Commercial Plan Review: Exempt Buildings

Plan review by a

Minnesota Building Official-Limited

Presented by: Lee Gladitsch, DLI/CCLD Construction Code Rep & Building Senior Plan Reviewer.

Lee.Gladitsch@State.MN.US

651.284.5801

DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

Disclaimers

Some of the content material is;

- Reproduced from the 2018 International Building Code®, Copyright© 2017;
- Developed by the International Code Council, Inc. or the 2020 Minnesota Building Code;

The text used in this program;

- Does not necessarily represent actual code language;
- Some text may be summarized, highlighted or generalize the code section;
- Additional provisions or exceptions may be included in the actual code section;

Code reference cites are given for the purpose of verifying the complete provisions of the section.

Course Objective

- Overview the Minnesota Commercial Building Code to Apply Key Code Sections to a Plan Review

Course Outcome

Participants will be able to:

- Module #1 - Identify projects within BOL authority
- Module #2 - Assess package completeness
- Module #3 - Writing an effective Plan Review letter.
- Module #4 - Review a commercial project; Plan Review Basics

DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

Module 1:

What Projects are within the Authority of a BOL to Review?

What is Design Certification?

- MN Administrative Rule 1800.5200 requires all Construction Documents to be Certified (signed) by…
  - **A**rchitects
  - **E**ngineers
  - **L**and **S**urveyors
  - **L**andscape **A**rchitects
  - **G**eologists & Soil Scientists
  - **I**nterior **D**esigners
- AELSLAGID Board
- http://mn.gov/aelslagid (to find a Licensee or CID)

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed _____ under the laws of the state of Minnesota.

_____
Signature

_____
Typed or Printed Name

_____ _____
Date License Number

EXEMPT/NON-EXEMPT

EXEMPT/NON-EXEMPT classifications per the Board of AELSLAGID and not CCLD.

NON-EXEMPT Buildings

- **Require** design professional Certification. (architect or engineer)
- **Can not** be reviewed or inspected by BOL (Inspections allowed under the supervision/direction of the BO)

EXEMPT Buildings

- Certification by an architect/engineer **NOT required**.
- Still required to meet building code requirements.
- **Can** be reviewed and inspected by BOL.

Both exempt and non-exempt buildings shall comply with the Minnesota State Building Code.

The Exceptions to Certification

3 Places/Categories to Look for Exempt Work:

MN Statute 326.03, Subpart 2 — Exempt Building Types
https://www.revisor.mn.gov/statutes/cite/326.03

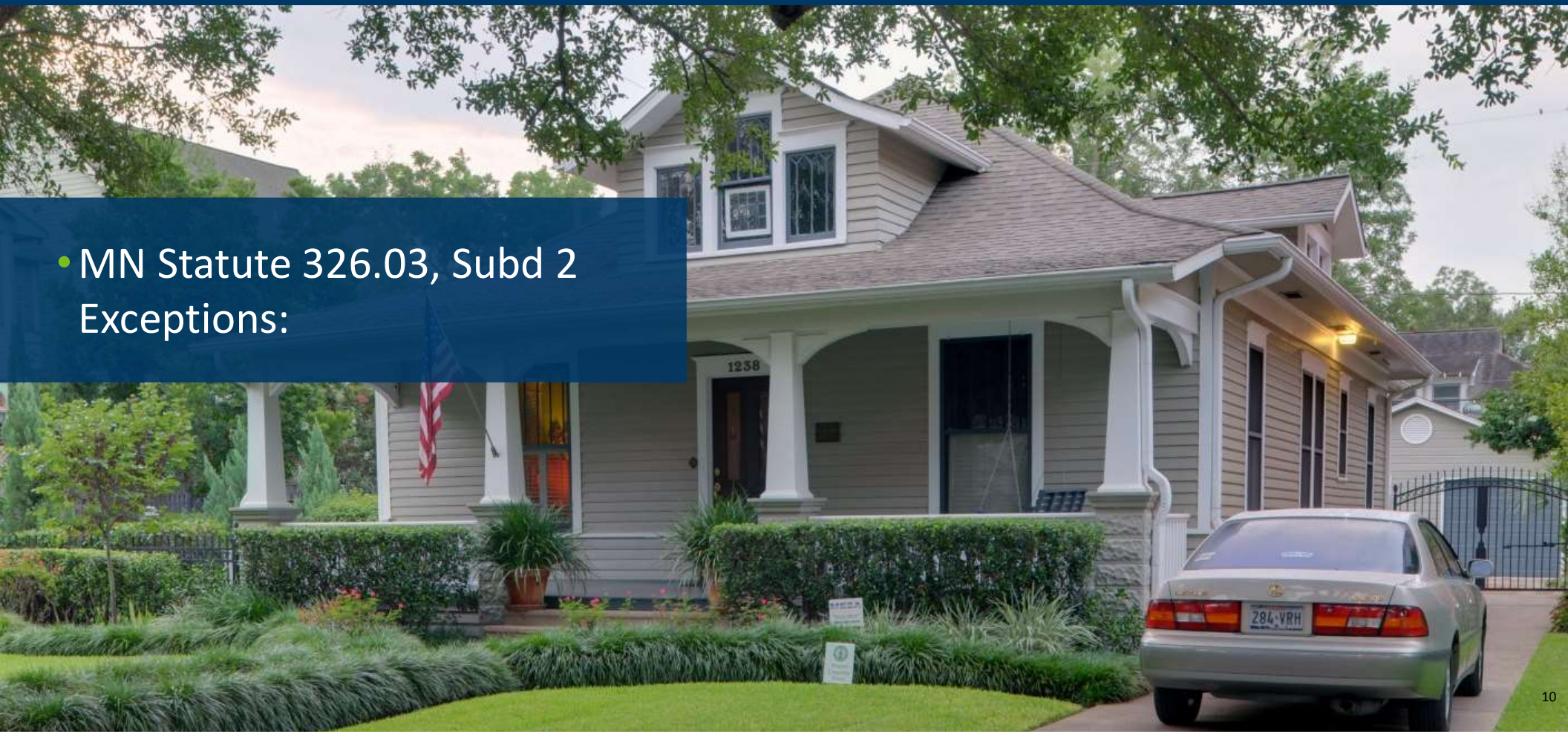
Minnesota Rule 1800. 5200 — Statutory and Renovation Exemptions
https://www.revisor.mn.gov/rules/1800.5200/

Minnesota Rule 1800. 5900 — Exempt Classes of Buildings
https://www.revisor.mn.gov/rules/1800.5900/

B.O.L Authority

MN Statue 326b.133 Subd. 3a (c) In part reads:

Exempt Building Types



- MN Statute 326.03, Subd 2 Exceptions:

Exempt Building Types

- MN Statute 326.03, Subd 2 Exceptions:

Exempt Building Types

- MN Statute 326.03, Subd 2 Exceptions:

Exempt Building Types

- MN Statute 326.03, Subd 2 Exceptions:

Exempt Remodeling & Renovations

Minnesota Rule 1800.5200 – Subpart 3

EXEMPT Remodeling and Renovation projects are projects that DO NOT

- Change the electrical or mechanical design loads
- Change the structural live or dead loads
- Change the building access or exit patterns
- Change of occupancy

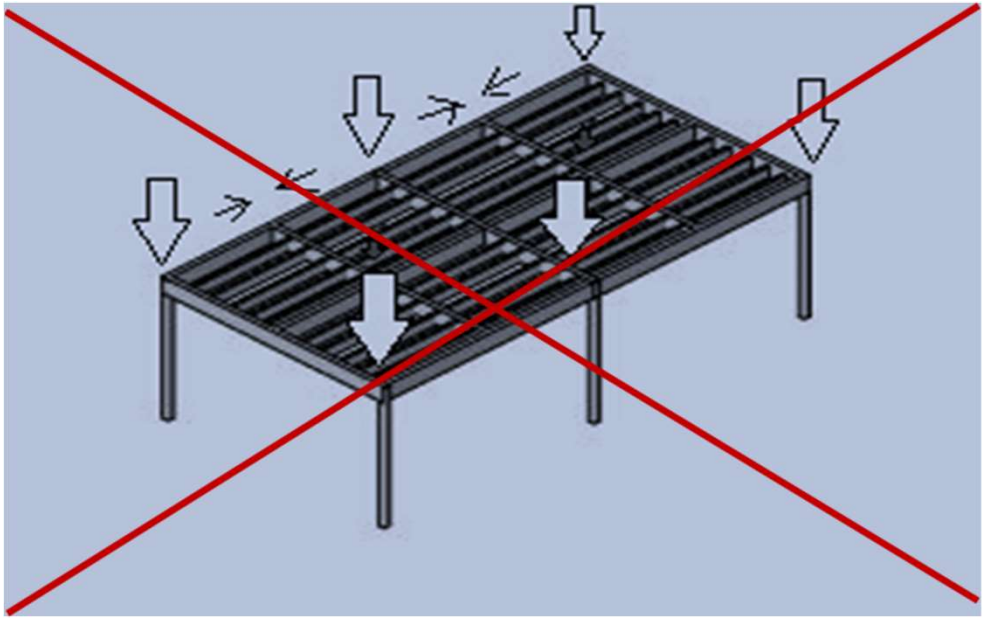
Exempt Remodeling & Renovations

MN Rule 1800.5200- Renovation work which **DOES NOT:**

Change the Mechanical or Electrical loads

Exempt Remodeling & Renovations

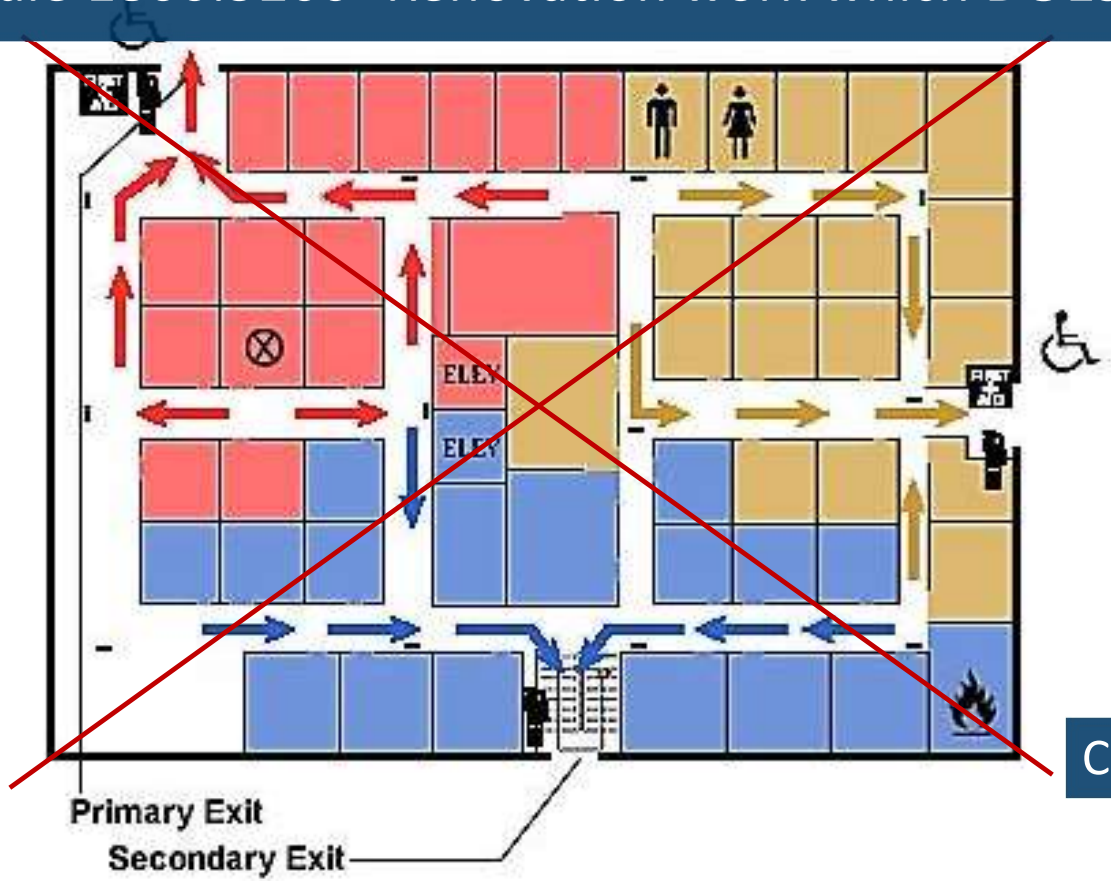
MN Rule 1800.5200- Renovation work which **DOES NOT:**



