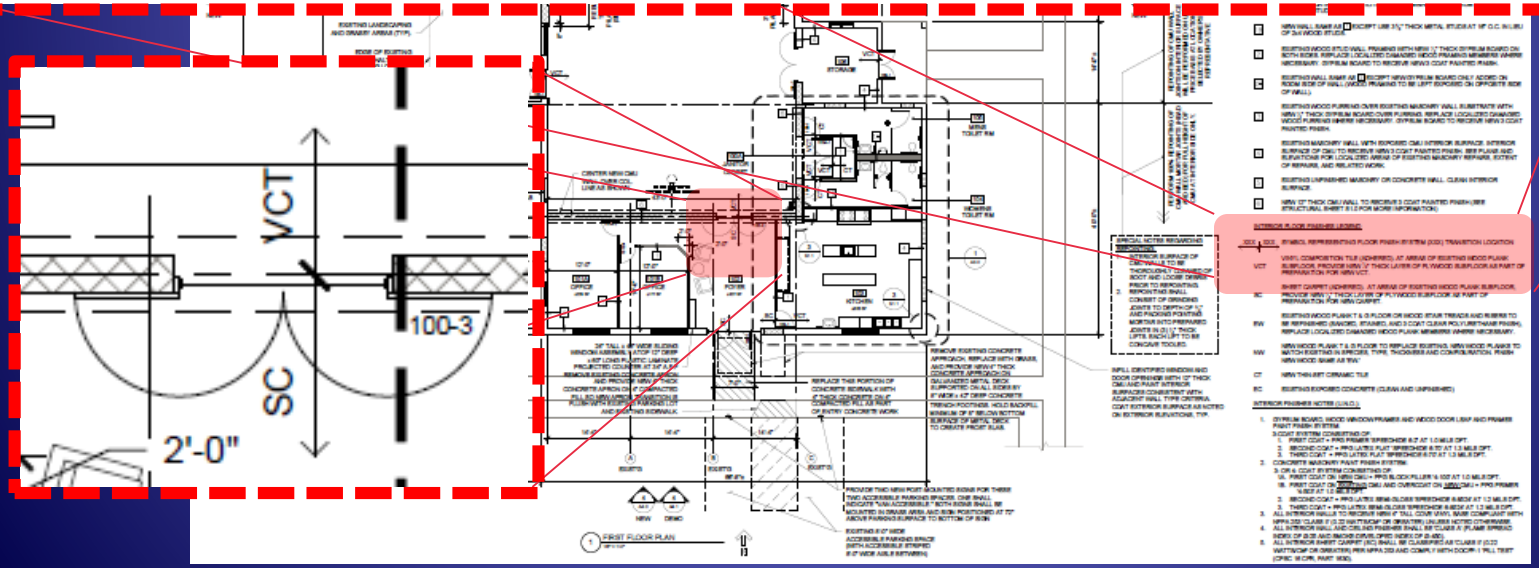
CHAPTER 8	INTERIOR FINISHES	
Table 803.9	Interior Wall and Ceiling Finish Required	
	Interior Stairway — B Rating Class	
	Corridors — B Rating Class	
	Rooms/Spaces — C Rating Class	
Sec. 804.4.1	Interior Floor Finish ("Pill Test")	Yes

