

# 2015 FALL SEMINAR



## 2015 MINNESOTA BUILDING CODE MINNESOTA RULES, CHAPTER 1305

Presented by  
Minnesota Department of Labor and Industry  
Construction Codes and Licensing Division

# Objective



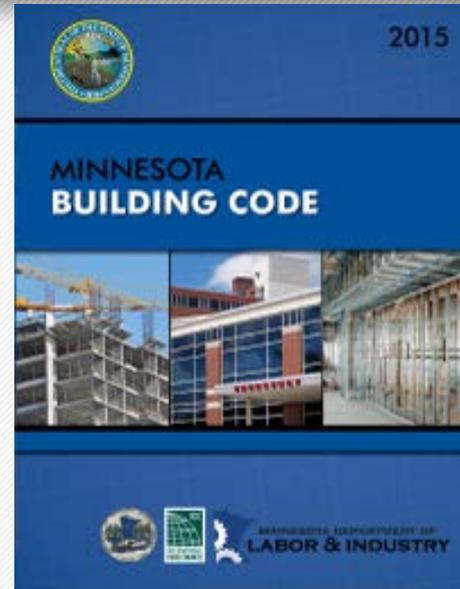
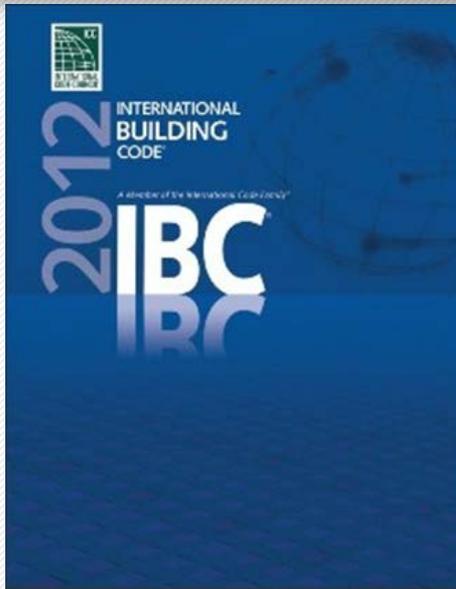
**The Department of Labor and Industry, Construction Codes and Licensing Division recognizes that numerous educational offerings in recent years focused on the 2012 International Building Code (IBC) model code document.**

**The objective and focus of this program is to **concentrate on the Minnesota amendments to the 2012 IBC**. Discussion will delve into background information and outcomes during the adoption process.**

**The intent is to prepare the model code user the necessary information to effectively use the 2012 IBC in Minnesota.**

**The Department plans to offer more in depth IBC programs in the near future to focus on items requiring additional explanation.**

# ABOUT MATERIALS/DISCLAIMER



Some of the content material is reproduced from the 2012 International Building Code®, Copyright© 2011, developed by the International Code Council, Inc.

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. Cites to the code sections are given for the purpose of verifying the complete provisions of the section.

# What's our role/responsibility?



- ...the commissioner shall by rule and in consultation with the Construction Codes Advisory Council establish a code of standards for the construction, reconstruction, alteration, and repair of buildings...
- The **code must conform insofar as practicable to model building codes** generally accepted and in use throughout the United States...

# DLI information and resources



## **CODE BOOKS**

For the 2015 Minnesota Building Codes, the Minnesota Department of Labor and Industry (DLI) contracted with ICC to produce Minnesota-specific code books to include only those chapters from the model codes used in Minnesota and state-specific amendments. The code books can be purchased or viewed online at no cost at [www.dli.mn.gov/CCLD/Codes15.asp](http://www.dli.mn.gov/CCLD/Codes15.asp). In addition, a first-ever, Spanish edition of Minnesota's Residential Code will be made available for purchase and for free online access.

**REVISOR OF STATUTES:** <https://www.revisor.mn.gov/rules/?id=1309>

# DLI information and resources



## FUTURE CODE ADOPTION

ICC publishes new codes every three years. **DLI has determined it will not propose any new ICC model codes for Minnesota until 2018.** This decision was reached after hearing from multiple affected stakeholders who preferred the stability of working with the new codes for another four to six years. However, DLI will still propose new code amendments if special needs or opportunities arise, such as advances in technology, safety or materials.

# DLI information and resources



443 Lafayette Road N.  
St. Paul, Minnesota 55155  
www.dli.mn.gov



MINNESOTA DEPARTMENT OF  
**LABOR & INDUSTRY**  
CONSTRUCTION CODES AND LICENSING

(651) 284-5005  
1-800-342-5354

## Construction Codes and Licensing Division (CCLD)

May 15, 2015

### Quick Links

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[Director-CCLD Building Official Email Archives](#)

[CCLD Rulemaking](#)

[Local Code Look-up](#)

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## Minnesota Building Official

**Seeking qualified Construction Code Rep I**  
CCLD is advertising to fill a vacancy in the building plan review unit. This position is open to all qualified job seekers and exists to provide building plan review and technical information assistance for compliance with the state building code with particular emphasis in building accessibility. [Please apply here by May 26, 2015.](#)

### Division opinion

CCLD has published a division opinion regarding ducts installed in floors over unconditioned spaces. [View the division opinion here.](#)

### First-ever Building Official Forum

Registrations have begun for the first-ever CCLD Building Official Forum at [Camp Ripley on June 5, 2015](#). This forum will review what is currently being done to address the challenges facing the municipal building official including prospects for competent successors and provide for an exchange of ideas among attendees to help create an action plan. Breakfast will be provided. [Please register now.](#) Attendance is free and 2.5 hours of continuing education for building officials will be provided.

### Free event: Building resiliency presentation

CCLD will host a meeting about [how to improve building resiliency in the Minnesota Building Code](#) 10 a.m. to noon, **May 21, 2015**, at the Department of Labor and Industry. A researcher from the Georgia Climate Center and a local architect will be present. There is no cost to attend and 2 hours of continuing education for building officials will be provided. Space is limited so please contact [Laura Millberg](#) and pu

**Educational opportunity**

### Focus of DLI spring seminars: fire sprinklers

Seminars conducted through June at nine Minnesota locations

DLI offers its spring seminars from April 2 to June 4, 2015, at nine locations throughout Minnesota.

**Seminar title:** IRC's Fire Sprinkler Plan Review, Installation and Inspection

**When and where:** April 2 to June 4, 2015, at nine locations throughout Minnesota.

**Description:** This course is offered to provide the local building or fire official and plumbers training in plan review and inspection of one- and two-family home fire suppression systems as required by the 2015 Minnesota State Residential Code. In addition, a basic understanding of requirements for residential fire sprinklers, installation and design parameters for design, construction and installation is provided. Read more about the course at [www.dli.mn.gov/cclde/education.asp](#).

**Continuing education:** This seminar is recognized by DLI as satisfying eight hours of continuing education credit for:

- building officials
- residential building contractors
- mechanical home installers
- plumber, water conditioning contractors
- water conditioning contractors

**View more information and register at** [www.dli.mn.gov/cclde/education.asp](#)

**Continuous Improvement**

**DLI Dashboard updated with agency performance indicators**

The DLI Dashboard tracks the agency's progress in key areas. Stakeholders can see where the agency is on track and where it needs to improve.

View the recently updated dashboard at [www.dli.mn.gov/Dashboard.asp](#).

## Director-CCLD Building Official Email Archives Homepage

- Director CCLD Newsletter - May 15, 2015 (5/15/2015)
- Director CCLD Newsletter - May 2015 (5/6/2015)
- Director CCLD Newsletter - April 2015 (4/2/2015)
- Director CCLD Newsletter - January 2015 (1/23/2015)
- Director CCLD Newsletter - October 2014 (10/28/2014)
- Director CCLD Newsletter - 6/3/2014 (6/3/2014)
- Director CCLD Newsletter 1/15/2014 (1/15/2014)

# DLI information and resources





**CCLD REVIEW**  
CONSTRUCTION CODES AND LICENSING DIVISION  
MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY  
SPRING 2015

**Educational opportunity**

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**Continuing education:** This seminar is recognized by DLI as satisfying eight hours of continuing education credit for:

- building officials
- residential building contractors
- manufactured home installers
- plumbers, water conditioning contractors
- water conditioning contractors



DLI's spring seminar series will focus on fire sprinklers. The seminar offers continuing education for plumbers and will run through June 4 at nine locations throughout Minnesota.