Change the structural live or dead loads

Exempt Remodeling & Renovations

MN Rule 1800.5200- Renovation work which **DOES NOT:**



Change Building Access or Exit Patterns

Exempt Remodeling & Renovations

MN Rule 1800.5200- Renovation work which **DOES NOT:**

Change Building Occupancy

Exempt Classes of Buildings

MN Rule 1800.5900

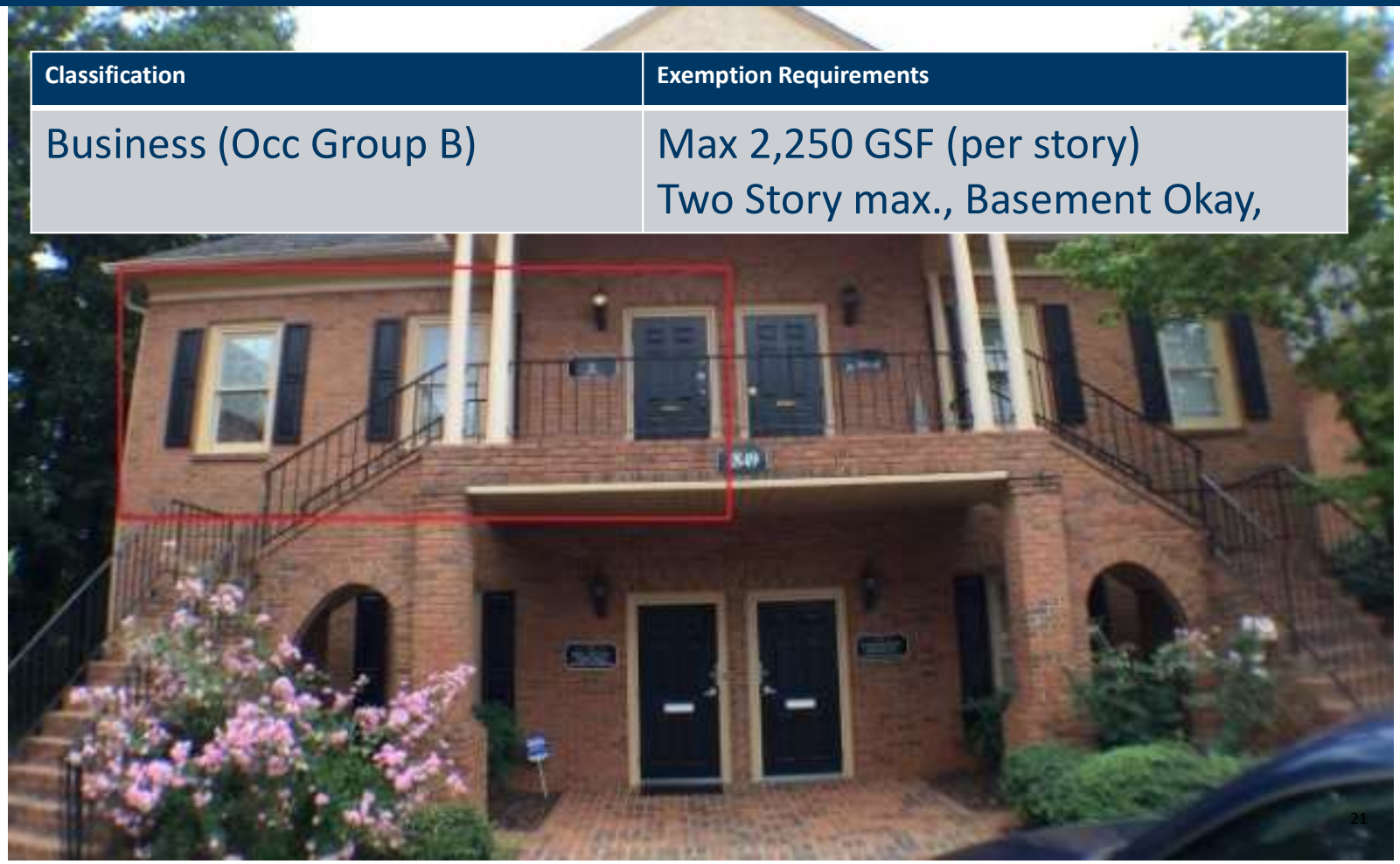
Exempt Classes of Buildings

Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Assembly (Occ Group A-2)	Max. 1000 GSF, One Story, No Basement, Max seating for 20 persons

Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Business (Occ Group B)	Max 2,250 GSF (per story) Two Story max., Basement Okay,



Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Factory (Occ Group F-2)	Max. 3000 GSF One Story, No Basement,

Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Mercantile (Occ Group M)	Max 1,500 GSF (per story) Two Story max., Basement Okay,

Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Residential (Occ Group R)	Apartments/Condos ≤ 3 Dwelling Units Congregate Residences ≤ 10 residents

Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Storage (Occ Group S-1 Aircraft Hangars & Helistops)	Max. 3000 GSF One Story, No Basement See IBC Section 412

Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Storage (S-2 except parking garages)	Max. 5000 GSF One Story, No Basement,

Exempt Classes of Buildings
MN Rule 1800.5900

Classification	Exemption Requirements
Utility (Occ Group U)	Max. 1000 GSF One Story, No Basement, (fences over 8 feet; tanks and towers; & retaining walls with over 4 feet of vertical exposed face NOT exempt)

BOL Scope Quiz- 1

2200 Square Foot
New Dentist Office
Type II Construction

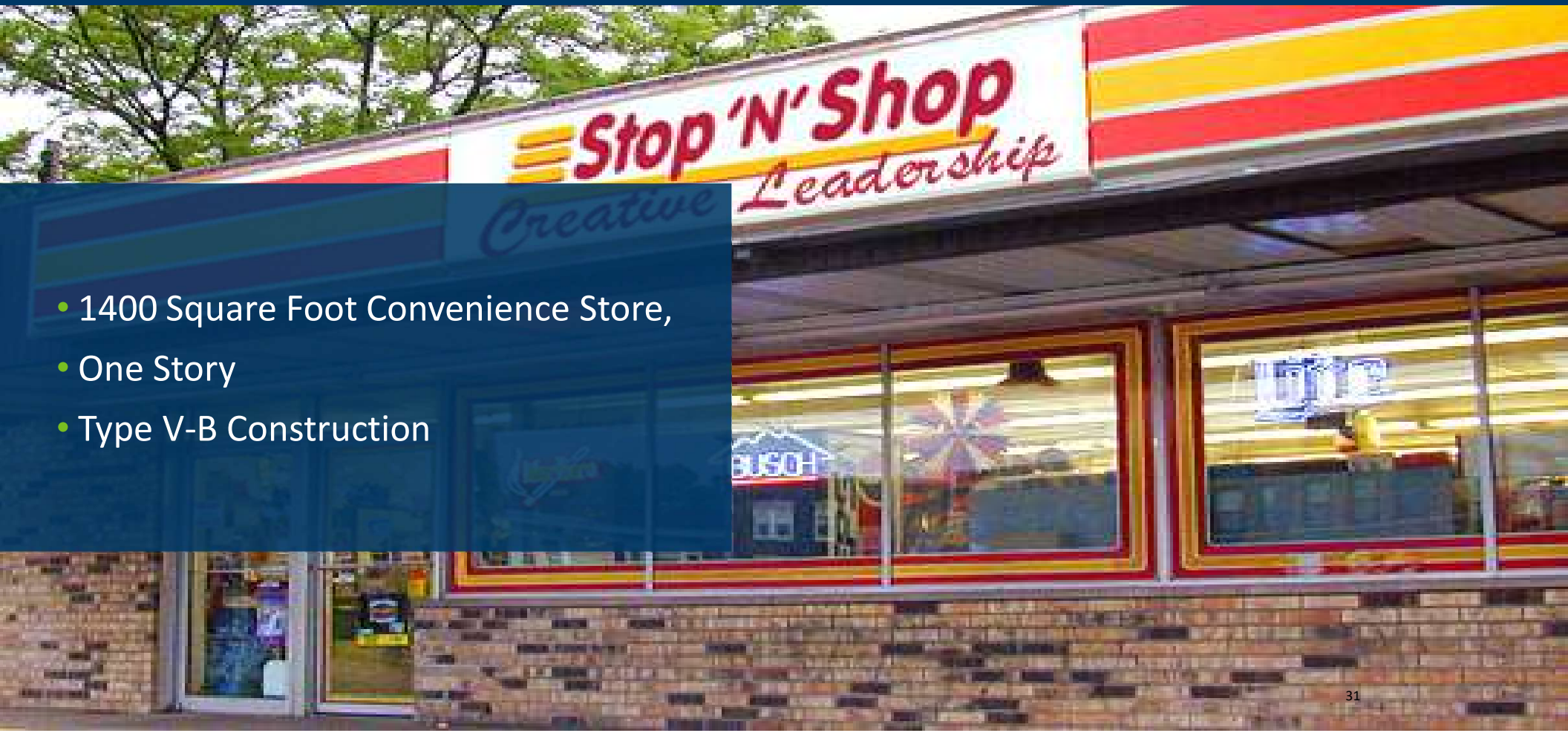
BOL Scope Quiz- 2

- 6000 Square Foot New 3-Apartment “Manor House”
- Three Story, Shared Lobby Entrance
- Type V-B Construction