Ch. 8 Interior Finishes

INTERIOR FLOOR FINISHES LEGEND

XXX / XXX — SYMBOL REPRESENTING FLOOR FINISH SYSTEM (XXX) TRANSITION LOCATION

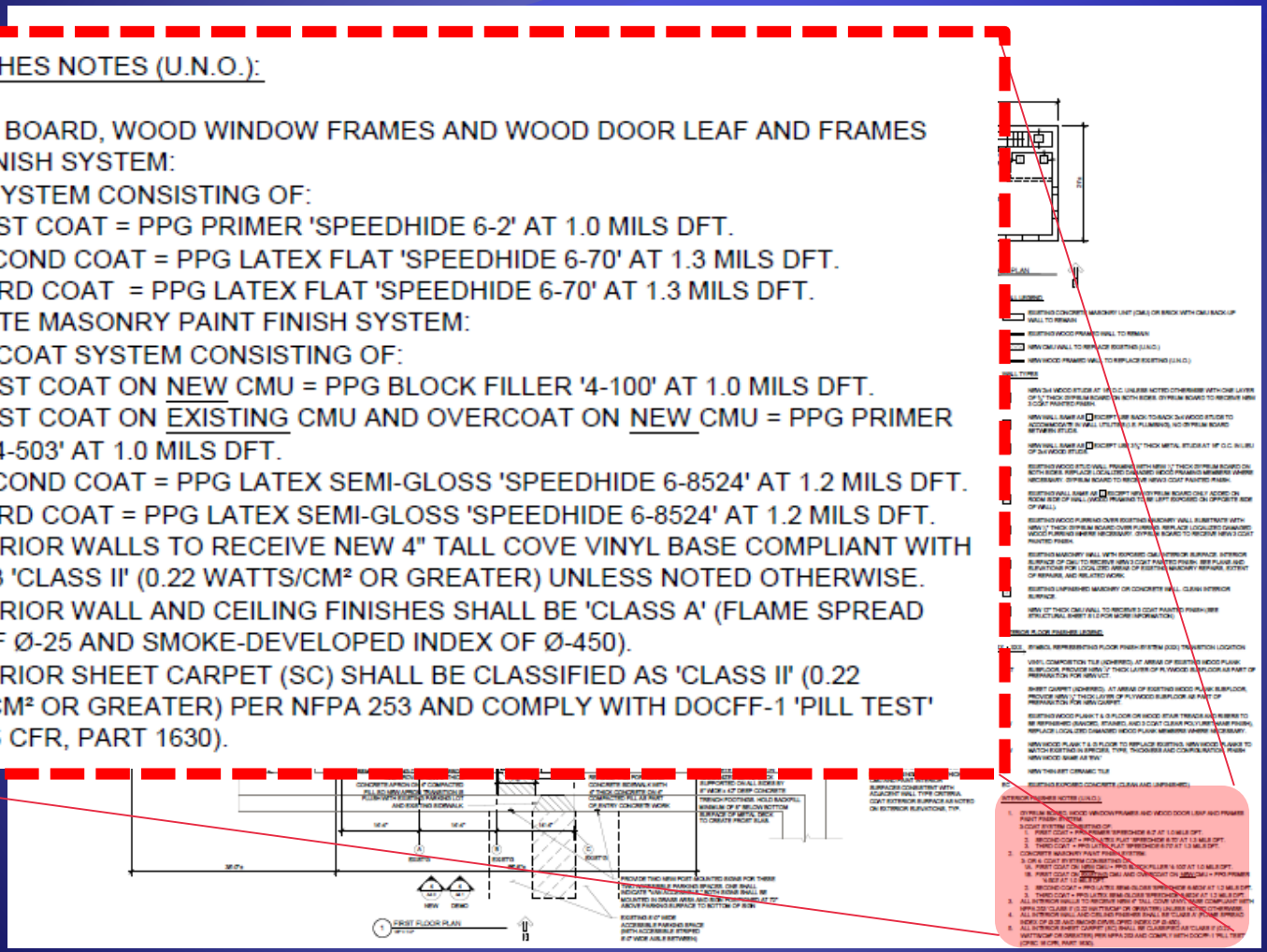
VCT — VINYL COMPOSITION TILE (ADHERED). AT AREAS OF EXISTING WOOD PLANK SUBFLOOR, PROVIDE NEW ¼" THICK LAYER OF PLYWOOD SUBFLOOR AS PART OF PREPARATION FOR NEW VCT.