The cost of the seminar is \$85 for each person and payment must be by credit card. Space is limited at each location. Learn more about the course, view dates and locations and register at [www.dli.mn.gov/ccld/education.asp](http://www.dli.mn.gov/ccld/education.asp).

**View more information and register at [www.dli.mn.gov/ccld/education.asp](http://www.dli.mn.gov/ccld/education.asp)**

**Continuous improvement**



### DLI Dashboard updated with agency performance indicators

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<http://webmail.mnet.state.mn.us/mailman/listinfo/ccld-review>

# DLI information and resources



## Errata for Minnesota codes

*Note:* The department used the first printing of each of the 2012 ICC Codes to develop the rules. The ICC errata apply to all of the 2015 Minnesota ICC Codes. There are also Minnesota errata that apply to the 2015 Minnesota ICC Codes (see below).

Subject matter of code	2015 Minnesota ICC Code (Minnesota errata) PDFs	2012 ICC Code (ICC Errata)* PDFs
Building Code	<ul style="list-style-type: none"> <li>Section 1209 Access to Unoccupied Spaces</li> <li>Section 3305 Sanitary</li> </ul>	View ICC Errata
Residential Code	N/A	View ICC Errata
Mechanical/Fuel Gas Code	<p>Combination Errata from ICC for Minnesota ICC Mechanical/Fuel Gas Code Book</p> <p>Mechanical</p> <ul style="list-style-type: none"> <li>Section 201 General</li> <li>Section 507 Commercial Kitchen Hoods</li> <li>Section 601 General</li> <li>Section 602 Plenums</li> <li>Section 801 General</li> <li>Section 901 General</li> <li>Section 1001 General</li> <li>Section 1003 Pressure Vessels</li> <li>Section 1205 Valves</li> <li>Section 1206 Piping Installation</li> </ul>	View ICC Errata

	Fuel Gas	View ICC Errata
	<ul style="list-style-type: none"> <li>Section 1346.5060 References to Other International Code Council Codes</li> <li>Section 201 General</li> <li>Section 401 General</li> <li>Table 402 Pipe Sizing</li> <li>Section 407 Piping Support</li> <li>Section 410 Flow Controls</li> <li>Section 501 General</li> <li>Section 503 Venting of Appliances</li> <li>Section 602 Decorative Appliances for Installation in Fireplaces</li> <li>Section 621 Unvented Room Heaters</li> <li>Appendix E, Worksheet E-1</li> </ul>	
Residential Energy Conservation Code	N/A	View ICC Errata
Commercial Energy Conservation Code	<ul style="list-style-type: none"> <li>Section 1323.0005 Administration and Purpose</li> <li>Section 402 Building Envelope Requirements</li> </ul>	View ICC Errata View ASHRAE Errata
Accessibility Code	<ul style="list-style-type: none"> <li>Section 1004 Type B Units</li> </ul>	View ICC Errata
Existing Building Code	N/A	View ICC Errata

\* If any ICC errata conflict with a section in the 2015 Minnesota ICC Code, the ICC errata for that section shall not apply.

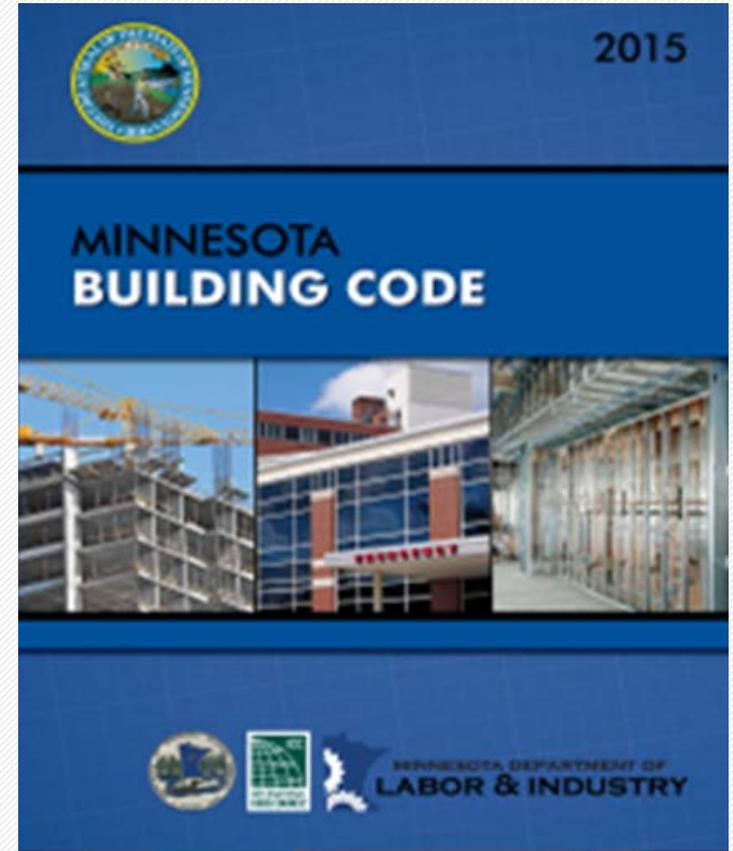
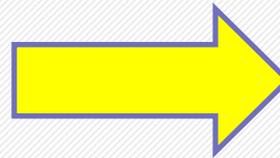
<http://www.dli.mn.gov/CCLD/errata.asp>

# DLI information and resources



<b><u>2015 Minnesota State Building Codes</u></b>	<b><u>Effective date</u></b>
Minnesota Accessibility Code	Jan. 24, 2015
Minnesota Building Code Administration	Jan. 24, 2015
Minnesota Conservation Code for Existing Buildings	Jan. 24, 2015
Minnesota Elevator and Related Devices Code	Jan. 24, 2015
Minnesota Mechanical and Fuel Gas Code	Jan. 24, 2015
Minnesota Provisions to the State Building Code	Jan. 24, 2015
Minnesota Residential Code	Jan. 24, 2015
Minnesota Residential Energy Code	Feb. 14, 2015
Minnesota Radon Code	Feb. 14, 2015
Minnesota Building Code	June 2, 2015
Minnesota Commercial Energy Code	June 2, 2015

# 2015 Minnesota Building Code



# 2012 INTERNATIONAL BUILDING CODE MANDATORY & REPLACEMENT CHAPTERS



**Mandatory chapters:** The 2012 IBC Chapters **2 through 33 & 35.**

**Replacement Chapters:**

**2012 IBC Chapter 1** and any references to code administration in this code are deleted and replaced with Minnesota Rules, **chapter 1300, Minnesota Administration Code.**

Amendments to **IBC chapters 11 and 30** are incorporated by reference in this rule chapter, but the actual amendments for those chapters are located in Minnesota Rules, **chapters 1341, the Minnesota Accessibility Code,** and **1307, the Minnesota Elevator Code,** respectively.

**IBC chapter 34** and any references to conservation or rehabilitation of existing buildings are deleted and replaced with Minnesota Rules, **chapter 1311, Minnesota Building Conservation Code.**

# 2012 INTERNATIONAL BUILDING CODE REFERENCES TO OTHER ICC CODES



**Subpart 1. Generally.** References to other codes and standards promulgated by the ICC in the **2012** IBC are modified in subparts 2 to 11.

**Subp. 2. Building code.** References to the International Building Code in this code mean the Minnesota Building Code, adopted pursuant to Minnesota Rules, **chapter 1305**, and Minnesota Statutes, section 326B.106, subdivision 1.

**Subp. 3. Residential code.** References to the IRC in this code mean the Minnesota Residential Code, adopted under Minnesota Rules, **chapter 1309**, and Minnesota Statutes, section 326B.106, subdivision 1.

**Subp. 4. Electrical code.** References to the ICC Electrical Code in this code mean the Minnesota Electrical Code, Minnesota Rules, **chapter 1315**, adopted under Minnesota Statutes, section 326B.35.

**Subp. 5. Fuel gas code.** References to the International Fuel Gas Code in this code mean the Minnesota Mechanical Code, Minnesota Rules, **chapter 1346**, adopted under Minnesota Statutes, section 326B.106, subdivision 1.

# 2012 INTERNATIONAL BUILDING CODE REFERENCES TO OTHER ICC CODES



**Subp. 6. Mechanical code.** References to the International Mechanical Code in this code mean the Minnesota Mechanical Code, Minnesota Rules, **chapter 1346**, adopted under Minnesota Statutes, section 326B.106, subdivision 1.