BOL Scope Quiz- 3

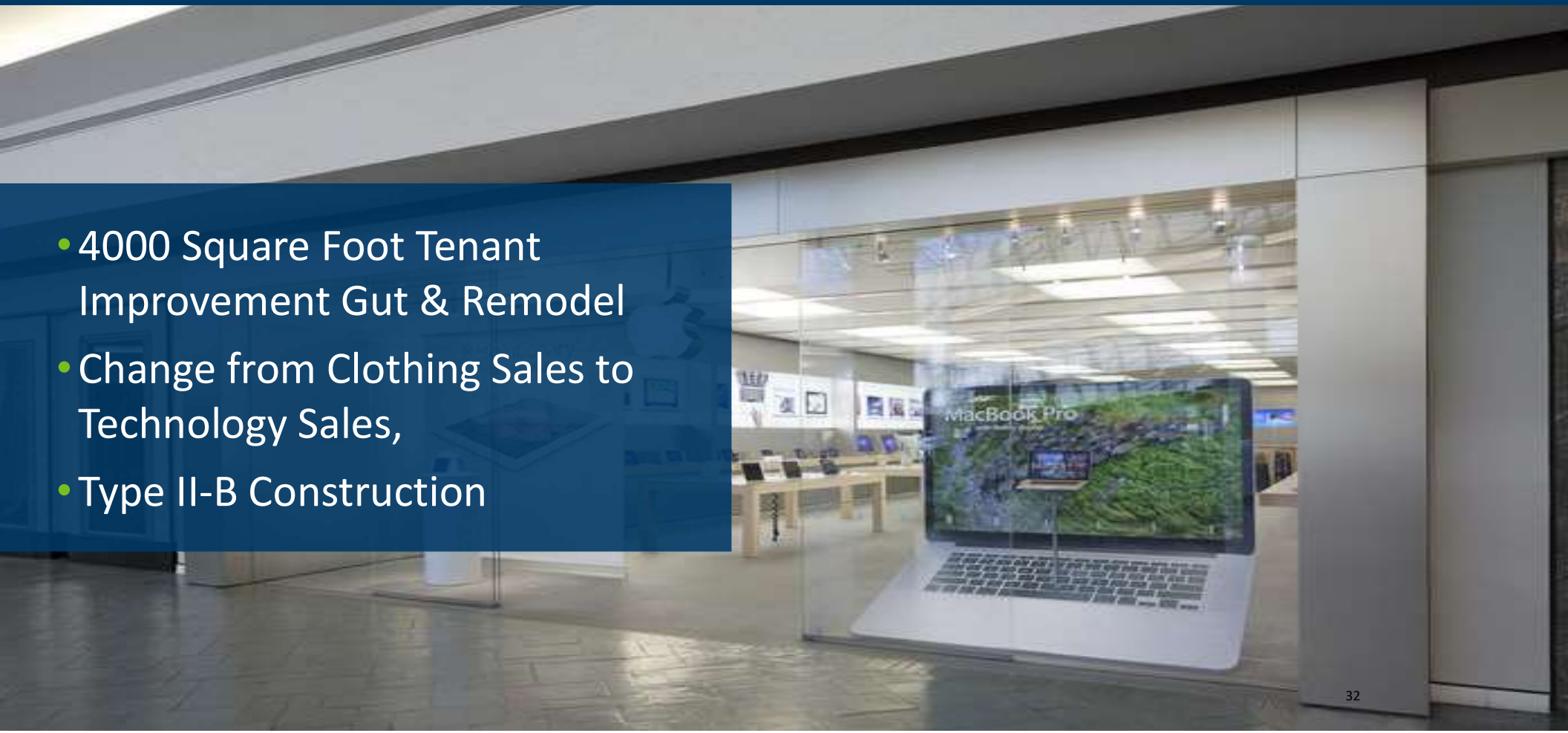
- 4,400 Square Foot New 4-Unit Apartment,
- Two Story
- Units above and below.
- Type V-B Construction

BOL Scope Quiz- 4



- 1400 Square Foot Convenience Store,
- One Story
- Type V-B Construction

BOL Scope Quiz- 5



- 4000 Square Foot Tenant Improvement Gut & Remodel
- Change from Clothing Sales to Technology Sales,
- Type II-B Construction

DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

Module 2:
Critical Components of a Commercial Permit Application

Parts of a Complete Permit Application Package

STATE REQUIRES;

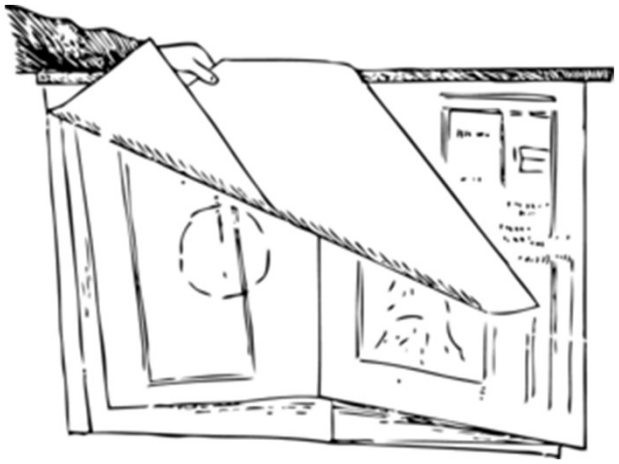
- Complete set of plans and Specifications (Addenda and/or Change orders)
- Completed plan review application and fees paid
- Code Record/Analysis
- Sample Structural Calculations
- Special Inspection Program
- Soils Investigative Report
- Energy Code Compliance Forms

POSSIBLE ADDITIONAL CITY REQUIREMENTS (varies by city);

- Planning and Zoning Approval by City
- SAC/WAC Determination (if located in the metro)
- Signed Survey (If required by City Ordinance)

Construction Documents

- Civil Site Plan including grading & improvements
- Architectural Site Plan (May be combined with Civil on small projects)
- Architectural Floor Plans, Sections, Elevations, Roof Plan, Details, and Schedules
- Structural Plans (may be combined with architectural for small projects)
- Mechanical Plans (HVAC)
- Plumbing Plans (Separate review and permit by plumbing inspections).
- Electrical Plans
- Specifications



Building Code Analysis

- Edition of the Design Building Codes (Year)
- Building Construction Type
- Occupancy Group(s) Mixed-use; Separated or Non-separated
- Sprinklered/non-sprinklered (Type of system – 13, 13R, 13D
- Building Area and modifications (allowed and provided)
- Number of Stories & Building Height (allowed and provided)
- Setbacks from property lines
- Fire Resistance Rated Components and Assemblies
- Plumbing Fixture Count Analysis

Energy Code Analysis

Edition of the Design Energy Code

- Compliance Path Selection (ASHRAE 90.1-2014 or 2018 IECC; then Prescriptive or Performance Method)
- Building Thermal Envelope Criteria:
  - Wall Insulation
  - Roof Insulation
  - Foundation Insulation
  - Window U-values & Solar Heat Gain Coefficient
  - Air Barrier Specification
- Mechanical HVAC System Efficiency & Controls
- Lighting Efficiency & Controls

DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

Module 3:
Writing an Effective Plan Review Letter

Parts of a Plan Review Letter

- City and Reviewer Contact Information
- Directed to the Designer/Applicant
- Review Date
- Application Completion Received Date
- Application/ Permit Number
- Tie-in to the Current Code
- List of items requiring attention (note Location in Contract Documents cited, and Code Reference cited)
- Indicate the ACTION REQUIRED (add, delete, modify…)
- Indicate any COORDINATED WORK
- Request Supplemental Documents if needed

Parts of a Plan Review Letter

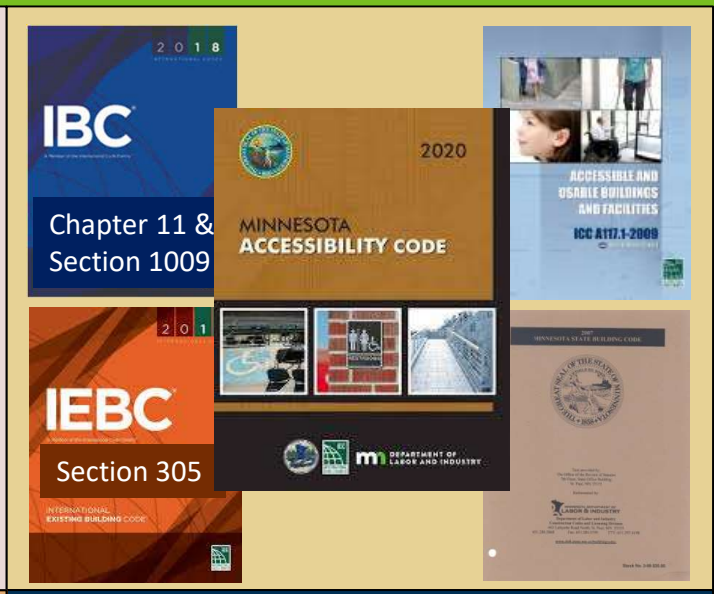
- City and Reviewer Contact Information
- Directed to the Designer/Applicant
- Review Date
- Application Completion Received Date
- Application/ Permit Number
- Tie-in to the Current Code
- List of items requiring attention (note Location in Contract Documents cited, and Code Reference cited)
- Indicate the ACTION REQUIRED
- Indicate any COORDINATED WORK
- Request Supplemental Documents if needed

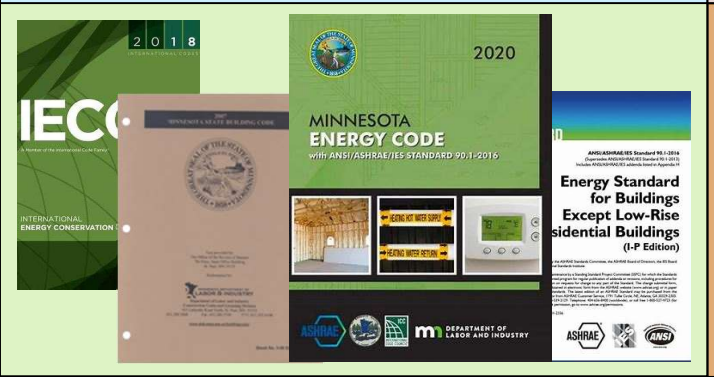
Sign It!

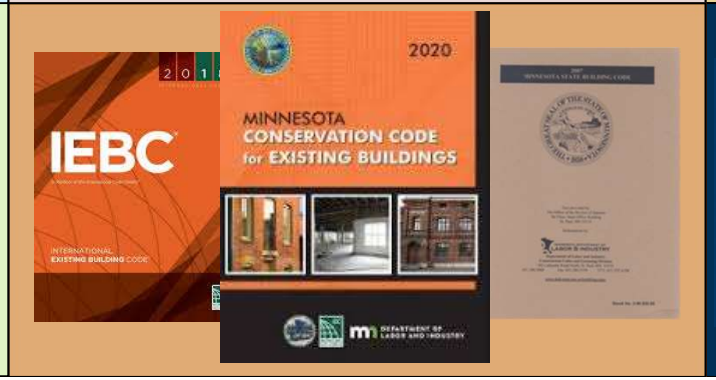
DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

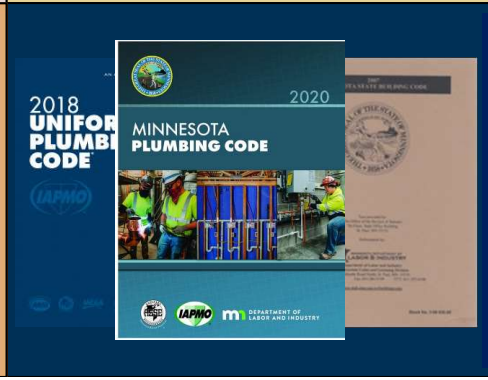
Module 4:
Plan Review Basics

Applicable Codes for Commercial Plan Review









Reviewed separately by DLI-Plumbing or by delegation agreement with the Municipality

How To Start- Basic Questions

- Has the project been approved by Planning & Zoning, Engineering?
- Which codes apply (scoping)?
- What is the Occupancy Group(s)?
- What is the Construction Type?
- What is the Building Area?
- Is this project exempt?