Ch. 8 Interior Finishes

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

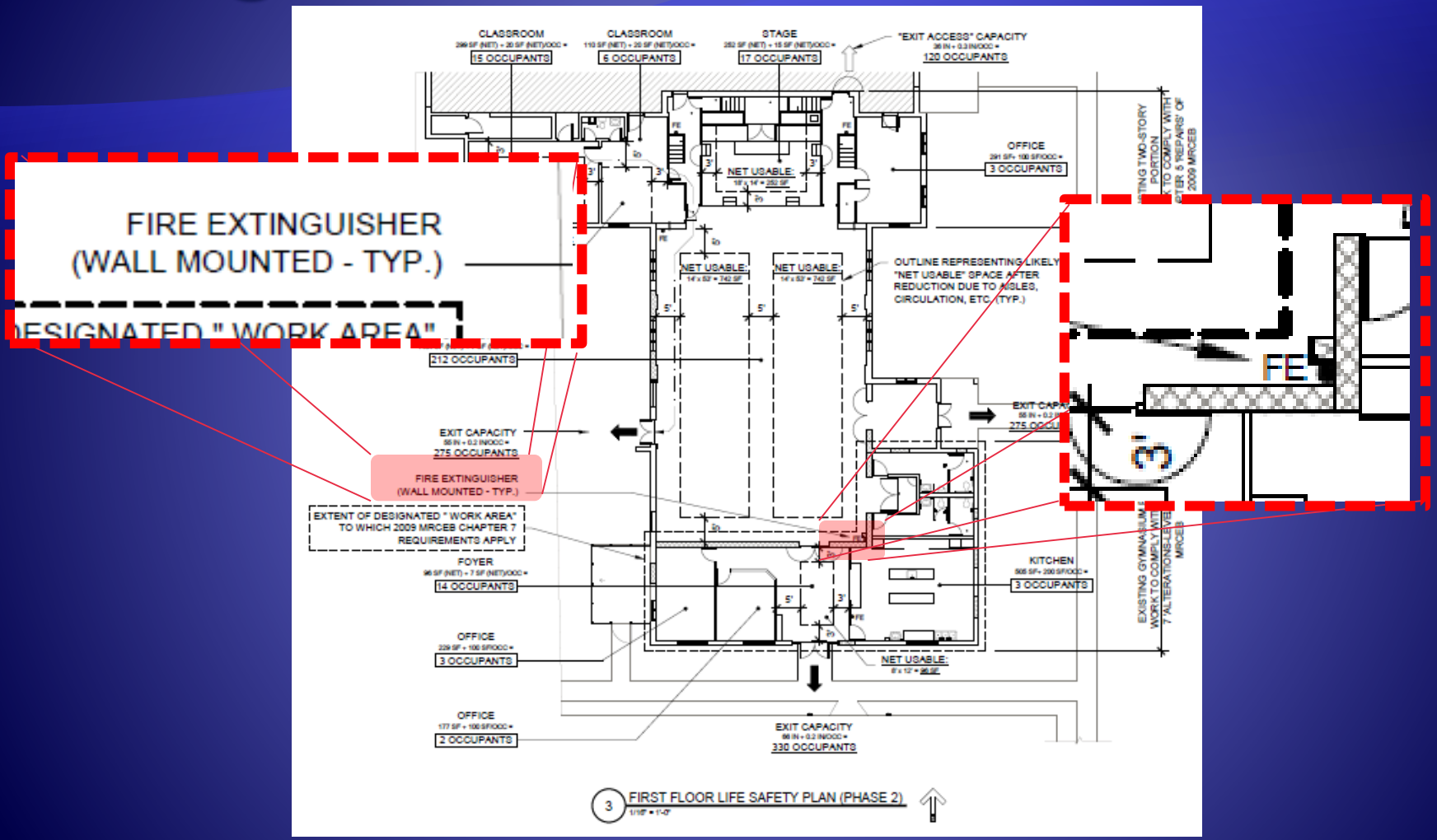
1. GYPSUM BOARD, WOOD WINDOW FRAMES AND WOOD DOOR LEAF AND FRAMES PAINT FINISH SYSTEM:
   3-COAT SYSTEM CONSISTING OF:
   1. FIRST COAT = PPG PRIMER 'SPEEDHIDE 6-2' AT 1.0 MILS DFT.
   2. SECOND COAT = PPG LATEX FLAT 'SPEEDHIDE 6-70' AT 1.3 MILS DFT.
   3. THIRD COAT = PPG LATEX FLAT 'SPEEDHIDE 6-70' AT 1.3 MILS DFT.
2. 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.
3. ALL INTERIOR WALLS TO RECEIVE NEW 4" TALL COVE VINYL BASE COMPLIANT WITH NFPA 253 'CLASS II' (0.22 WATTS/CM² OR GREATER) UNLESS NOTED OTHERWISE.
4. ALL INTERIOR WALL AND CEILING FINISHES SHALL BE 'CLASS A' (FLAME SPREAD INDEX OF Ø-25 AND SMOKE-DEVELOPED INDEX OF Ø-450).
5. ALL INTERIOR SHEET CARPET (SC) SHALL BE CLASSIFIED AS 'CLASS II' (0.22 WATTS/CM² OR GREATER) PER NFPA 253 AND COMPLY WITH DOCFF-1 'PILL TEST' (CPSC 16 CFR, PART 1630).



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
	903.2.7	Group M	No
	------	B	NA

Ch. 9 Fire Protection



Drawing Information for: Egress & Capacity

MBC Chapter 10

MPC Chapter 4

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	Total 226 Occupants (A-2 Restaurant) Total 126 Occupants (B Business) Total 176 Occupants (M Mercantile)
	Exception: Actual Number No	
Sec. 1005.3	Egress Width Per Occupant Served 1005.3.1 Stairways	0.3 Inches Per Occupants 48"/0.3" = 160 Occupants Maximum 63 Occupants Actual
	1005.3.2 Other	0.2 Inches Per Occupants
	Actual Total Egress Capacity (Table 1004.1.2) Allowable Total Egress Capacity	'A-2' Restaurant 226 Occupants (Actual) 320 Occupants (Allowable) 'B' Business 126 Occupants (Actual) 320 Occupants (Allowable) 'M' Mercantile 176 Occupants (Actual) 320 Occupants (Allowable)