**Subp. 7. Plumbing code.** References to the International Plumbing code in this code mean the Minnesota Plumbing Code, Minnesota Rules, **chapter 4715**, adopted under **Minnesota Rules, chapter 1322 and 1323**.

**Subp. 8. Private sewage disposal code.** References to the International Private Sewage Disposal Code in this code mean the Minnesota Pollution Control Agency's minimum standards and criteria for individual sewage treatment systems in Minnesota Rules, **chapter 7080**, adopted under Minnesota Statutes, chapters 103F, 103G, 115, and 116.

**Subp. 9. Energy conservation code.** References to the International Energy Conservation Code in this code mean the Minnesota Energy Code, adopted under Minnesota Statutes, section 326B.115.

# 2012 INTERNATIONAL BUILDING CODE REFERENCES TO OTHER ICC CODES



**Subp. 10. Property maintenance code.** References to the International Property Maintenance Code in this code **do not apply**.

**Subp. 11. Accessibility code.** References to accessibility in this code mean the Minnesota Accessibility Code, Minnesota Rules, **chapter 1341**.

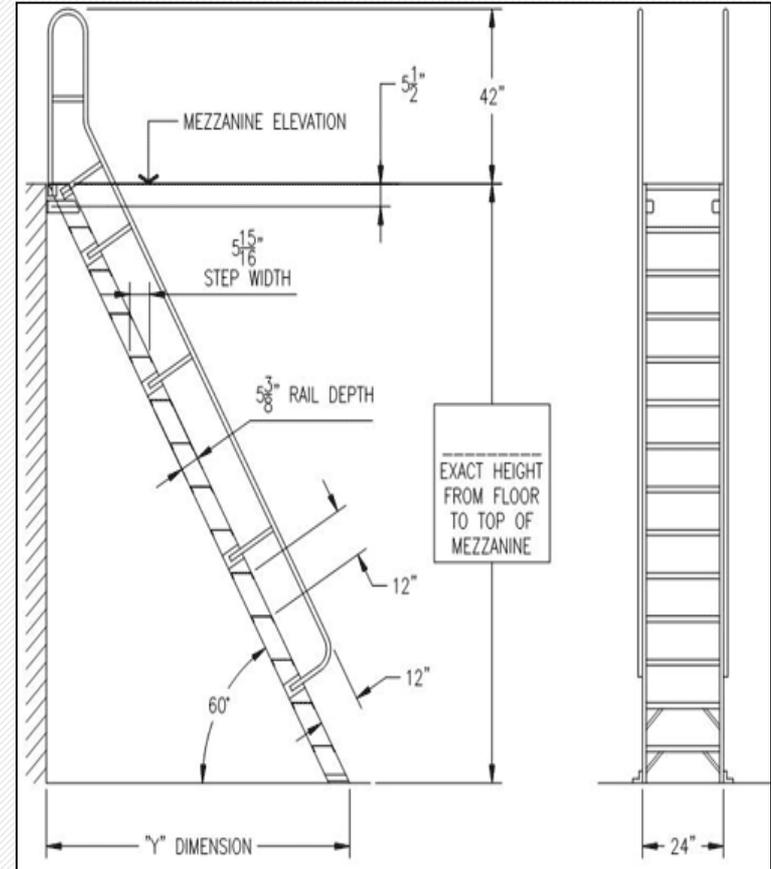
# Definitions



# Alternating Tread Device



VS.



# Alternating Tread Device -Definition



ALTERNATING TREAD DEVICE. A device that has a series of steps between 50 and 70 degrees from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time. **A ships ladder in compliance with Minnesota Rules, part 1305.1209, shall be considered equivalent to an alternating tread device.**

# Permanent Stair (ship ladder)



The permanent stair shall be as required by relevant safety regulations, but shall not be less than the following:

1. The stair shall be installed at an angle **of not more than 60 degrees** measured from the horizontal plane.
2. The stair shall have **flat treads at least six inches** deep and a clear width of at least 18 inches with equally spaced **risers at least 10.5 inches high and not exceeding 14 inches**.
3. The stair shall have intermediate landings not exceeding 18 feet vertically.
4. Continuous handrails shall be installed on both sides of the stair.
5. Interior stairs shall terminate at the underside of the roof at a hatch or scuttle of at least eight square feet with a minimum dimension of 20 inches.
6. When a roof access hatch or scuttle is located within ten feet of a roof edge, a guard shall be installed in accordance with this code.
7. Exterior stairs shall terminate at the roof access point or at a level landing of at least eight square feet with a minimum dimension of 20 inches. The landing shall have a guard installed in accordance with IMC Section 304.9.

# Ambulatory Care Facility



A.K.A. Ambulatory Surgical Centers



*Outpatient Surgery Magazine's*  
**Architects' Showcase**



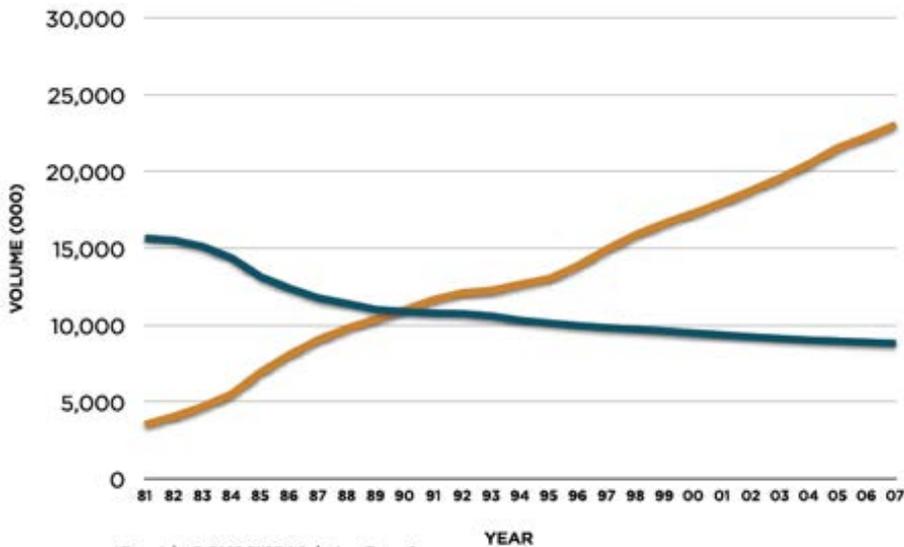
*Click here to explore a portfolio of surgical opportunities.*

# Ambulatory Care Facility

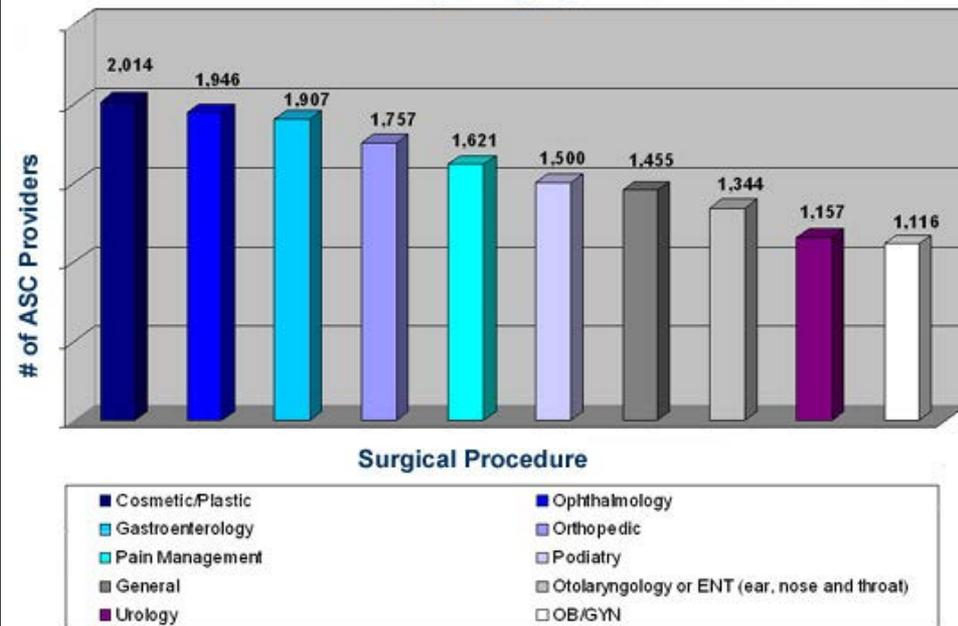


## SURGICAL TRENDS

— INPATIENT SURGERIES  
— OUTPATIENT SURGERIES



## Ambulatory Surgery Centers



# Ambulatory Care Facility (ACF)



**AMBULATORY CARE FACILITY.** Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to individuals who are rendered incapable of self-preservation by the services provided. For the purposes of this provision federally certified End Stage Renal Disease (a.k.a. kidney dialysis) facilities located on the level of exit discharge shall not be considered ambulatory care facilities.