  (Am I qualified to review this?)
- Has the Plumbing Review been completed by the State?
- Has the sewer & water access been approved by the AHJ (Met Council in the Metro Area?)

Overview

Occupancy Groups

- What is the proposed Occupancy?

Construction Types

What is the proposed Construction Type?

[IBC Chapter 6]

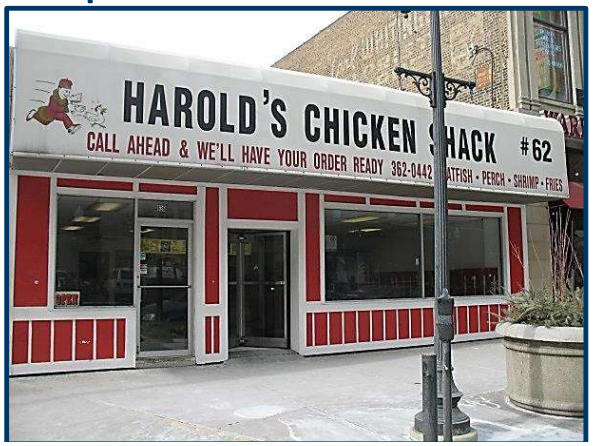
- Are the construction materials consistent with the construction type proposed?

Describe Buildings Like a Building Official:

- Primary Occupancy Group?
- Construction Type?
- How many stories?
- How big is it?
- Sprinkled or Not?

A

B



C

Overview

Occupancy Groups

- How would you classify this Occupancy?

Professional Tutoring Service for 24 Children K-12

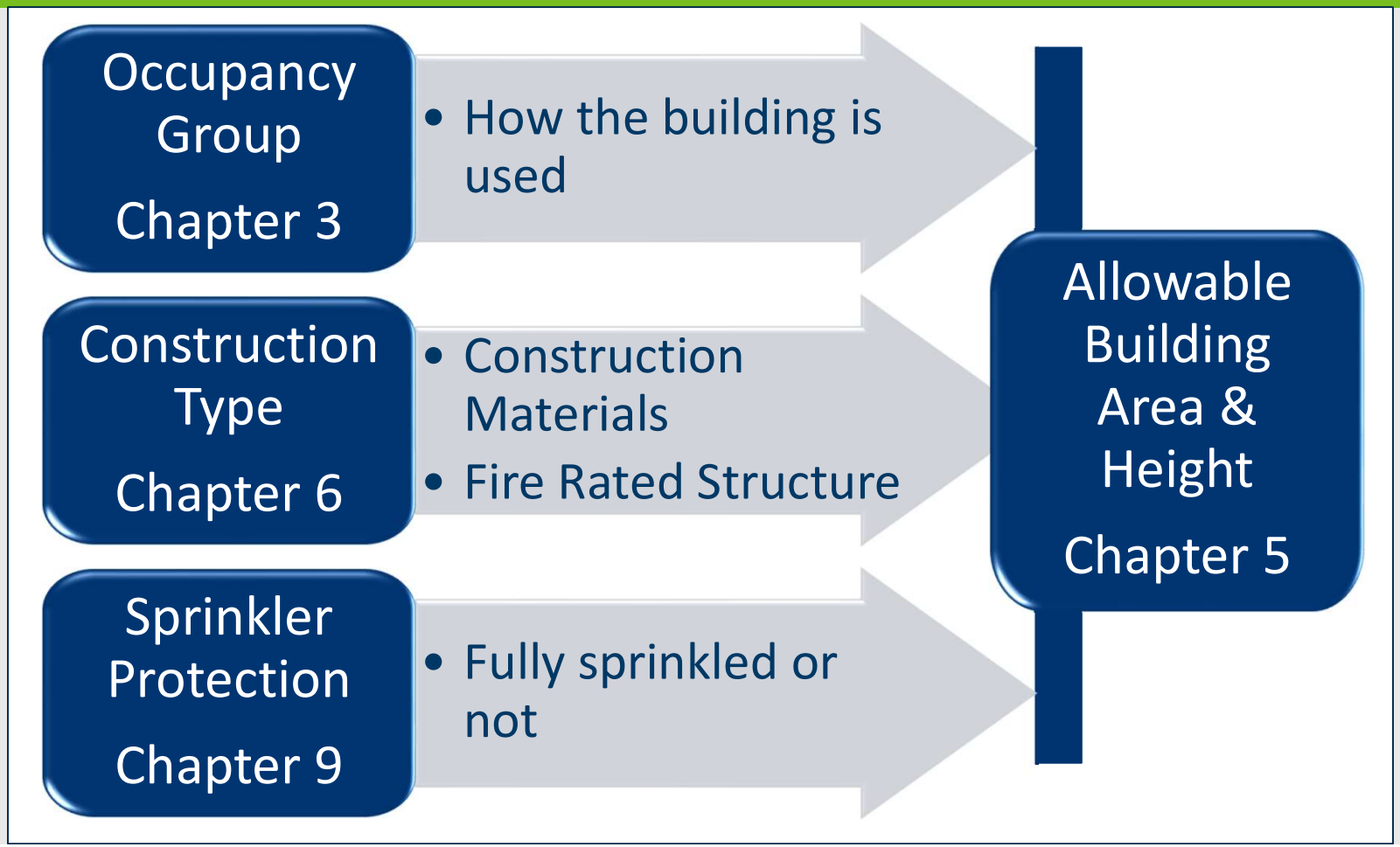
Determining Building Area

- Gross or Net? (Definitions: *Area, Building*) IBC 202

- What about mezzanines?

- What about overhangs, extended overhangs, and canopies?

How do these all work together?



Sammy's Sub Shop Construction Documents

01 Site Plan
02 Specifications
03 Main Level Plan
03A Plan Notes
04 Upper Level Plan
05 West Elevation
06 South Elevation
07 East Elevation
08 Building Section
09 Building Sections
10 Typical Wall Section
11 Main Ceiling Plan
12 Upper Ceiling Plan

- What is the Occupancy Group?
- How Many Stories?
- What is the Area?
- How Many Seats?

Can you review Sammy's Application?

MR1800.5900 Next Slide

Minnesota Administrative Rules

1800.5900 CLASSES OF BUILDINGS.

In accordance with Minnesota Statutes, sections 326.02, subdivision 5, and 326.03, subdivision 2, the following classes of buildings are exempt subject to the limitations of the elements listed below:

Classifications	Elements that must be met to be exempt*
Assembly (as defined by the MSBC under occupancy group A2: Dining and drinking less than 50 persons)	Not greater than one story with no basement; and Seating for not more than 20 persons; and Not greater than 1,000 gross square footage (GSF)
Business (as defined by the MSBC under occupancy group B)	Not greater than two story with a basement; and Not greater than 2,250 GSF
Factory (as defined by the MSBC under occupancy group F2)	Not greater than one story with no basement; and Not greater than 3,000 GSF
Mercantile (as defined by the MSBC under occupancy group M)	Not greater than two story with a basement; and Not greater than 1,500 GSF
Residential (as defined by the MSBC under occupancy group R)	Apartment houses/condominiums (three units or less), dwellings, lodging houses, attached single-family dwellings/townhomes, and congregate residences (each accommodating ten persons or less)
Storage (as defined by the MSBC under occupancy group S1: Aircraft hangars and helistops)	Not greater than one story with no basement; and Not greater than 3,000 GSF
Storage (as defined by the MSBC under occupancy group S2 except for parking garages, open or enclosed)	Not greater than one story with no basement; and Not greater than 5,000 GSF
Utility (as defined by the MSBC under occupancy group U except for fences higher than 8', tanks and towers, and retaining walls with over 4' of vertical exposed face)	Not greater than one story with no basement; and Not greater than 1,000 GSF

How does the IBC work together?

IRC Building Planning

- **Chapter 3 Building Planning**

IBC Building Planning

- **Chapter 3 Occupancy Groups**
- **Chapter 4 Special Provisions**
- **Chapter 5 Allowable Height & Area**
- **Chapter 6 Construction Types**
- **Chapter 7 Fire and Protection (passive)**
- **Chapter 8 Interior Finishes**
- **Chapter 9 Fire Protection & Life Safety Systems**
- **Chapter 10 Means of Egress**
- **Chapter 11 Accessibility**
- **Chapter 12 Interior Environment**

How does the IBC work together?

IRC Building Planning

- **Chapter 4 Foundations**
- Chapter 5 Floors
- Chapter 6 Wall Construction
- Chapter 7 Wall Covering
- Chapter 8 Roof/Ceiling
- Chapter 9 Roof Assemblies/Coverings
- Chapter 10 Chimneys and Fireplaces
- Chapter P29 Sprinkler Systems

IBC Building Planning

- Chapter 9 Fire Protection
- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- Chapter 16 Structural Design
- Chapter 17 Special Inspections
- **Chapter 18 Soils & Foundations**
- Chapter 19 Concrete
- Chapter 20 Aluminum
- Chapter 21 Masonry
- Chapter 22 Steel
- Chapter 23 Wood
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- Chapter 26 Plastics & Foam
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

How does the IBC work together?

IRC Building Planning

- Chapter 4 Foundations
- **Chapter 5 Floors**
- Chapter 6 Wall Construction
- Chapter 7 Wall Covering
- Chapter 8 Roof/Ceiling
- Chapter 9 Roof Assemblies/Coverings
- Chapter 10 Chimneys and Fireplaces
- Chapter P29 Sprinkler Systems

IBC Building Planning

- Chapter 9 Fire Protection
- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- **Chapter 16 Structural Design**
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- **Chapter 19 Concrete**
- **Chapter 20 Aluminum**
- **Chapter 21 Masonry**
- **Chapter 22 Steel**
- **Chapter 23 Wood**
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- Chapter 26 Plastics & Foam
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

How does the IBC work together?

IRC Building Planning

- Chapter 4 Foundations
- Chapter 5 Floors
- **Chapter 6 Wall Construction**
- Chapter 7 Wall Covering
- Chapter 8 Roof/Ceiling
- Chapter 9 Roof Assemblies/Coverings
- Chapter 10 Chimneys and Fireplaces
- Chapter P29 Sprinkler Systems

IBC Building Planning

- Chapter 9 Fire Protection
- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- **Chapter 16 Structural Design**
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- **Chapter 19 Concrete**
- Chapter 20 Aluminum
- **Chapter 21 Masonry**
- **Chapter 22 Steel**
- **Chapter 23 Wood**
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- **Chapter 26 Plastics & Foam**
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

How does the IBC work together?

IRC Building Planning

- Chapter 4 Foundations
- Chapter 5 Floors
- Chapter 6 Wall Construction
- **Chapter 7 Wall Covering**
- Chapter 8 Roof/Ceiling
- Chapter 9 Roof Assemblies/Coverings
- Chapter 10 Chimneys and Fireplaces
- Chapter P29 Sprinkler Systems

IBC Building Planning

- Chapter 9 Fire Protection
- **Chapter 12 Interior Finishes**
- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- Chapter 16 Structural Design
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- Chapter 19 Concrete
- Chapter 20 Aluminum
- Chapter 21 Masonry
- Chapter 22 Steel
- Chapter 23 Wood
- **Chapter 24 Glass & Glazing**
- **Chapter 25 Gypsum Board & Plaster**
- **Chapter 26 Plastics & Foam**
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

How does the IBC work together?