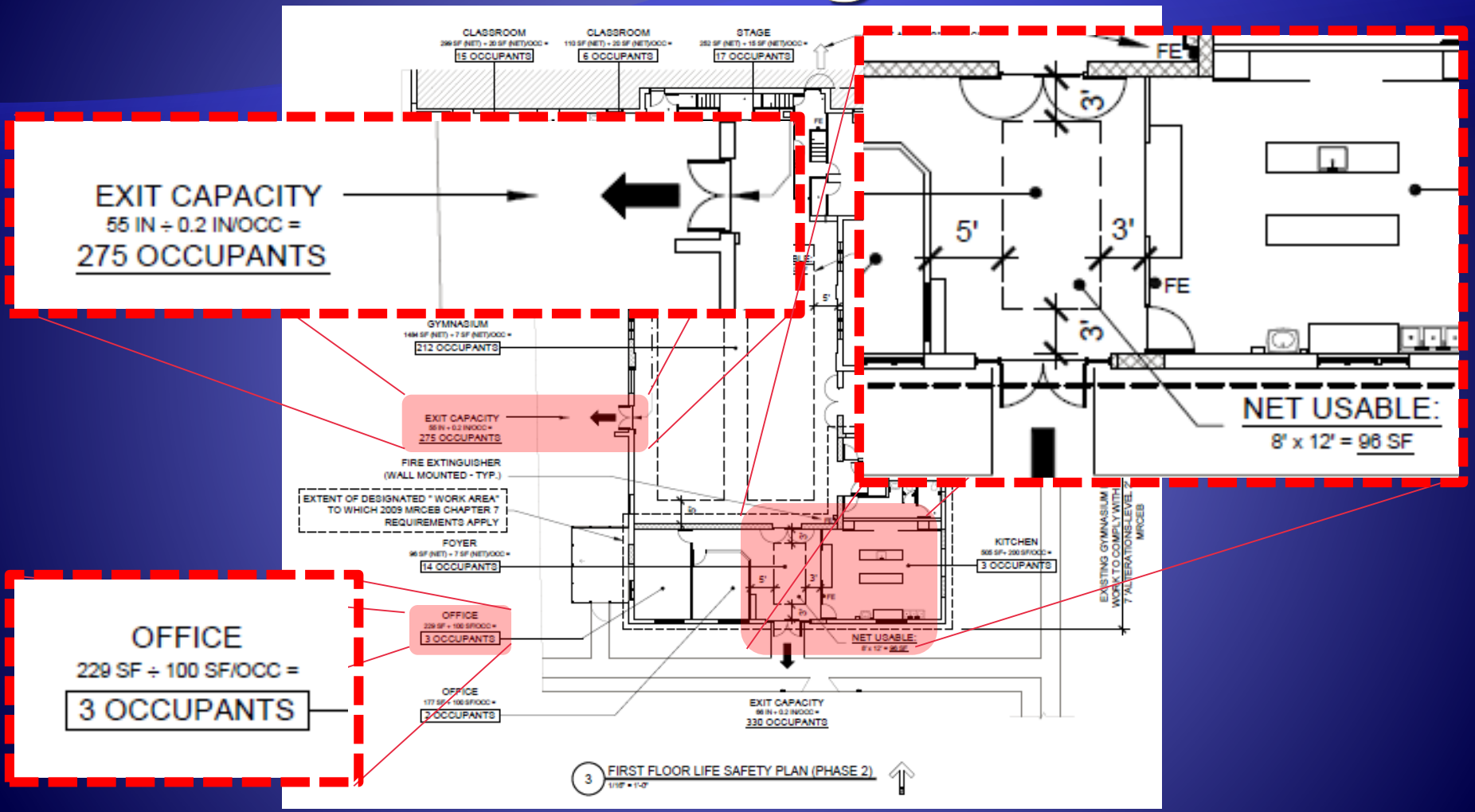
Ch. 10 Means of Egress

Table 1014.3	Common Path of Egress Travel		Yes
Sec. 1015.1	(2) Exit or Exit Access Doorways Required		Yes
	Item 1: Table 1015.1	Yes	
	Item 2: Sec. 1014.3	Yes	
	Item 3: Sec. 1015.3, 1015.4, 1015.5 & 1015.6	NA	
Table 1015.1	Spaces With One Means Of Egress		No
Sec. 1015.2.1	Exit Doorways (Remoteness)		'A-2' Restaurant
	Exception 1 No		81 Ln Ft Actual
	Exception 2 Yes		39.3 Ln Ft Minimum Required (118/3)
			'B' Business
			154 Ln Ft Actual
			70.3 Ln Ft Minimum Required (211/3)
			'M' Mercantile
			80 Ln Ft Actual
			39.3 Ln Ft Minimum Required (118/3)