# Ambulatory Care Facility - Requirements



- Group B occupancy
- ACF with 4 or more care recipients separated from adjacent spaces by fire partition.
- Sprinkled (NFPA13) on floor containing:
  - 4 or more care recipients or
  - 1 care recipient on floor other than level of exit discharge (LED) & all levels between care floor and LED
- Smoke barrier when > 10,000 sf on story containing ACF

# Outpatient Clinic



- **OUTPATIENT CLINIC.** "Outpatient clinic" means a building or part of a building used to provide medical care on a less than 24-hour basis to persons who are not rendered incapable of self-preservation by the services provided, **including federally certified end stage renal dialysis facilities (kidney dialysis facilities) not classified as an ambulatory care facility.**

# Approved and Corridor



- **APPROVED:** “Approved” means approval by the building official, pursuant to the Minnesota State Building Code, by reason of: inspection, investigation, or testing; accepted principles; computer simulations; research reports; or testing performed by either a licensed engineer or by a locally or nationally recognized testing laboratory.
- **CORRIDOR:** “Corridor” means an interior passageway having a length at least 3 times its width, having walls, partitions, or other obstructions to exit travel over 6 feet (1929 mm) in height on 2 opposing sides and having openings from rooms or similar spaces.

# Live/work Unit



- **LIVE/WORK UNIT.** The **definition** of "Live/Work Unit" in IBC section 202 is **deleted** in its entirety.
- **IBC section 419**, Live/Work Units, is **deleted** in its entirety.



# Small Hose Connection



- "Small hose connection" means a 1 1/2-inch connection supplied inside of a building for firefighting overhaul operations in sprinkler-protected structures.
- In reference to 1305.0905 Subp. 6a.
- We'll talk later about this.....

# Chapter 3

## Use and Occupancy Classification



# Care Facility Classification: Step 1 & 2



MINNESOTA DEPARTMENT OF  
**LABOR & INDUSTRY**



## **Quick Reference Guide** To **Care Facilities** **in Minnesota**

**2007 Minnesota State Building Code &  
2007 Minnesota State Fire Code**

This guide will be updated and available when the 2015 Minnesota Fire Code is adopted and effective

# Care Facility Classification: Step 1- Insert table



Table 302.2 Care Facilities

<u>Type of Licensed Facility</u>		<u>Number or Type of Residents</u>	<u>IBC Occupancy Classification</u>
<u>Child Care (Day Care)</u>	<u>Family Child Care Home</u>	<u>10 occupants maximum with ≤ 6 below school age</u>	<u>R-3 dwelling unit</u>
	<u>Group Child Care Home &lt; 24 hours per day</u>	<u>11-14 occupants maximum</u>	<u>R-3 dwelling unit</u>
	<u>Child Care Center &lt; 24 hours per day</u>	<u>&gt; 5 but ≤ 100 children &lt; 2.5 years of age and each room at, and with, an exit at the level of exit discharge</u>	<u>E</u>
	<u>Child Care Center &lt; 24 hours per day</u>	<u>More than 5 children &gt; 2.5 years of age</u>	<u>E</u>
	<u>Child Care Center &lt; 24 hours per day</u>	<u>More than 5 children ≤ 2.5 years of age</u>	<u>I-4</u>
<u>Adult Day Care</u>	<u>Family Adult Day Services</u>	<u>≤ 8 impaired adults</u>	<u>R-3 dwelling unit</u>
	<u>Adult Day Care Center &lt; 24 hours per day</u>	<u>6 or more occupants, all may or may not be capable of self-preservation</u>	<u>I-4</u>

	<u>Adult Day Care Center &lt; 24 hours per day</u>	<u>6 or more occupants, but having no more than 50 percent of the occupants who are not capable of self-preservation</u>	<u>E</u>
<u>Supervised Living Facilities</u>	<u>Class A-1</u>	<u>6 or fewer residents; all of whom are capable of self-preservation</u>	<u>R-3 dwelling unit</u>
	<u>Class A-2</u>	<u>7 to 16 residents; all of whom are capable of self-preservation</u>	<u>R-4</u>
	<u>Class A-2</u>	<u>More than 16 residents; all of whom are capable of self-preservation</u>	<u>I-1</u>
	<u>Class B-1</u>	<u>6 or fewer residents; all of whom may not be capable of self-preservation</u>	<u>R-3</u>
	<u>Class B-2</u>	<u>7 to 16 residents; all of whom may not be capable of self-preservation</u>	<u>R-4</u>
	<u>Class B-3</u>	<u>More than 16 residents; all of whom may not be capable of self-preservation</u>	<u>I-2</u>
<u>Hospice</u>	<u>Residential Hospice Facility</u>	<u>1-5 terminally ill persons</u>	<u>R-3</u>
	<u>Residential Hospice Facility</u>	<u>6-12 terminally ill persons</u>	<u>R-4</u>
<u>Adult Foster Care</u>	<u>Adult Foster Care Home</u>	<u>1-5 impaired adults</u>	<u>R-3 dwelling unit</u>
<u>Child Foster Care</u>	<u>Foster Care</u>	<u>1-6 foster children without severe disability or assisted medical technology</u>	<u>R-3 dwelling unit</u>
	<u>Foster Care</u>	<u>1-4 foster children with medical or special care services</u>	<u>R-3 dwelling unit</u>

# Care Facility Classification: Step 1- Insert table



<u>Housing with Services Facility</u>	<u>Housing with Services Establishment</u> <u>Housing with Services Establishment Providing Assisted Living Services</u>	<u>1-5 adult residents ≥ 80 percent 55 years of age or older unless registered under MN Statutes, section 144D.025</u>	<u>R-3 dwelling unit</u>
	<u>Housing with Services Establishment</u> <u>Housing with Services Establishment Providing Assisted Living Services</u>	<u>6-16 adult residents ≥ 80 percent 55 years of age or older unless registered under MN Statutes, section 144D.025</u>	<u>R-4</u>
	<u>Housing with Services Establishment</u> <u>Housing with Services Establishment Providing Assisted Living Services</u>	<u>16 adult residents ≥ 80 percent 55 years of age or older unless registered under MN Statutes, section 144D.025</u>	<u>I-1</u>
<u>Boarding Care</u>	<u>Boarding Care Home</u>	<u>&lt; 5 residents</u>	<u>R-3 dwelling unit</u>
	<u>Boarding Care Home</u>	<u>6-16 residents</u>	<u>R-4</u>
	<u>Boarding Care Home</u>	<u>&gt; 16 residents</u>	<u>I-1</u>
<u>Boarding and Lodging</u>	<u>Boarding and Lodging</u>	<u>≤ 16 residents in sleeping rooms or ≤ 2 dwelling units in one building</u>	<u>R-3</u>
	<u>Boarding and Lodging</u>	<u>&gt; 16 residents in sleeping rooms or &gt; 2 dwelling units in one building</u>	<u>R-2</u>
	<u>Boarding and Lodging &lt; 30 days</u>	<u>Bed and Breakfast with 6 or more sleeping units</u> <u>Boarding houses with &gt; 10 occupants</u>	<u>R-1</u>
	<u>Boarding and Lodging &lt; 30 days</u>	<u>Bed and Breakfast with 5 or fewer sleeping units</u> <u>Boarding houses with ≤ 10 occupants</u>	<u>R-3 dwelling unit</u>