IRC Building Planning

- Chapter 4 Foundations
- Chapter 5 Floors
- Chapter 6 Wall Construction
- Chapter 7 Wall Covering
- **Chapter 8 Roof/Ceiling**
- Chapter 9 Roof Assemblies/Coverings
- Chapter 10 Chimneys and Fireplaces
- Chapter P29 Sprinkler Systems

IBC Building Planning

- Chapter 9 Fire Protection
- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- **Chapter 16 Structural Design**
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- **Chapter 19 Concrete**
- Chapter 20 Aluminum
- Chapter 21 Masonry
- **Chapter 22 Steel**
- **Chapter 23 Wood**
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- **Chapter 26 Plastics & Foam**
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

How does the IBC work together?

IRC Building Planning

- Chapter 4 Foundations
- Chapter 5 Floors
- Chapter 6 Wall Construction
- Chapter 7 Wall Covering
- Chapter 8 Roof/Ceiling
- **Chapter 9 Roof Assemblies/Coverings**
- Chapter 10 Chimneys and Fireplaces
- Chapter P29 Sprinkler Systems

IBC Building Planning

- Chapter 9 Fire Protection
- Chapter 14 Exterior Walls
- **Chapter 15 Roof Assemblies**
- Chapter 16 Structural Design
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- Chapter 19 Concrete
- Chapter 20 Aluminum
- Chapter 21 Masonry
- Chapter 22 Steel
- Chapter 23 Wood
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- Chapter 26 Plastics & Foam
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

How does the IBC work together?

IRC Building Planning

- Chapter 4 Foundations
- Chapter 5 Floors
- Chapter 6 Wall Construction
- Chapter 7 Wall Covering
- Chapter 8 Roof/Ceiling
- Chapter 9 Roof Assemblies/Coverings
- **Chapter 10 Chimneys and Fireplaces**
- Chapter P29 Sprinkler Systems

IBC Building Planning

- Chapter 9 Fire Protection
- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- **Chapter 16 Structural Design**
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- Chapter 19 Concrete
- Chapter 20 Aluminum
- **Chapter 21 Masonry**
- Chapter 22 Steel
- Chapter 23 Wood
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- Chapter 26 Plastics & Foam
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

How does the IBC work together?

IRC Building Planning

- Chapter 4 Foundations
- Chapter 5 Floors
- Chapter 6 Wall Construction
- Chapter 7 Wall Covering
- Chapter 8 Roof/Ceiling
- Chapter 9 Roof Assemblies/Coverings
- Chapter 10 Chimneys and Fireplaces
- **Chapter P29 Sprinkler Systems**

IBC Building Planning

- **Chapter 9 Fire Protection**
- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- Chapter 16 Structural Design
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- Chapter 19 Concrete
- Chapter 20 Aluminum
- Chapter 21 Masonry
- Chapter 22 Steel
- Chapter 23 Wood
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- Chapter 26 Plastics & Foam
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators

Break for the Day

Commercial Plan Review: Exempt Buildings (Part II)

Plan review by a

Minnesota Building Official-Limited

Presented by: Lee Gladitsch, DLI/CCLD Construction Code Rep & Building Senior Plan Reviewer.

Lee.Gladitsch@State.MN.US

651.284.5801

DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

Commercial Plan Review: Exempt Buildings (Part II)

Plan review by a

Minnesota Building Official-Limited

Presented by: Lee Gladitsch, DLI/CCLD Construction Code Rep & Building Senior Plan Reviewer.

Lee.Gladitsch@State.MN.US

651.284.5801

DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

The Exceptions to Certification

3 Places/Categories to Look for Exempt Work:

MN Statute 326.03, Subpart 2 — Exempt Building Types

https://www.revisor.mn.gov/statutes/cite/326.03

Minnesota Rule 1800. 5200 — Statutory and Renovation Exemptions

https://www.revisor.mn.gov/rules/1800.5200/

Minnesota Rule 1800. 5900 — Exempt Classes of Buildings

https://www.revisor.mn.gov/rules/1800.5900/

Arrangement of the IBC

IBC CORE

- Chapter 1 Administration (replaced by MR 1300)
- Chapter 2 Definitions
- Chapter 3 Occupancy Groups
- Chapter 4 Special Provisions
- Chapter 5 Allowable Height & Area
- Chapter 6 Construction Types
- Chapter 7 Fire and Protection (passive)
- Chapter 8 Interior Finishes
- Chapter 9 Fire Protection & Life Safety Systems
- Chapter 10 Means of Egress
- Chapter 11 Accessibility (replaced by MR 1341)
- Chapter 12 Interior Environment
- Chapter 13 Energy Code (Replaced by MR 1322/23)

IBC Detail Sections

- Chapter 14 Exterior Walls
- Chapter 15 Roof Assemblies
- Chapter 16 Structural Design
- Chapter 17 Special Inspections
- Chapter 18 Soils & Foundations
- Chapter 19 Concrete
- Chapter 20 Aluminum
- Chapter 21 Masonry
- Chapter 22 Steel
- Chapter 23 Wood
- Chapter 24 Glass & Glazing
- Chapter 25 Gypsum Board & Plaster
- Chapter 26 Plastics & Foam
- Chapter 29 Plumbing Systems
- Chapter 30 Elevators
- Chapter 31 Special Construction

Site Accessibility

01 Site Plan

What comments do you have on Sammy's Site?

Site
Proximity to Property Line- Wall Ratings

- What are the Wall Rating requirements due to Property Line Proximity?

[IBC Table 602]

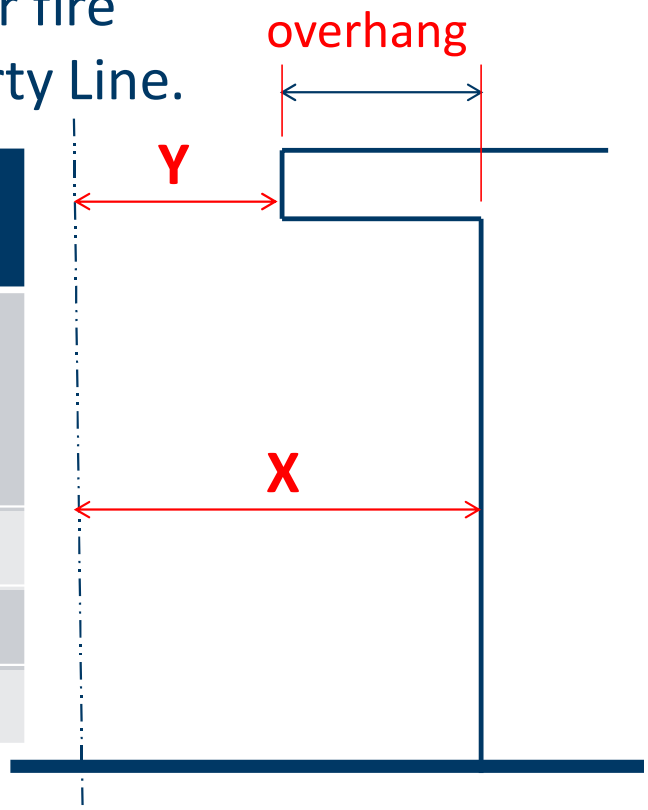
Fire Sep Dist X (feet)	Type of Construction	Occupancy Group H	Occupancy Group F 1, M, S 1	Occupancy Group A, B, E, F 2, I, R, S 2, U
X<5	All	3	2	1
5 ≤ X < 10	IA Others	3 2	2 1	1 1
10 ≤ X 30	IA, IB IIB, VB Others	2 1 1	1 0 1	1 0 1
X ≥ 30	All	0	0	0

Site-
Wall Projections

IBC 705.2.3

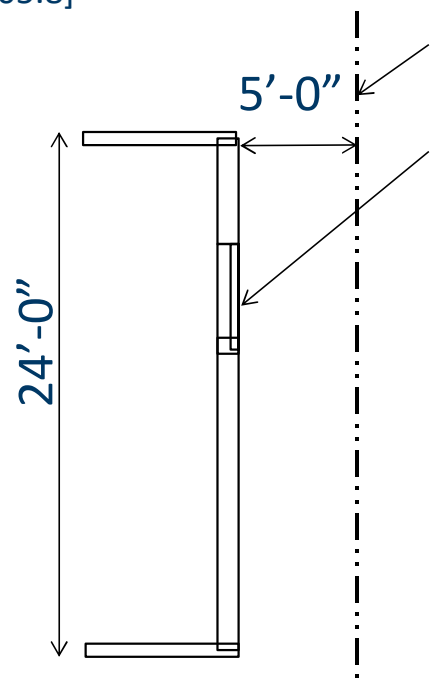
Combustible Projections: One-hour fire resistive within 5 feet of the Property Line.

Table 705.2 Minimum Distance of Projection	
Fire Separation Distance **(X)**	Minimum Dist. From Line Used to Determine FSD **(Y)**
0 ≤ X < 2 Feet	No Projections
2 ≤ X < 5 Feet	24 Inches
X ≥ 5 Feet	40 Inches



Site
Fire Separation Distance- Openings

- What is the allowable overhang? [IBC Table 705.2]
- What is the wall required to be rated? [IBC Table 602]
- Is the window shown permissible this close to the property line? [IBC Table 705.8]



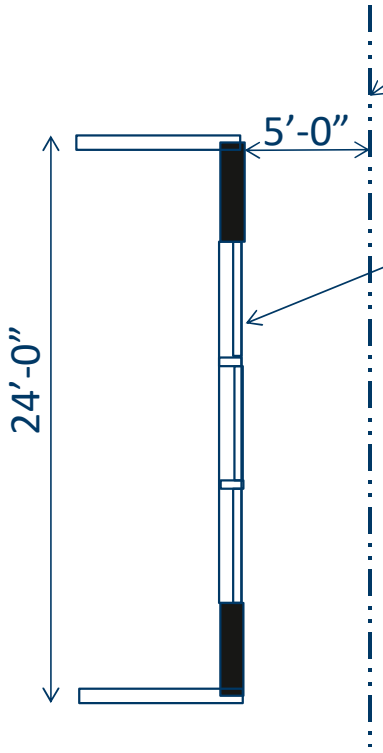
B- Occupancy
Type V-B Construction
2000 Square Feet
One- Story
Non-Sprinkled
10’-0” Floor to Floor

Table 705.8

Fire Separation Distance	Degree of Opening Protection	Allowable Area
	Unprotected, Non Sprinkled (UP,NS)	Not Permitted
	Unprotected, Sprinkled (UP, S)	Not Permitted
	Protected (P)	Not Permitted
	Unprotected, Non Sprinkled (UP,NS)	Not Permitted
	Unprotected, Sprinkled (UP, S)	15%
	Protected (P)	15%
	Unprotected, Non Sprinkled (UP,NS)	10%
	Unprotected, Sprinkled (UP, S)	25%
	Protected (P)	25%
	Unprotected, Non Sprinkled (UP,NS)	15%
	Unprotected, Sprinkled (UP, S)	45%
	Protected (P)	45%
	Unprotected, Non Sprinkled (UP,NS)	25%
	Unprotected, Sprinkled (UP, S)	75%
	Protected (P)	75%
	Unprotected, Non Sprinkled (UP,NS)	45%
	Unprotected, Sprinkled (UP, S)	No Limit
	Unprotected, Non Sprinkled (UP,NS)	No Limit