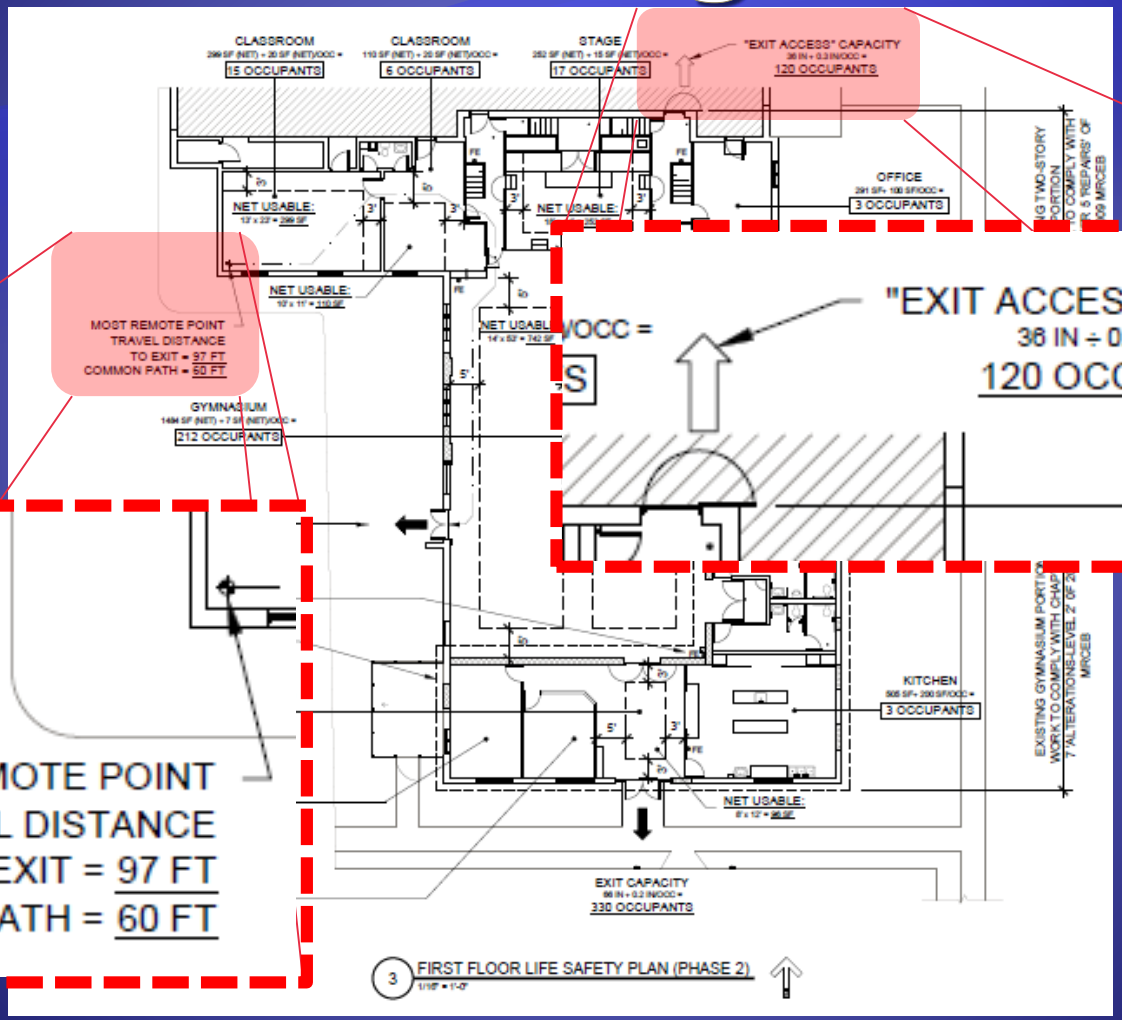
Ch. 10 Means of Egress

Table 1016.2	Exit Access Travel Distance				'A-2' Restaurant 113 Ln Ft Actual 250 Ln Ft Maximum Allowed 'B' Business 138 Ln Ft Actual 300 Ln Ft Maximum Allowed 'M' Mercantile 116 Ln Ft Actual 250 Ln Ft Maximum Allowed
Table 1018.1	Corridor Fire-Resistance Rating				0 Hrs (W/ 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 1018.2	Corridor Width (Minimum)				60" Actual
				Yes	44" Minimum
				NA	36" Minimum (Less Than 50 Occupants)
Sec. 1018.4	Dead Ends	20 Feet Maximum			No
	Exception 1	Group I-3	NA		
	Exception 2	Sprinkler System	NA		
	Exception 3	2.5 x Width	NA		
Table 1021.2(2)	Stories With One Exit				No
Sec. 1021.2.4	Three or More Exits (Occupant Load)				No
	501 to 1,000	3 Exits Required	Yes/No		
	1,001 Plus	4 Exits Required	Yes/No		

Ch. 10 Means of Egress



Ch. 10 Means of Egress



"EXIT ACCESS" CAPACITY
36 IN ÷ 0.3 IN/OCC =
120 OCCUPANTS

MOST REMOTE POINT
TRAVEL DISTANCE
TO EXIT = 97 FT
COMMON PATH = 60 FT

Ch. 4 (MPC) Fixture Quantities

(MICHIGAN PLUMBING CODE 2012)

A-2 Assembly (Restaurant)

CHAPTER 4 FIXTURES, FAUCETS AND FIXTURE FITTINGS

Sec. 403.1 Minimum Number of Fixtures
Table 403.1 Yes
Exception 1 Actual Per Affidavit No

Sec. 403.1.1 Fixture Calculations
50% Men and 50% Women Yes
Exception: Not 1/2 Men/Women with Statistical Data No