<u>Senior Housing</u>	<u>Senior Housing (See IBC 310)</u>	<u>More than 2 dwelling units in one building</u>	<u>R-2</u>
	<u>Senior Housing (See IBC 310)</u>	<u>2 dwelling units in one building</u>	<u>R-3</u>
	<u>Senior Housing (See IBC 310)</u>	<u>1 dwelling unit</u>	<u>R-3 dwelling unit</u>
<u>Congregate Residence</u>	<u>Congregate Residence</u>	<u>≤ 16 residents</u>	<u>R-3</u>
	<u>Congregate Residence</u>	<u>17 or more residents</u>	<u>R-2</u>
<u>Day Services</u>	<u>Day Services Facility</u>	<u>Adult (over 18)</u>	<u>I-4</u>
	<u>Day Services Facility</u>	<u>Ages 13-18</u>	<u>I-4</u>
<u>Chemical Dependency Treatment Programs</u>	<u>Chemical Dependency Treatment Program - Outpatient (&lt; 24 hrs.)</u>	<u>Not regulated</u>	<u>B</u>
	<u>Chemical Dependency Treatment Program - Residential</u>	<u>&lt; 5 residents</u>	<u>R-3 dwelling unit</u>
	<u>Chemical Dependency Treatment Program - Residential</u>	<u>6-16 residents</u>	<u>R-4</u>
	<u>Chemical Dependency Treatment Program - Residential</u>	<u>&gt; 16 residents</u>	<u>I-1</u>



# Care Facility Classification:

## Step 2 – Amend Specific Sections



- IBC section 308.3. IBC section 308.2 308.3 is amended to read as follows:
- 308.3 Institutional Group I-1. This occupancy shall include buildings, structures, or portions thereof for more than 16 persons, who reside on a 24-hour basis in a supervised environment and receive custodial care. Examples of this group include the following:
  - Alcohol and drug centers
  - **Assisted living facilities**
  - Boarding care
  - Congregate care facilities
  - Convalescent facilities
  - Group homes
  - Halfway houses
  - **Housing with services**
  - Residential board and care facilities
  - Social rehabilitation facilities
  - Supervised living facilities Class A-2

# Care Facility Classification:

## Step 2 – Amend Specific Sections



- IBC section 308.4. IBC section 308.4 is amended to read as follows:
- 308.4 Institutional Group I-2. This occupancy shall include buildings and structures used for medical care on a 24-hour basis for more than five persons who are incapable of self-preservation. Examples of this group include the following:
  - Detoxification facilities
  - Foster care facilities
  - Hospitals
  - Nursing homes
  - Psychiatric hospitals
  - Supervised living facilities Class B-3

# Care Facility Classification:

## Step 2 – Amend Specific Sections



- 310.5 Residential Group R-3. R-3 Residential occupancies where the occupants are primarily permanent in nature and not classified as R-1, R-2, R-4, or I including:
  - Assisted living
  - Boarding care homes
  - Boarding houses (nontransient) with 16 or fewer occupants
  - Boarding houses (transient) with 10 or fewer occupants
  - Care facilities that provide accommodations for five or fewer persons receiving care
  - Congregate living facilities (nontransient) with 16 or fewer occupants
  - Congregate living facilities (transient) with ten or fewer occupants
  - Dwelling units in mixed occupancy buildings
  - Family adult foster homes
  - Foster care
  - Housing with services established
  - Residential hospice with five or fewer occupants
- In new construction, Group R-3 occupancies shall meet the requirements for building durability of chapter 1309, the International Residential Building Code, parts 1309.0402; 1309.0406, subpart 2; 1309.0702, subpart 2; 1309.0703, subpart 2a; 1309.0703, subpart 9, items A, B, and C; 1309.0903; and 2012 IRC section R703.8.1.

# Care Facility Classification:

## Step 2 – Amend Specific Sections



- **310.5.1 Care facilities within a dwelling.** Section 310.5.1 is deleted in its entirety.
- **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 the following:
  - Alcohol and drug centers
  - Boarding care homes
  - Congregate care facilities
  - Group homes
  - Halfway houses
  - Housing with services (including those that provide assisted living services)
  - Residential board and care facilities
  - Residential hospice with 12 or fewer occupants
  - Social rehabilitation facilities
- **Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.**

# What Does that mean? #1



# What does that mean? #1



- **310.1 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. This group shall not include buildings regulated by chapter 1309, the International Residential Building Code (IRC). However, the licensed uses specified in sections 310.5 and 310.6, as amended by this part, are applicable to a building constructed in accordance with the IRC that houses a use that is required to be licensed.

# What Does that mean? #2



# What does that mean? #2



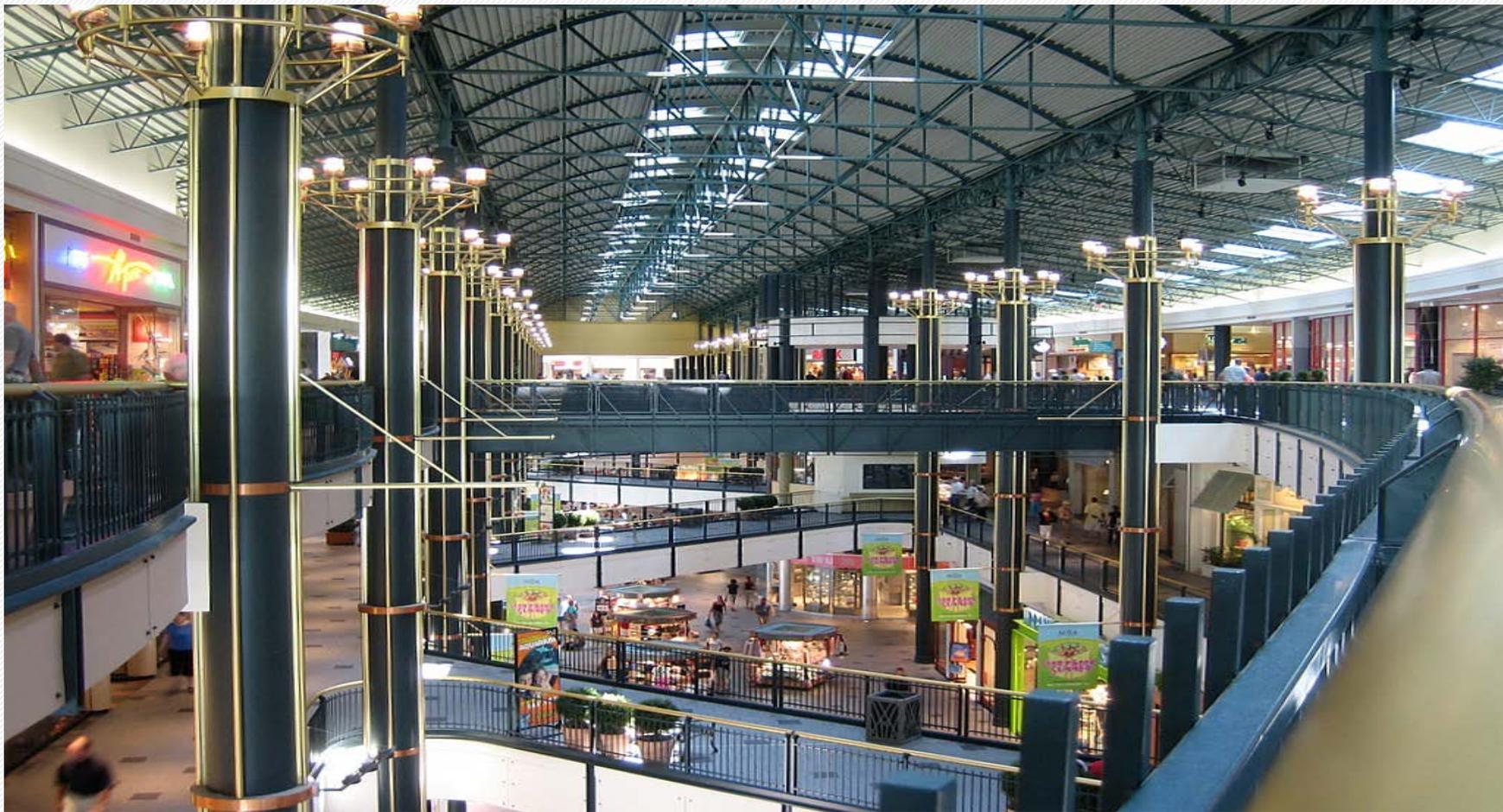
- **310.5 Residential Group R-3.**
- In new construction, Group R-3 occupancies shall meet the requirements for building durability of chapter 1309, the International Residential Building Code, parts 1309.0402; 1309.0406, subpart 2; 1309.0702, subpart 2; 1309.0703, subpart 2a; 1309.0703, subpart 9, items A, B, and C; 1309.0903; and 2012 IRC section R703.8.1.