Site

Fire Separation Distance- Openings



Property Line

(3) 3’-6” x 6’ windows
Unprotected Opening

B- Occupancy
Type V-B Construction
2000 Square Feet
One- Story
Non-Sprinkled
10’-0” Floor to Floor

How can the owner get this window to work?
[IBC Table 705.8]

Site
Fire Separation Distance- Application

How Does Sammy's Fare with regard to:

- Fire Separation Proximity To Property Lines?
  - Any requirements for exterior walls? (Table 602 on slide 66)
  - Windows? (Table 705.8 on slide 69)
- Allowable Combustible Projections? (Table 705.2 on slide 67)

01 Site Plan

03 Main Level Plan

FIRE RESISTANCE RATINGS

Chapter 7

- Structural members = Section 704
- Exterior wall = Section 705
- Fire walls = Section 706
- Fire Barrier walls = Section 707
- Fire Partition walls = Section 708
- Smoke Barrier walls = Section 709
- Smoke Partition walls = Section 710
- Smoke Resistant Construction = Section 509.4.2. (MN PR-01)

FIRE RESISTANCE RATINGS

Chapter 7

- Horizontal Assemblies = Section 711
- Vertical Openings = Section 712
- Shaft Enclosures = Section 713
- Penetrations = Section 714
- Fire Resistant Joint systems = 715
- Opening protections = Section 716
- Ducts and Air Transfer Openings = Section 717
- Concealed spaces = Section 718
- Prescriptive Fire Resistance = Section 721

INTERIOR FINISHES
Chapter 8

- Wall and Ceiling Finishes (Flame Spread Criteria)- Section 803
- Interior Floor Finishes (Classifications for Fire & Critical Radiant Flux)- 804
- Combustible Finishes in Type I and Type II Construction- 805
- Decorative Materials and Trim (including wall partitions)- 806
- Acoustic Ceiling Systems- 808

“Active” FIRE PROTECTION AND LIFE SAFETY SYSTEMS

Chapter 9

- Sprinkler Systems- Section 903
- Alternative Fire Extinguishing Systems- Section 904
- Standpipes- Section 905
- Portable Fire Extinguishers- Section 906
- Fire Alarm & Detection Systems- Section 907
- Carbon Monoxide Detection- Section 915

Means of Egress

IBC Chapter 10

General Requirements

- Height: 7’-6”
- Width: IBC 1005.2 “Elsewhere in the Code” refers to 1020.2 Corridors, and 1018.2 Aisles.
- Stairways = Occupant Load x 0.3”; if sprinkled AND has voice/alarm communication, then 0.2”
- Other Egress Components= Occupant Load x 0.2”; If sprinkled AND has voice/alarm communication, then 0.15”

Occupant Load Factors Table 1004.5

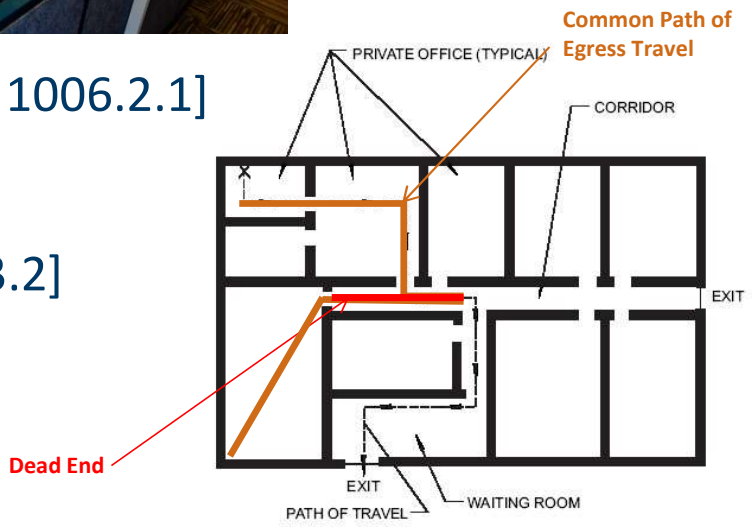
Parts of the Means of Egress- **Look up MBC Section 1003.1**

Definition [IBC 202 Definitions, Page 43]

Means of Egress
Three Parts- Part 1: Exit Access

Exit Access

- What is it?
- Common Path of Egress Travel [IBC 1006.2.1]
- Travel Distance Limits [IBC 1017.2]
- Access to multiple exits [IBC 1006.3.2]
- Intervening Spaces [IBC 1016.2]
- Corridors [IBC 1020.1]
- Dead ends [IBC 1020.4]

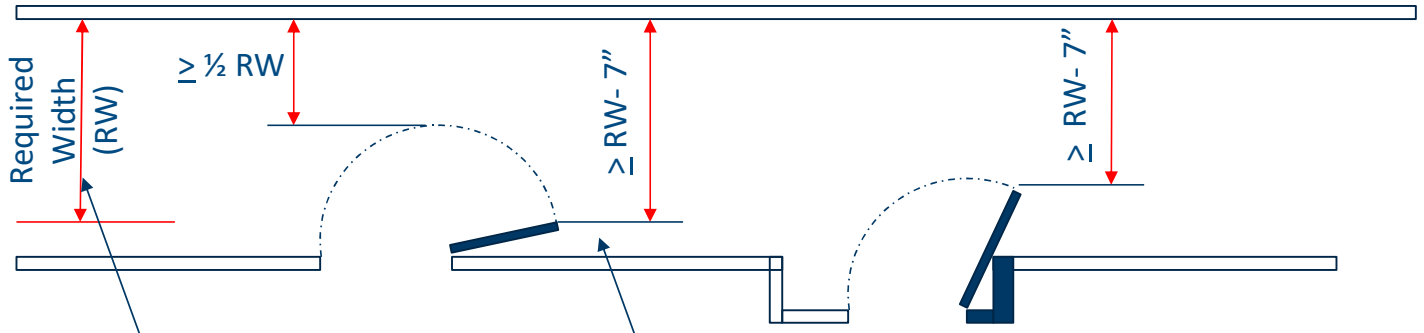


Corridors

- What is a corridor? Definition
- What are the minimum width requirements? [Table 1020.2]
- What about dead ends?
- Air Movement
- Corridor Continuity

Three Parts- Part 1: Exit Access

Door Encroachment Allowances [IBC 1005.7.1]

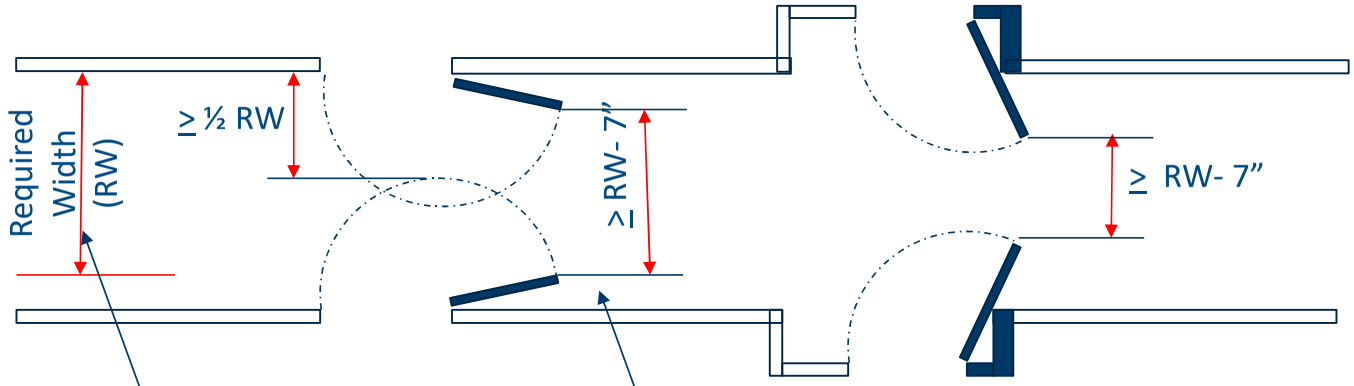


Actual corridor width is often wider than the minimum required

Max 7” Door Encroachment into the Minimum Required width is Okay when door is fully open

Three Parts- Part 1: Exit Access

Door Encroachment Allowances [IBC 1005.7.1]



Actual corridor width is often wider than the minimum required

Max 7” Door Encroachment into the Minimum Required width is Okay when door is fully open

Exit Access Stairs

When are stairs not required to be enclosed (exit access stairs)?

Any ONE of the following:

- Only two communicating stories
- Within dwelling units
- If All of the following criteria are met:
  - Fully sprinkled building
  - Floor opening not more than 2x the size of the stair footprint
  - Draft Curtains at floor openings

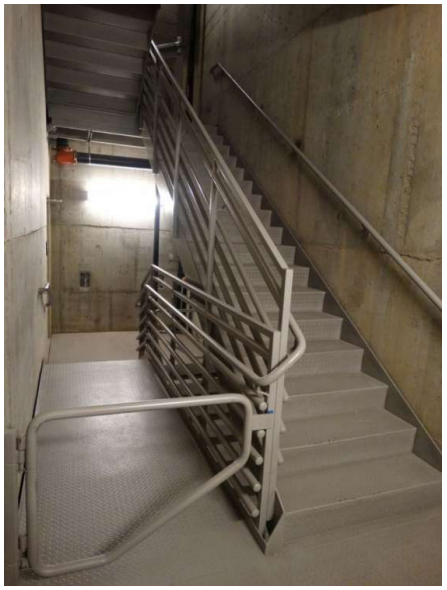
Note: New requirement in 1006.3.1 requires an exit within one story.

[IBC 1019]

Three Parts- Part 2: Exit

Exit

- What is it?
- Two MOE required from each story [IBC 1006.3.2]
  - Access to Exits on Adjacent Levels [IBC 1006.3]
    - Must be by stair or ramp only (not elevator)
    - Limits on travel distance to exit includes BOTH horizontal and vertical travel distance.
- Some stories only require ONE [IBC Table 1006.3.3]
  - Limits on Occupant Load
  - Limits on travel distance



If not same as the exterior door, then fire & smoke protection is required

- Exit Stairway [IBC 1023]
- Exit Passageway [IBC 1024]
- Horizontal Exits [IBC 1026]

Means of Egress
Stairs

So when might a stair in an exempt building be required to be enclosed?

- More than two stories connected without a sprinkler system
- Travel distance exceeded for common path of egress travel, especially from a mezzanine (Need to provide an Exit within the allowable travel distance.)

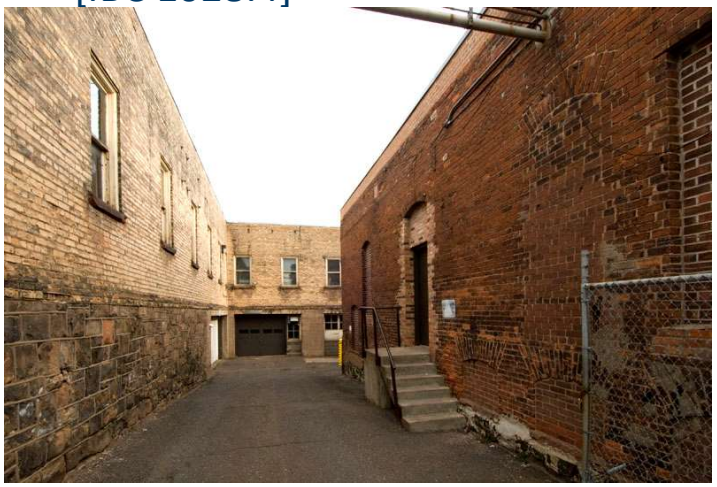
Where might you run across some of these applications?