Table 403.1 Minimum Number of Required Plumbing Fixtures

Table 1004.1.2 226 Total Occupants (MBC)
113 Men 50.00%
113 Women 50.00%

Classification/Occupancy Assembly A-2

Water Closet/Urinal

	Men	Women	
	113	113	
Ratio	75	75	
Required	1.51	1.51	6 Provided

Lavatories

	Men	Women	
	113	113	
Ratio	200	200	
Required	0.57	0.57	6 Provided

Drinking Fountain

Ratio	0 Sec. 410.3 Substitution Restaurants	
Required	0	0 Provided

Service Sink

Required	1	1 Provided

Sec. 403.2 Separate Facilities Each Sex Yes
Exception 1 Private Facilities No
Exception 2 15 or Less Employees & Customers No
Exception 3 50 or Less Mercantile Occupancies No

Ch. 4 (MPC) Fixture Quantities

B Business (Attorney Office)

CHAPTER 4 FIXTURES, FAUCETS AND FIXTURE FITTINGS

Sec. 403.1 Minimum Number of Fixtures
Table 403.1 Yes
Exception 1 Actual Per Affidavit No

Sec. 403.1.1 Fixture Calculations
50% Men and 50% Women Yes
Exception: Not 1/2 Men/Women with Statistical Data No

Table 403.1 Minimum Number of Required Plumbing Fixtures

Table 1004.1.2 126 Total Occupants (MBC)
63 Men 50.00%
63 Women 50.00%

Classification/Occupancy Business B

Water Closet/Urinal

	Men	Women	
	63	63	
Ratio	25 + 50	25 + 50	
Required	3	3	6 Provided

Lavatories

	Men	Women	
	63	63	
Ratio	40	40	
Required	1.575	1.575	4 Provided

Drinking Fountain

Ratio	100	
Required	1.26	2 Provided

Service Sink

Required	1	1 Provided

Sec. 403.2 Separate Facilities Each Sex Yes
Exception 1 Private Facilities No
Exception 2 15 or Less Employees & Customers No
Exception 3 50 or Less Mercantile Occupancies No

Ch. 4 (MPC) Fixture Quantities

M Mercantile (Retail)

CHAPTER 4 FIXTURES, FAUCETS AND FIXTURE FITTINGS

Sec. 403.1 Minimum Number of Fixtures
Table 403.1 Yes
Exception 1 Actual Per Affidavit No

Sec. 403.1.1 Fixture Calculations
50% Men and 50% Women Yes
Exception: Not 1/2 Men/Women with Statistical Data No