# **Chapter 4**

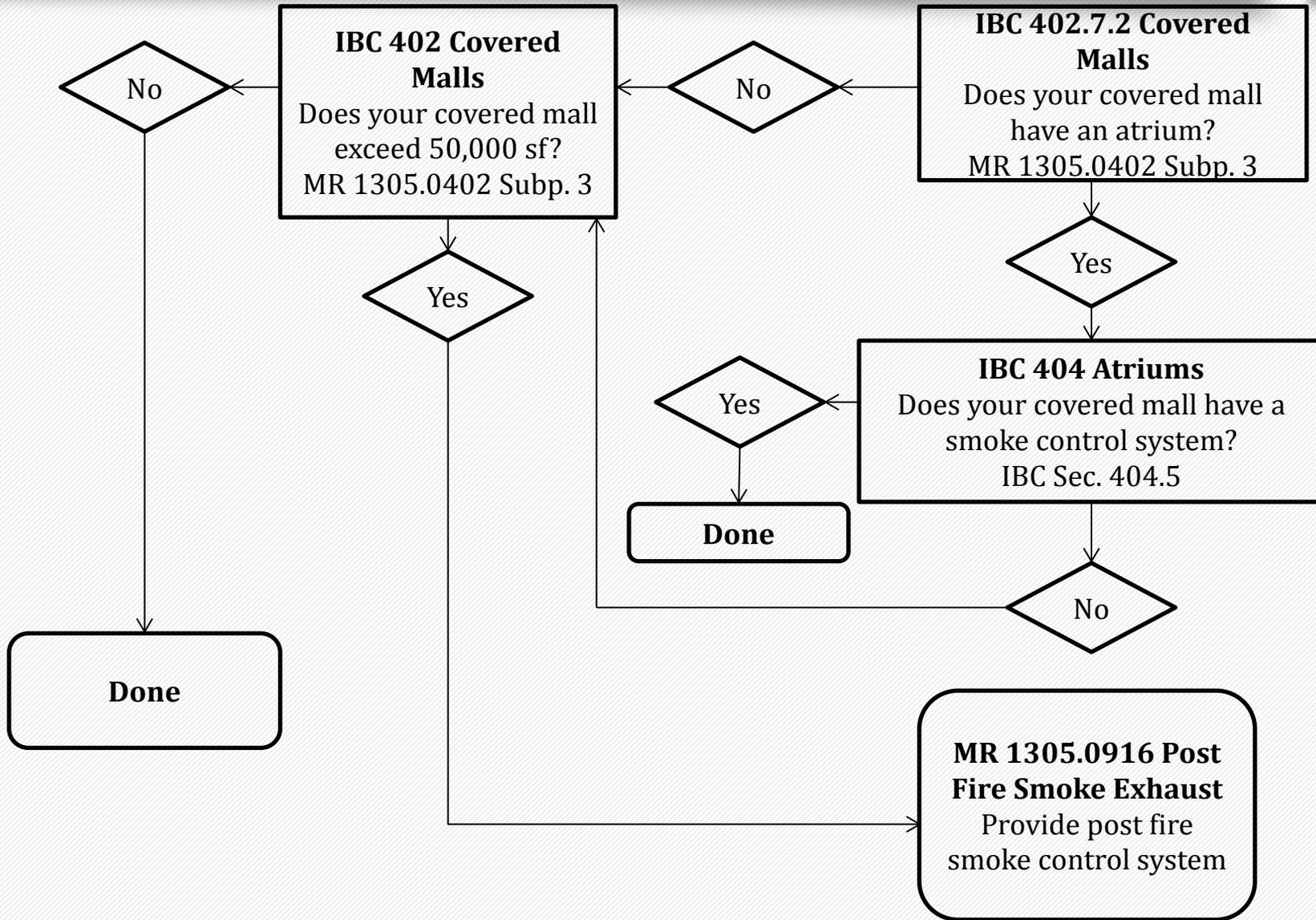
## **Detailed Requirements Based on Use and Occupancy**



# Covered malls



# 2015 SBC Flow Chart for Covered Malls



# Covered Mall Buildings



- Subp. 3. **IBC section 402.7.2.** IBC section 402.7.2 is amended to read as follows:
- **402.7.2 Smoke control.** Where a covered mall building contains an atrium, a smoke control system shall be provided in accordance with section 404.5.
  - **Exception:** Smoke control is not required in covered mall buildings where an atrium connects only two stories.

Covered mall buildings **exceeding 50,000 square feet** (4645 m<sup>2</sup>) in floor area, excluding anchor buildings, not provided with an approved smoke control system, shall be provided with a post fire smoke exhaust system in accordance with Minnesota Rules, part 1305.0916.

# High-Rise Buildings



## Part 1 and 2



# Part 1 High Rise: Post fire Smoke Exhaust/Smoke Removal



- 2007 MR 1305.0403 Subp.2:
- 2006 IBC Section 403. IBC Section 403 is amended by adding a section to read as follows:
- 403.15 **Post fire smoke exhaust system.** A post fire smoke exhaust system in compliance with IBC Section 913 shall be provided for high rise buildings.
- 2015 MR 1305.0403 Subp. 2: [See repealer]
- 2012 IBC Sec. 403.4.7 **Smoke removal.** To facilitate smoke removal in post-fire salvage and overhaul operations, buildings or structures shall be equipped with natural or mechanical ventilation for removal of products of combustion...
  - 3 options including operable windows, mechanical ventilation and engineered design.

# Part 2:

## High-Rise Buildings



- **IBC section 403.4.8.2.** IBC section 403.4.8.2 is amended to read as follows:
- **403.4.8.2 Standby power loads.** The following are classified as standby power loads:
  - 1. Power and lighting for the fire command center required by section 403.4.6;
  - 2. Ventilation and automatic fire detection equipment for smokeproof enclosures; and
  - 3. Passenger elevators **serving occupied floors more than 75 feet (22860) above the lowest level of fire department vehicle access.**

# Part 2: High-Rise Buildings





# Motor Vehicle-Related Occupancies



# Parking garages



- Subpart 1. **IBC section 406.4.5.** IBC section 406.4.5 is amended by adding a new exception to read as follows:
- **406.4.5 Floor surface.** Parking surfaces **shall be of concrete or similar noncombustible and nonabsorbent materials.**
- The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.
- **Exceptions:**
  - 1. Asphalt parking surfaces shall be permitted at ground level.
  - 2. Floors of Group S-2 parking garages shall not be required to have a sloped surface.
  - 3. **Unoccupied portions of nonpublic parking garages shall not be required to be nonabsorbent.**

# Fire Protection of Floors



# Basements, sprinklers, fire fighters and the IRC





- **IRC section R501.3 Fire protection of floors.** Floor assemblies, not required elsewhere in this code to be fire-resistance rated, shall be provided with a ½ - inch gypsum wallboard membrane, 5/8 - inch wood structural panel membrane, or equivalent on the underside of the floor framing.

Exceptions:

1. Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with Section P2904, NFPA13D or other approved equivalent sprinkler system.
- 2, 3, 4.....

# Combustible Storage



- **IBC section 413** is amended by **adding** a subsection to read as follows:
- **413.3 Fire protection of floors.** In addition to the requirements of this section, the fire protection of floors in Groups I-1, R-1, R-2, and **R-3** occupancies shall comply with the requirements of section **420.6**.

# Combustible Storage - Why is this amendment necessary?????



- **IBC Sec. 413.2 Attic, under-floor and concealed spaces.** Attic, under-floor and concealed spaces used for storage of combustible material shall be protected on the storage side as required for 1-hour fire-resistance-rated construction. Openings shall be protected by assemblies that are self-closing and are of noncombustible construction or solid wood core not less than 1 ¾ inch in thickness.

**Exception:** Neither fire resistant construction nor open protectives are required in any of the following locations:

1. Areas protected by approved automatic sprinkler systems.
2. **Group R-3** and U occupancies.

**413.3 Fire protection of floors.** In addition to the requirements of this section, the fire protection of floors in Groups I-1, R-1, R-2, and **R-3** occupancies shall comply with the requirements of section **420.6.**

# IBC Sec. 420 Groups I-1, R-1, R-2, R-3



- **420.1 General.** Occupancies in Groups I-1, R-1, R-2, and R-3 shall comply with the provisions of sections 420.1 through [420.6](#) and other applicable provisions of this code.