What would you write as Means of Egress review comments for Sammy's?
03 Main Level Plan 04 Upper Level Plan

Three Parts- Part 3: Exit Discharge

Exit Discharge

- The “direct and unobstructed access” route between the exit and the public way.
- No distance limits.
- Egress Courts may require additional protection. [IBC 1028.4]



Means of Egress
Occupant Loads & Exiting

- What is the *Occupant Load* of Each Space? [IBC 1004.5]
  - Lobby
  - Dining Room
  - Kitchen
  - Upper Level Office
  - What is the Occupant Load of the Building?
- What is the maximum *Travel Distance*? [IBC Table 1017.2]
- What is the maximum *Common Path of Egress Travel*? [IBC Table 1006.2.1]
- How many exits does the building need? [IBC 1006.3]

03 Main Level Plan 04 Upper Level Plan

Means of Egress
Doors

- Sizes [IBC 1010.1.1]
  - 32” Clear Width (typically 36” wide door)
  - 48” Maximum Width
  - 80” Minimum height
- Door Swing- Side swing typical [1010.1.2]
  - When can you use a horizontal sliding door, like a patio door or barn-style door?

    - Private garages, offices, factory areas,

      storage areas with Occupant Load < 10.

    -Doors within R-2 & R-3 Dwelling Units
- Opening Force [1010.1.3]
  - Interior Swinging Egress Doors(other than fire doors) $\leq$ 5 lbs force
  - Other doors $\leq$ 30 lbs force to set the door in motion and $\leq$ 5 lbs force to open the door to 90 degrees.

Means of Egress
Door Landings

- Minimum 44” in the direction of travel
- Minimum width shall be not less than the doorway width or adjacent stair width.
- Floors shall be at the same elevation on both sides of the door.
  - Variations due to floor finish changes shall not be greater than ½”
  - Variations greater than ¼” require a beveled transition along accessible routes.
- Interior landings shall be level
- Exterior landings maximum 2% slope

03 Main Level Plan 04 Upper Level Plan

Means of Egress
Locks & Door Hardware

- Where do you find information regarding requirements for Door Hardware?
- What is the general rule of thumb regarding locking the means of egress?
- Exceptions to the general rule;
  - Locks and Latches - Section 1010.1.9.4.
  - Locking Arrangements - Section 1010.1.9.7 through 1010.1.9.12
    - When is panic hardware Required?
    - Are Panic devices required on Sammy's exit door(s)?

Building Components
IBC Review by Chapter

Interior Environment

Chapter 12

- Attic Ventilation
- Natural Interior Ventilation vs Mechanical Ventilation
- Natural Light
- Sound Transmission [IBC 1206]
- Minimum Sizes of Spaces
- Access
- Toilets and Bathrooms

Exterior Walls

IBC Chapter 14

- Weather Resistive Barrier [IBC 1402.2]
- Vapor Retarder [IBC 1404.3]
- Flashings [IBC 1404.4]
- Wall Claddings [IBC 1404.5 through 1404.18]
- EIFS [IBC 1407]

- https://codes.iccsafe.org/content/MNBC2020P1/chapter-14-exterior-walls#MNBC2020P1_Ch14_Sec1402
- https://codes.iccsafe.org/content/MNBC2020P1/chapter-14-exterior-walls#MNBC2020P1_Ch14_Sec1403
- https://codes.iccsafe.org/content/MNBC2020P1/chapter-14-exterior-walls#MNBC2020P1_Ch14_Sec1404

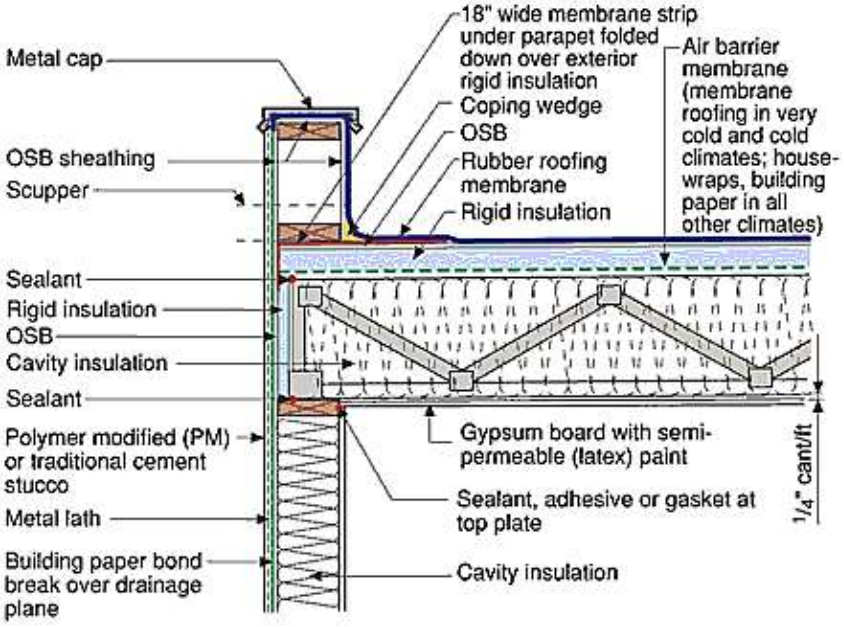
10 Typical Wall Section

Roof Assemblies

Chapter 15

- Roof Drainage & Secondary Drainage.
- Overview of Materials
- Foam Plastic Insulation

[01 Site Plan]
[04 Upper Level Plan]



https://codes.iccsafe.org/content/MNBC2020P1/chapter-15-roof-assemblies-and-rooftop-structures

Special Inspections and Testing

Chapter 17

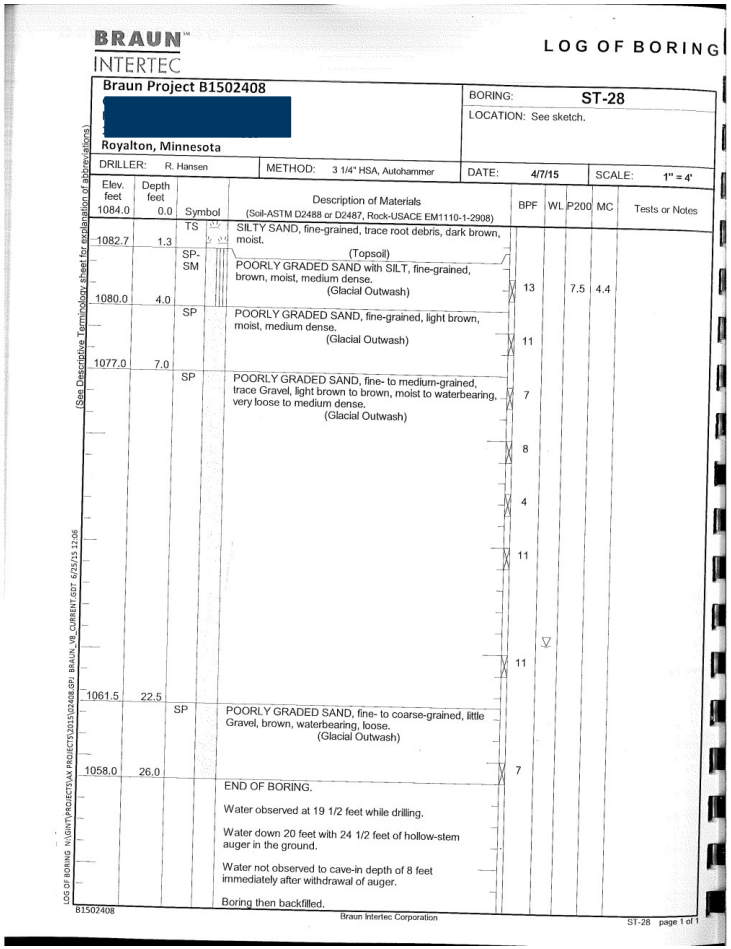
- Soils Field Verification & Fill Placement
- Concrete Testing & Inspections
- Structural Steel & Welding Inspections
- Cold formed steel light-frame construction. [IBC 1705.11.2]
- Fire Resistance Rated Assemblies
- EIFS

Soils & Foundations

IBC Chapter 18

Geotechnical Reports & Foundation Recommendations

- Damp Proofing
- Waterproofing
- Prescriptive Foundations
- Concrete Table & Masonry Tables



BRAUN INTERTEC

LOG OF BORING

Braun Project B1502408 [redacted]

Royalton, Minnesota

BORING: ST-28

LOCATION: See sketch.

DRILLER: R. Hansen | METHOD: 3 1/4" HSA, Autohammer | DATE: 4/7/15 | SCALE: 1" = 4'

Elev. feet	Depth feet	Symbol	Description of Materials (Soil-ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	P200	MC	Tests or Notes
1084.0	0.0	TS	SILTY SAND, fine-grained, trace root debris, dark brown, moist. (Topsoil)					
1082.7	1.3	SP-SM	POORLY GRADED SAND with SILT, fine-grained, brown, moist, medium dense. (Glacial Outwash)	13		7.5	4.4	
1080.0	4.0	SP	POORLY GRADED SAND, fine-grained, light brown, moist, medium dense. (Glacial Outwash)	11				
1077.0	7.0	SP	POORLY GRADED SAND, fine- to medium-grained, trace Gravel, light brown to brown, moist to waterbearing, very loose to medium dense. (Glacial Outwash)	7				
				8				
				4				
				11				
				11	▽			
1061.5	22.5	SP	POORLY GRADED SAND, fine- to coarse-grained, little Gravel, brown, waterbearing, loose. (Glacial Outwash)					
1058.0	26.0			7				

END OF BORING.

Water observed at 19 1/2 feet while drilling.

Water down 20 feet with 24 1/2 feet of hollow-stem auger in the ground.

Water not observed to cave-in depth of 8 feet immediately after withdrawal of auger.

Boring then backfilled.