Table 403.1 Minimum Number of Required Plumbing Fixtures

Table 1004.1.2 176 Total Occupants (MBC)
88 Men 50.00%
88 Women 50.00%

Classification/Occupancy Mercantile M

Water Closet/Urinal

	Men	Women	
	88	88	
Ratio	500	500	
Required	0.18	0.18	3 Provided

Lavatories

	Men	Women	
	88	88	
Ratio	750	750	
Required	0.12	0.12	3 Provided

Drinking Fountain

Ratio	1,000	
Required	0.176	2 Provided

Service Sink

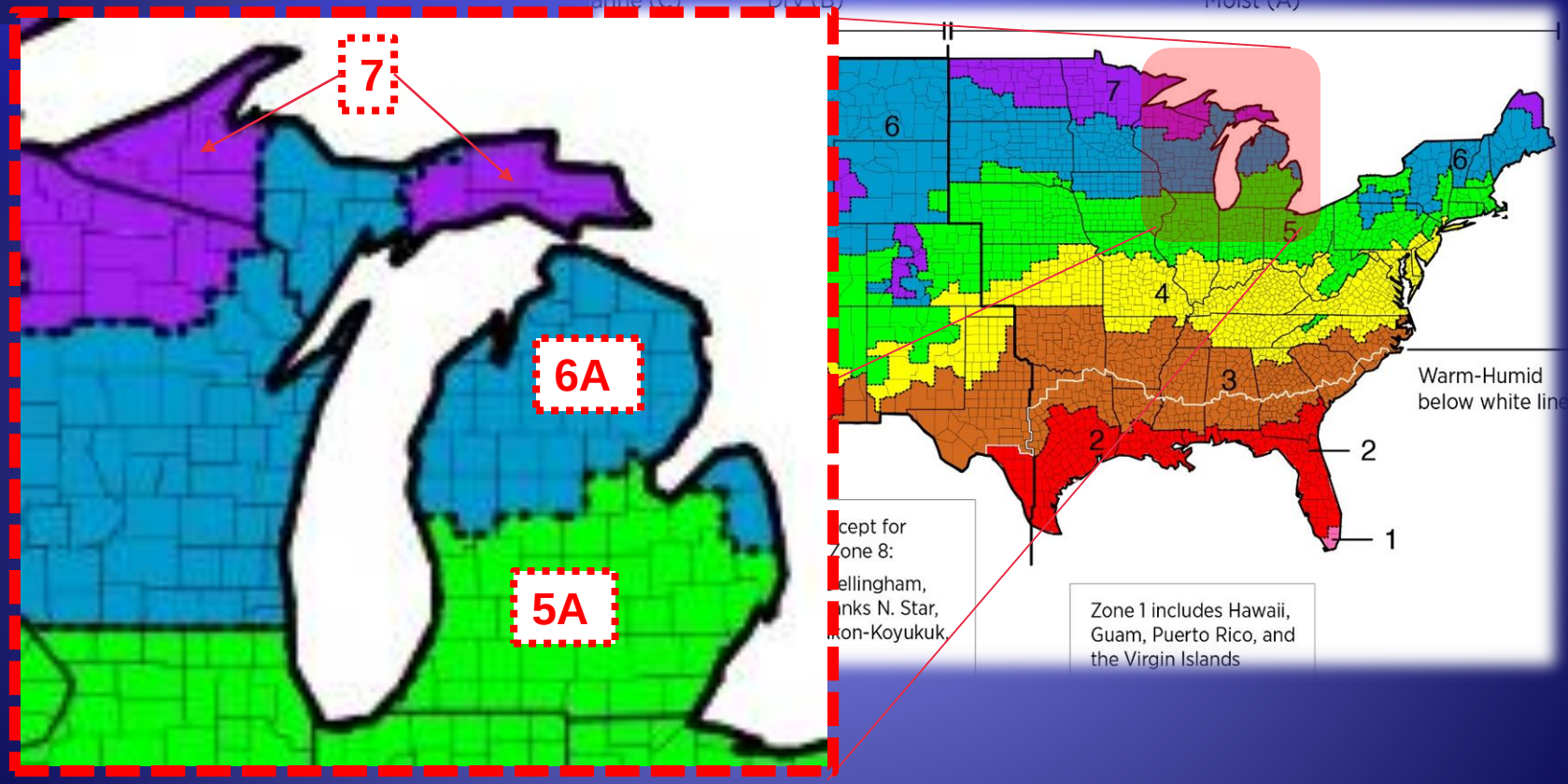
Required	1	1 Provided

Sec. 403.2 Separate Facilities Each Sex Yes
Exception 1 Private Facilities No
Exception 2 15 or Less Employees & Customers No
Exception 3 50 or Less Mercantile Occupancies No

Drawing Information for: Other Technical Criteria

MBC Chapters 13, 16 & 17

Ch. 13 Energy Efficiency



Ch. 13 Energy Efficiency

Roofs	
Insulation Entirely above Deck	
Metal Building	
Attic and Other	
Walls, Above-Grade	
Mass	
Metal Building	
Steel-Framed	
Wood-Framed and Other	