# Groups I-1, R-1, R-2, R-3



- **IBC section 420.6.** IBC section 420 is amended by **adding a subsection**
- **420.6 Fire protection of floors.** Floor assemblies, not required elsewhere in this code to be fire-resistance rated, shall be provided with 1/2-inch gypsum wallboard membrane, 5/8-inch wood structural panel membrane, or equivalent on the underside of the floor framing member.
- **Exceptions:**
  1. Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with NFPA 13D, or other approved equivalent sprinkler system.
  2. Floor assemblies located directly over a crawl space not intended for storage or fuel-fired appliances.
  3. Portions of the floor assemblies in Group R-3 can be unprotected when complying with the following:
    - a. The aggregate area of the unprotected portions shall not exceed 80 square feet per story; and
    - b. Fire blocking in accordance with section 717.2 shall be installed along the perimeter of the unprotected portion to separate the unprotected portion from the remainder of the floor assembly.
  4. Wood floor assemblies in Group R-3 occupancies using dimension lumber or structural composite lumber equal to or greater than 2-inch by 10-inch nominal dimension, or other approved floor assemblies demonstrating equivalent fire performance.

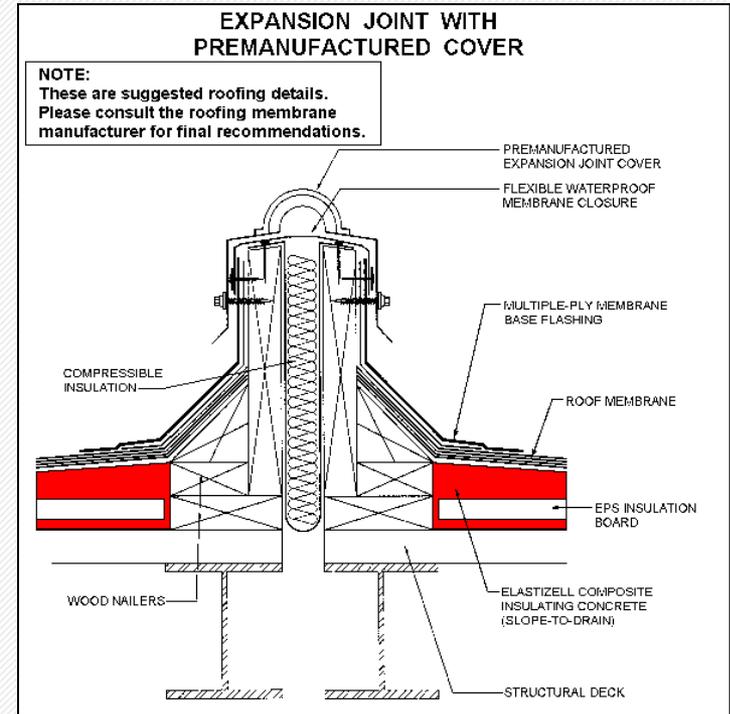
# Chapter 6

## Types of Construction



Section 603:  
Combustible Material in Type I and II Construction

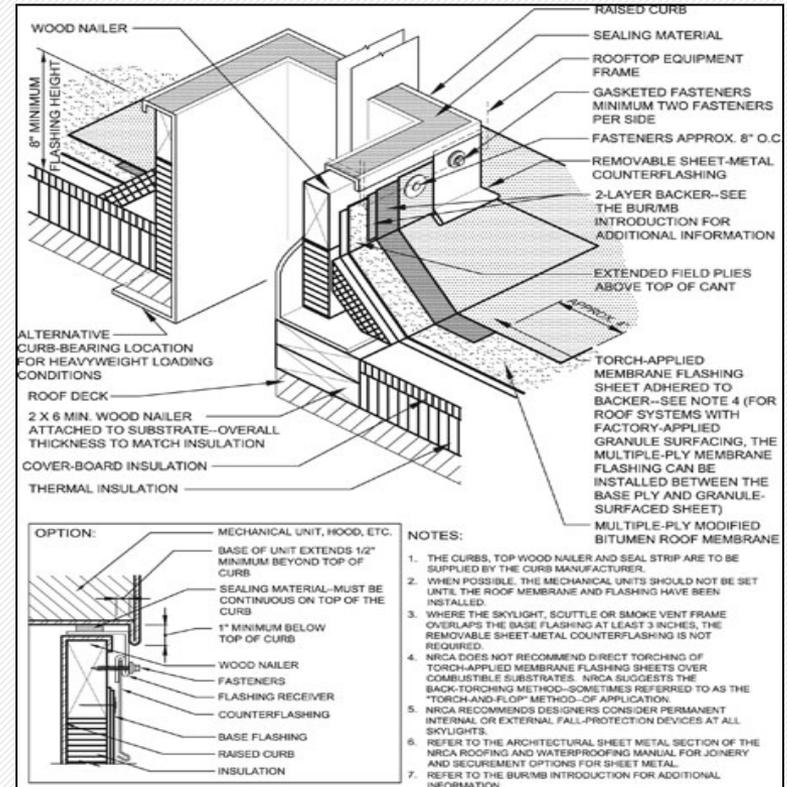
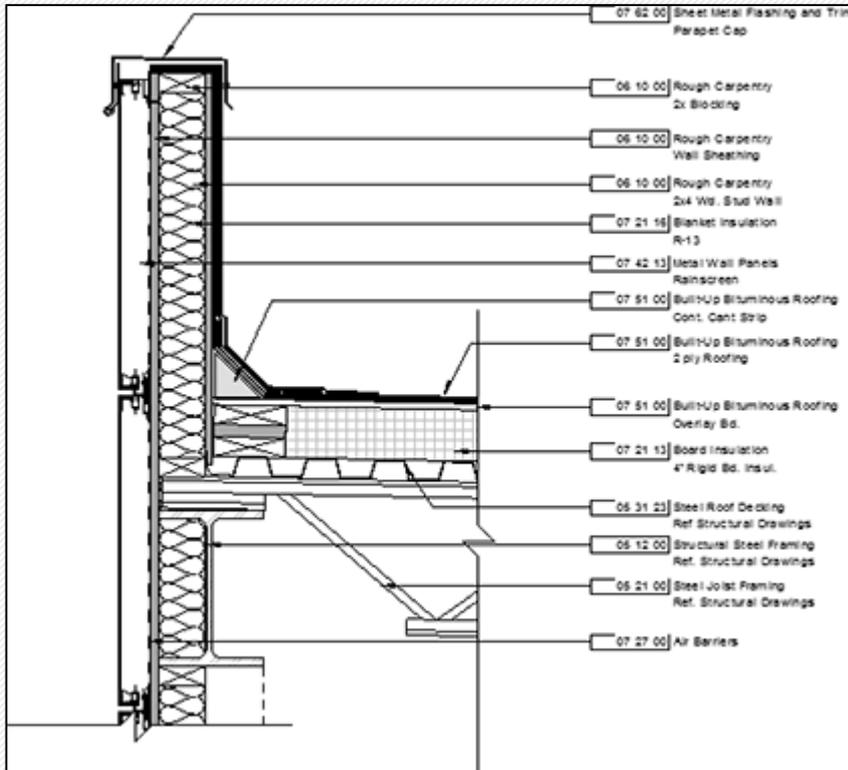
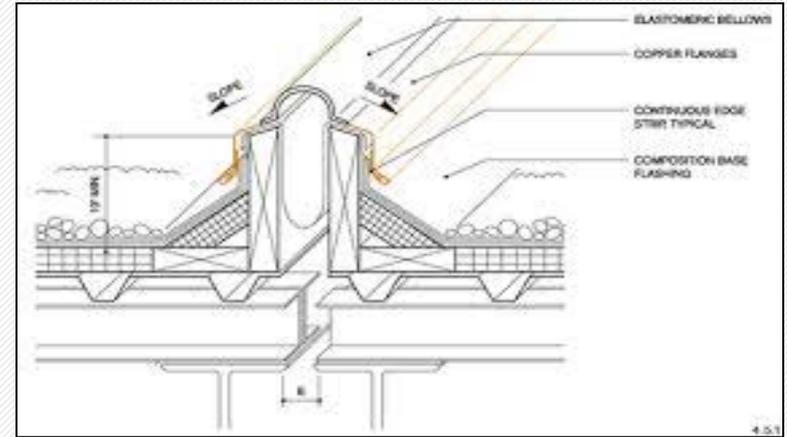
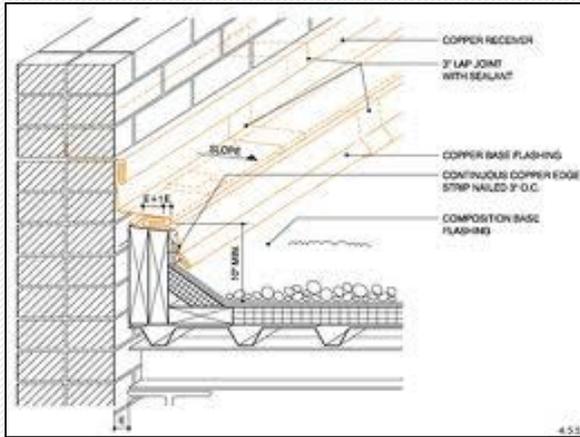
# Wood in Roof Construction in Type I & II Construction