(See Descriptive Terminology sheet for explanation of abbreviations)

LOGS OF BORING N:\GINT\PROJECTS\AX PROJECTS\2015\02408.GPJ BRAUN_V8_CURRENT.GDT 6/25/15 12:06

B1502408 Braun Intertec Corporation ST-28 page 1 of 1

Concrete

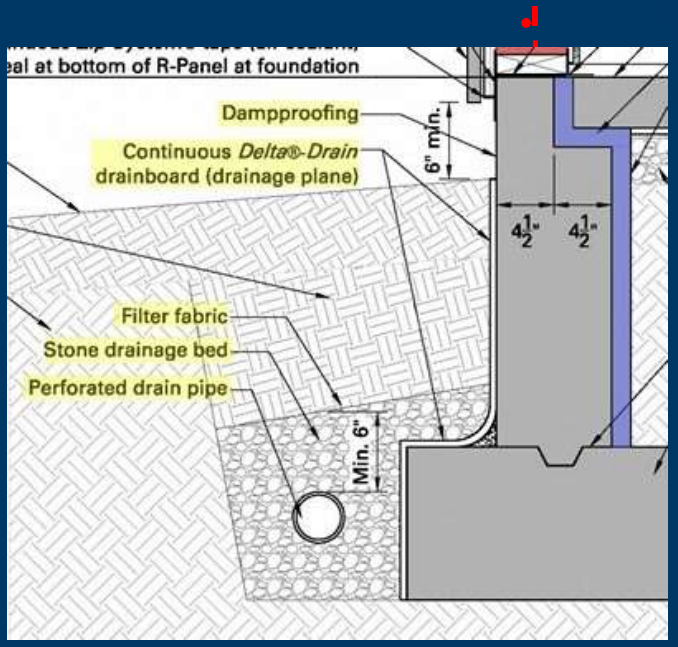
IBC Chapter 19

- Reference Standard to ACI 318, Building Code Requirements for Structural Concrete.
- Minimum Compressive Strength [ACI 318]
- Damp Proofing
- Concrete slabs shall be not less than 3 ½" thick. [IBC 1907.1]
- Vapor Retarder required under slabs [IBC 1907.1]
- Prescriptive Foundations

Concrete
IBC Chapter 19

Concrete Foundations ACI 318

- NOTE: The prescriptive tables for foundations are not found in CONCRETE. They are in the Soils and Foundations Chapter 18.



Steel

Steel Framed and Pre-Engineered Buildings

- Structure certified
- Typically see shop drawings after Permit approvals.
- Require your approval before erection

Cold Formed Light Gauge Framing

- Structure certified
- Typically see shop drawings after Permit approvals
- Require your approval before erection

Anatomy of a Pre-Engineered Building

- Pre-Engineered Buildings- Vocabulary

Purlins

Structural Frame or Moment Frame

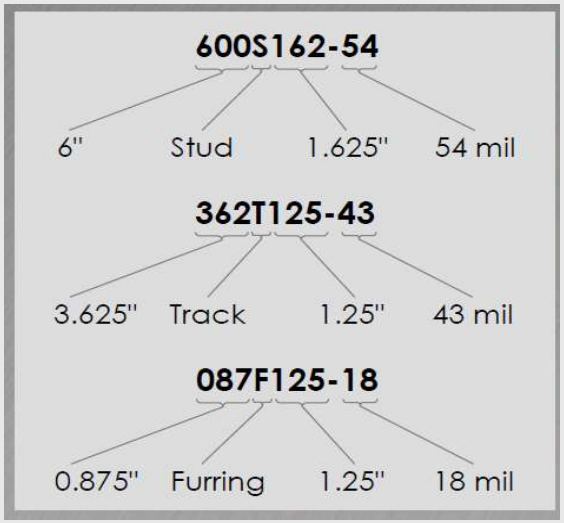
Girts

Cross Bracing or Lateral Bracing

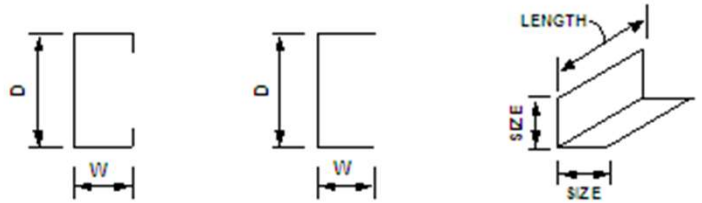
Note that the bracing spans between two frames top and sides

Steel

- Cold Formed Light Gauge Framing



Standard Nomenclature



MEMBERS ARE DESIGNATED ON DESIGN DRAWINGS AS FOLLOWS:

400 S 162 - 54
DEPTH OF MEMBER (D)
STUD
THICKNESS IN MILS
FLANGE WIDTH (W)

400 T 125 - 54
DEPTH OF MEMBER (D)
TRACK
THICKNESS IN MILS
FLANGE WIDTH (W)

L 2 x 2 x 54 x 4
ANGLE
SIZE IN INCHES
LENGTH IN INCHES
THICKNESS IN MILS

THICKNESS CONVERSION	EQUIVALENT MEMBER DEPTH OR FLANGE WIDTH	
33 MILS = 20 GA.	125 = 1.25" = 1 1/4"	362 = 3.62" = 3 5/8"
43 MILS = 18 GA.	137 = 1.37" = 1 3/8"	400 = 4.00" = 4"
54 MILS = 16 GA.	162 = 1.62" = 1 5/8"	600 = 6.00" = 6"
68 MILS = 14 GA.	200 = 2.00" = 2"	800 = 8.00" = 8"
97 MILS = 12 GA.	250 = 2.50" = 2 1/2"	1000 = 10.00" = 10"

Wood
Conventional Light Framed Construction

Section 2308:

- Max floor to floor: 11’-7”
- Dead Load ≤ 15 psf for combined roof, ceiling, floor, exterior walls & partitions.
- Live Loads ≤ 40 psf
- Trusses/Rafters ≤ 40 feet span
- Braced Wall Lines Required at ≤ 35 feet o.c.
- Foundation Plates
- Floors
  - Typically trusses
  - Framing
  - Walls
  - Sheathing Span Tables
- Flooring Span Tables

- Floor Joist Span Tables
- Bracing Requirements
- Header & Girder Span Tables
- Rafter Span Tables
- Fastening Schedules

Wood Framing

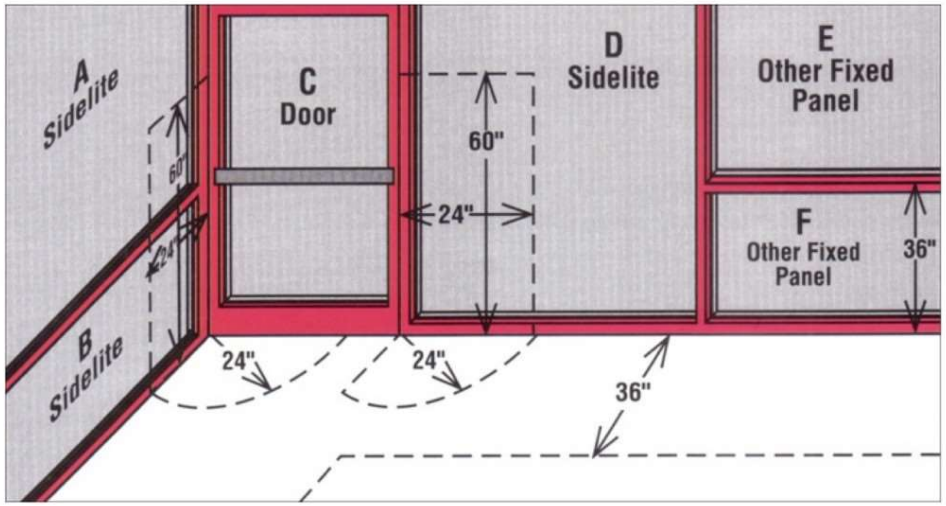
Plan Review Check Points:

- Treated lumber where in contact with concrete or masonry.
- Sills anchored to foundation walls.
- Specification for hurricane/ uplift clips
- Adequate bearing & studs for headers & girders
- Vertical load path to foundation for primary structural members. (Columns/posts/stud packs stack)
- Sheathing sizes and allowable spans

Hazardous Locations requiring safety glazing
[IBC 2406.4]

- Glass in Doors
- Glass next to doors

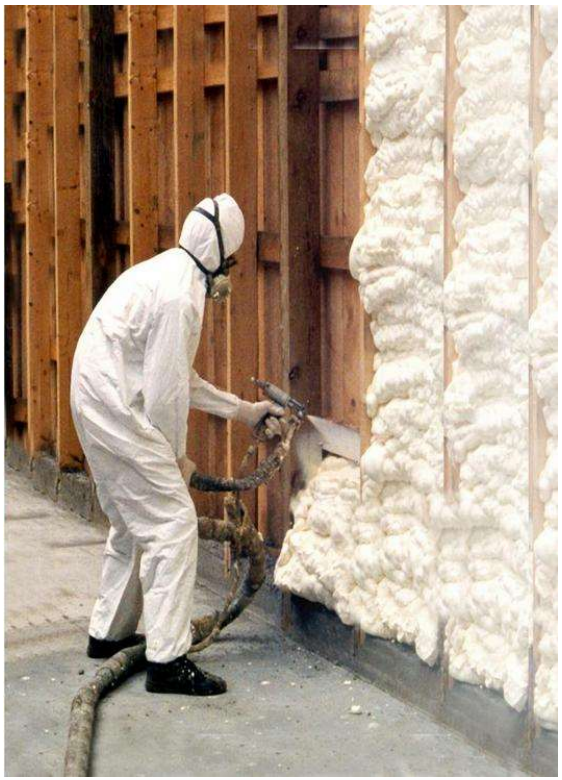
Hazardous Locations



- Glass next to stairs [IBC 2406.4.7]
- Glass at the bottom stair landing [IBC 2406.4.7]
- Glass panels with ALL of the following conditions:
  - >9 square feet
  - Bottom edge < 18” AFF
  - Top edge > 36” AFF
  - Walking Surface within 36” [IBC 2406.4.3]

Thermal Barriers [IBC 2603.4 & 2603.45.2]

- ½" gypsum board typically required
- Exceptions:
  - 1" concrete or masonry provides equivalent protection
  - Exterior walls of sprinkled buildings where the foam is clad with aluminum or steel.
  - Roof sheathing ½" thick or more with tongue and groove edges and part of a Class A, B, or C roof.
  - Various insulation coverings allowed in attics and crawl spaces.
  - Siding backer board maximum ½" thick and separated from interior by minimum 2" mineral fiber insulation
- **Type V construction where foam is 5 ½" thick or less, has a flame spread index ≤ 25 and a smoke developed index ≤ 450 in accordance with ASTM E84.**

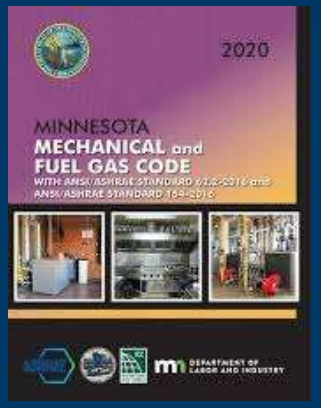


Minimum Plumbing & Toileting

Chapter 29

- Review Table 2902.1
- Requirements & exceptions for separate facilities
- Family/ Assisted Use Toilets
- Travel Distance to toilet facilities
- Drinking Fountains

https://codes.iccsafe.org/content/MNBC2020P1/chapter-29-plumbing-systems



IMC 2012 with State Amendments

Mechanical Ventilation- IMC Table 403.3

- Outdoor Air (ventilation) Calculation

$$\text{Required Outdoor Air} = \frac{\text{Room Area x Occupant Density} \times \text{People Outdoor Airflow Rate}}{1000\ \text{Ft}^2} + \text{Room Area} \times \text{Area Outdoor Airflow Rate}$$

- Required Exhaust Calculation

$$\text{Required Exhaust} = \text{Room Area} \times \text{Exhaust Airflow Rate}$$

09 Building Sections

Commercial Energy Code

- Building Envelope
- HVAC
- Service Water Heating
- Power & Lighting

DEPARTMENT OF LABOR AND INDUSTRY
CONSTRUCTION CODES AND LICENSING

Questions and Comments

MN DLI/CCLD Building Plan Review

Lee Gladitsch

651-284-5801

Lee.Gladitsch@state.mn.us