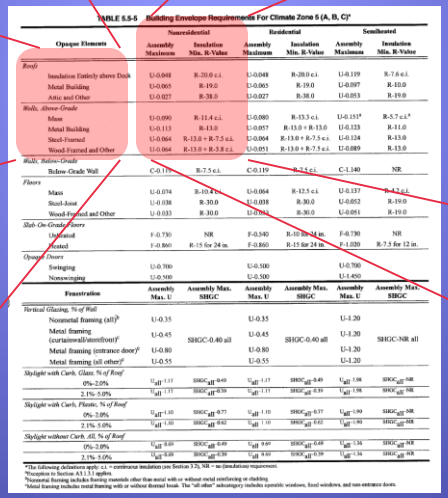


TABLE 5.5-5 Building Envelope Requirements For Climate Zone 5 (A, B, C)*

Opaque Elements	Nonresidential Assembly Maximum	Nonresidential Insulation Min. R-Value	Residential Assembly Maximum	Residential Insulation Min. R-Value	Semiheated Assembly Maximum	Semiheated Insulation Min. R-Value
Roofs						
Insulation Entirely above Deck	U-0.048	R-20.0 c.i.	U-0.048	R-20.0 c.i.	U-0.119	R-7.6 c.i.
Metal Building	U-0.065	R-19.0	U-0.065	R-19.0	U-0.097	R-10.0
Attic and Other	U-0.027	R-38.0	U-0.027	R-38.0	U-0.053	R-19.0
Walls, Above-Grade						
Mass	U-0.090	R-11.4 c.i.	U-0.080	R-13.3 c.i.	U-0.151[g]	R-5.7 c.i.[g]
Metal Building	U-0.113	R-13.0	U-0.057	R-13.0 + R-13.0	U-0.123	R-11.0
Steel-Framed	U-0.064	R-13.0 + R-7.5 c.i.	U-0.064	R-13.0 + R-7.5 c.i.	U-0.124	R-13.0
Wood-Framed and Other	U-0.064	R-13.0 + R-3.8 c.i.	U-0.051	R-13.0 + R-7.5 c.i.	U-0.089	R-13.0
Walls, Below-Grade						
Below-Grade Wall	C-0.119	R-7.5 c.i.	C-0.119	R-7.5 c.i.	C-1.140	NR
Floors						
Mass	U-0.074	R-10.4 c.i.	U-0.064	R-12.5 c.i.	U-0.137	R-4.2 c.i.
Steel-Joist	U-0.038	R-30.0	U-0.038	R-30.0	U-0.052	R-19.0
Wood-Framed and Other	U-0.033	R-30.0	U-0.033	R-30.0	U-0.051	R-19.0
Slab-On-Grade Floors						
Unheated	F-0.730	NR	F-0.540	R-10 for 24 in.	F-0.730	NR
Heated	F-0.860	R-15 for 24 in.	F-0.860	R-15 for 24 in.	F-1.020	R-7.5 for 12 in.
Opaque Doors						
Swinging	U-0.700		U-0.500		U-0.700	
Nonswinging	U-0.500		U-0.500		U-1.450	
Fenestration	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**
Vertical Glazing, % of Wall:						
Nonmetal framing (all)[b]	U-0.35		U-0.35		U-1.20	
Metal framing (curtainwall/storefront)[c]	U-0.45	SHGC-0.40 all	U-0.45	SHGC-0.40 all	U-1.20	SHGC-NR all
Metal framing (entrance door)[c]	U-0.80		U-0.80		U-1.20	
Metal framing (all other)[c]	U-0.55		U-0.55		U-1.20	
Skylight with Curb, Glass, % of Roof						
0%-2.0%	U_{all} 1.13	$SHGC_{all}$ 0.49	U_{all} 1.17	$SHGC_{all}$ 0.49	U_{all} 1.98	$SHGC_{all}$ NR
2.1%-5.0%	U_{all} 1.13	$SHGC_{all}$ 0.39	U_{all} 1.17	$SHGC_{all}$ 0.39	U_{all} 1.98	$SHGC_{all}$ NR
Skylight with Curb, Plastic, % of Roof						
0%-2.0%	U_{all} 1.10	$SHGC_{all}$ 0.77	U_{all} 1.10	$SHGC_{all}$ 0.77	U_{all} 1.90	$SHGC_{all}$ NR
2.1%-5.0%	U_{all} 1.10	$SHGC_{all}$ 0.62	U_{all} 1.10	$SHGC_{all}$ 0.62	U_{all} 1.90	$SHGC_{all}$ NR
Skylight without Curb, All, % of Roof						
0%-2.0%	U_{all} 0.69	$SHGC_{all}$ 0.49	U_{all} 0.69	$SHGC_{all}$ 0.49	U_{all} 1.36	$SHGC_{all}$ NR
2.1%-5.0%	U_{all} 0.69	$SHGC_{all}$ 0.39	U_{all} 0.69	$SHGC_{all}$ 0.39	U_{all} 1.36	$SHGC_{all}$ NR

*The following definitions apply: c.i. = continuous insulation (see Section 3.2), NR = no (insulation) requirement.
[b]Exception to Section A1.1.3.1 applies.
[c]Nonmetal framing includes framing materials other than metal with or without metal reinforcing or cladding.
[e]Metal framing includes metal framing with or without thermal break. The "all other" subcategory includes operable windows, fixed windows, and non-entrance doors.

Nonresidential Assembly Maximum	Nonresidential Insulation Min. R-Value
U-0.048	R-20.0 c.i.
U-0.065	R-19.0
U-0.027	R-38.0
U-0.090	R-11.4 c.i.
U-0.113	R-13.0
U-0.064	R-13.0 + R-7.5 c.i.
U-0.064	R-13.0 + R-3.8 c.i.

Ch. 16 Structural Design

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

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	Soils	Yes
Sec. 1705.7	Driven Foundations	Not Used
Sec. 1705.8	Cast-In-Place Deep Foundations	Yes
Sec. 1705.9	Helical Foundations	Not Used
Sec. 1705.10	Special Inspections For Wind Resistance	Not Used
Sec. 1705.11	Special Inspections For Seismic Resistance	Not Used
Sec. 1705.12	Testing and Qualification for Seismic Resistance	Not Used
Sec. 1705.13	Sprayed Fire-Resistant Materials	Not Used
Sec. 1705.14	Mastic and Intumescent Fire-Resistant Coatings	Not Used
Sec. 1705.15	Exterior Insulation and Finish Systems (EIFS)	Yes
Sec. 1705.16	Fire-Resistant Penetration and Joints	Yes
Sec. 1705.17	Special Inspection for Smoke Control	Not Used

Ch. 17 Special Inspections

C. (con't)	CONCRETE CONSTRUCTION (1704.4 & Table 1704.4):			
CHECK BOX BELOW IF REQ'D.	CONTINUAL	PERIODIC	REQUIRED VERIFICATION AND INSPECTIONS:	PLEASE PROVIDE THE NAME AND PHONE NUMBER OF THE SPECIAL INSPECTION AGENCY AND INDIVIDUAL PERFORMING THIS SPECIAL INSPECTION SERVICE IN THE SPACE BELOW.
	–	X	10. Erection of precast concrete members. Referenced Standard: ACI 318: Ch. 16	
	–	X	11. Verification of in-situ concrete strength, prior to stressing of tendons in posttensioned concrete and prior to the removal of shores and forms from beams and structural slabs. Referenced Standard: ACI 318: 6.2	
	–	X	12. Inspect formwork for shape, location and dimensions of the concrete members being formed. Referenced Standard: ACI 318: 6.1.1	

Thank You!

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