# Wood in Roof Construction

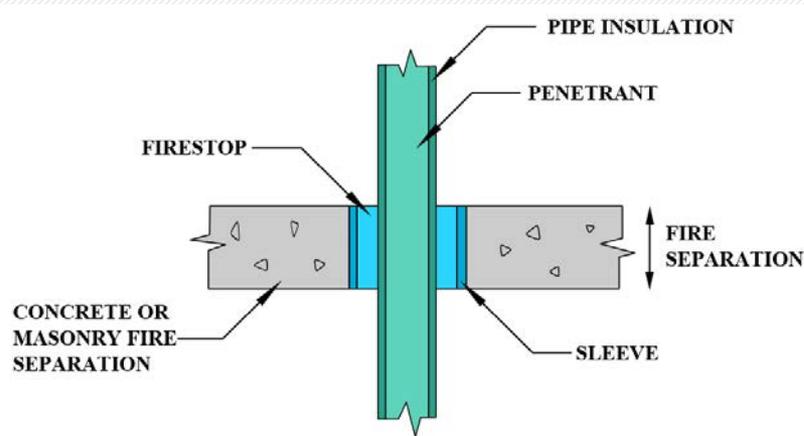


- 26. When not exceeding **24 inches above the roof deck**, **wood is permitted** to be used in roof construction for equipment support, building or roof system joints, skylight or mechanical equipment, curbs, cants, blocking and backing, and for parapet or roof edge construction.



# Chapter 7

## Fire and Smoke Protection Features



# Exception #7 IBC 714.4.1.2 – Horizontal Assemblies



- IBC section 714.4.1.2 is amended by modifying exception 7 as follows:
- 7. The ceiling membrane of 1- and 2-hour fire-resistance-rated horizontal assemblies is permitted to be interrupted with the double wood top plate of a fire-resistance-rated wall assembly provided that all **penetrating items through the double top plates are protected in accordance with Section 714.4.1.1.1 or 714.4.1.1.2.** ~~The fire-resistance rating of the wall shall not be less than the rating of the horizontal assembly.~~

# Horizontal Assemblies - Continuity



- IBC Sec. 711.4
- Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 712.1, 714.4, 715, 1009.3 and 1022.1. Skylights and.....

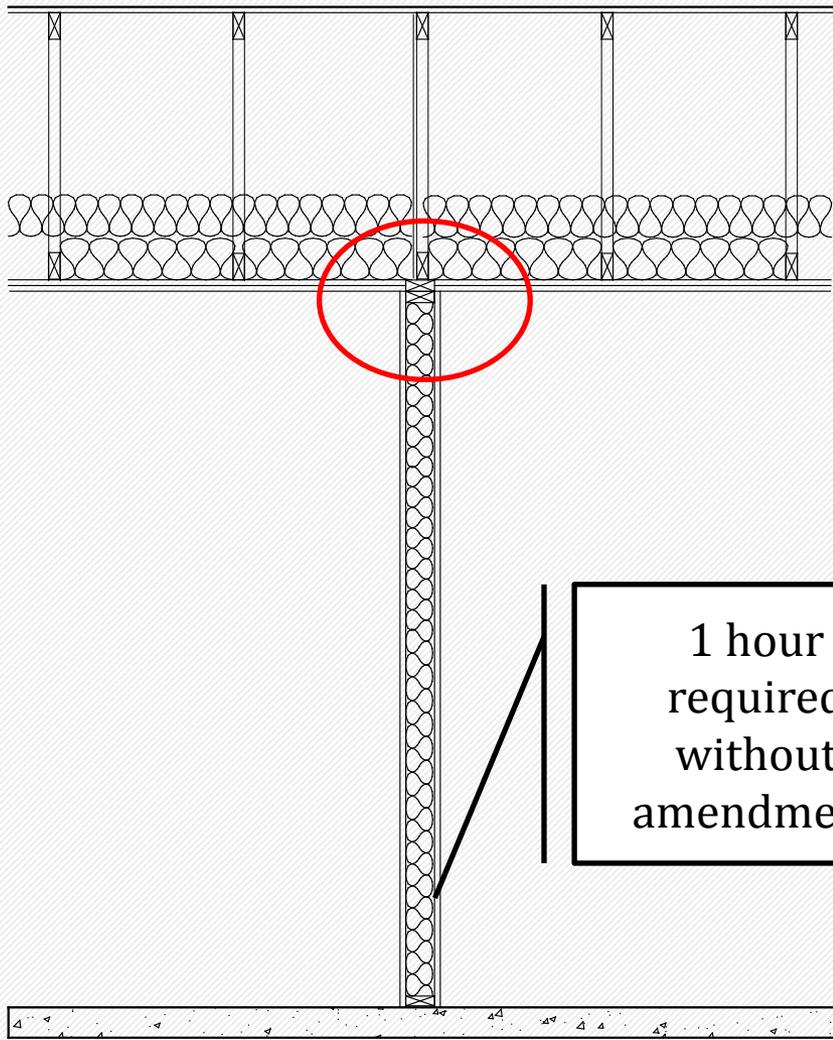


# IBC Table 602

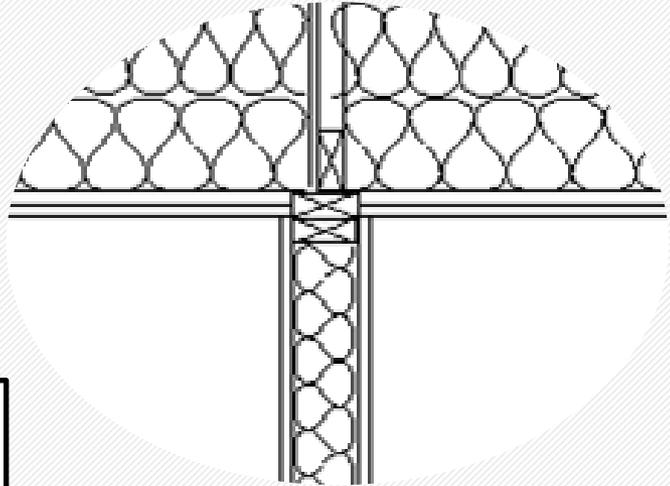


**TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)**

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A <sup>d</sup>	B	A <sup>d</sup>	B	HT	A <sup>d</sup>	B
Primary structural frame <sup>g</sup> (see Section 202 )	3 <sup>a</sup>	2 <sup>a</sup>	1	0	1	0	HT	1	0
Bearing walls									
Exterior <sup>f, g</sup>	3	2	1	0	2	2	2	1	0
Interior	3 <sup>a</sup>	2 <sup>a</sup>	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions	See Table 602								
Exterior									
Nonbearing walls and partitions									
Interior <sup>e</sup>	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction and associated secondary member (see Section 202 )	2	2	1	0	1	0	HT	1	0
Roof construction and associated secondary members (see Section 202 )	1 <sup>1/2</sup> <sup>b</sup>	1 <sup>b,c</sup>	1 <sup>b,c</sup>	0 <sup>c</sup>	1 <sup>b,c</sup>	0	HT	1 <sup>b,c</sup>	0



1 hour  
required  
without  
amendment



# Duct & Air Transfer Openings – Parts 1 & 2



# Duct & Air Transfer Openings #1



- **717.6.1 Through penetrations.** In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the International Mechanical Code that penetrates a fire-resistance-rated floor or floor/ceiling assembly that connects not more than two stories is permitted **without a shaft enclosure protection**, provided a listed fire damper is installed at the floor line or the duct is protected in accordance with section 714.4. For air transfer openings, see section 712.1.8.

# Duct & Air Transfer Openings #1

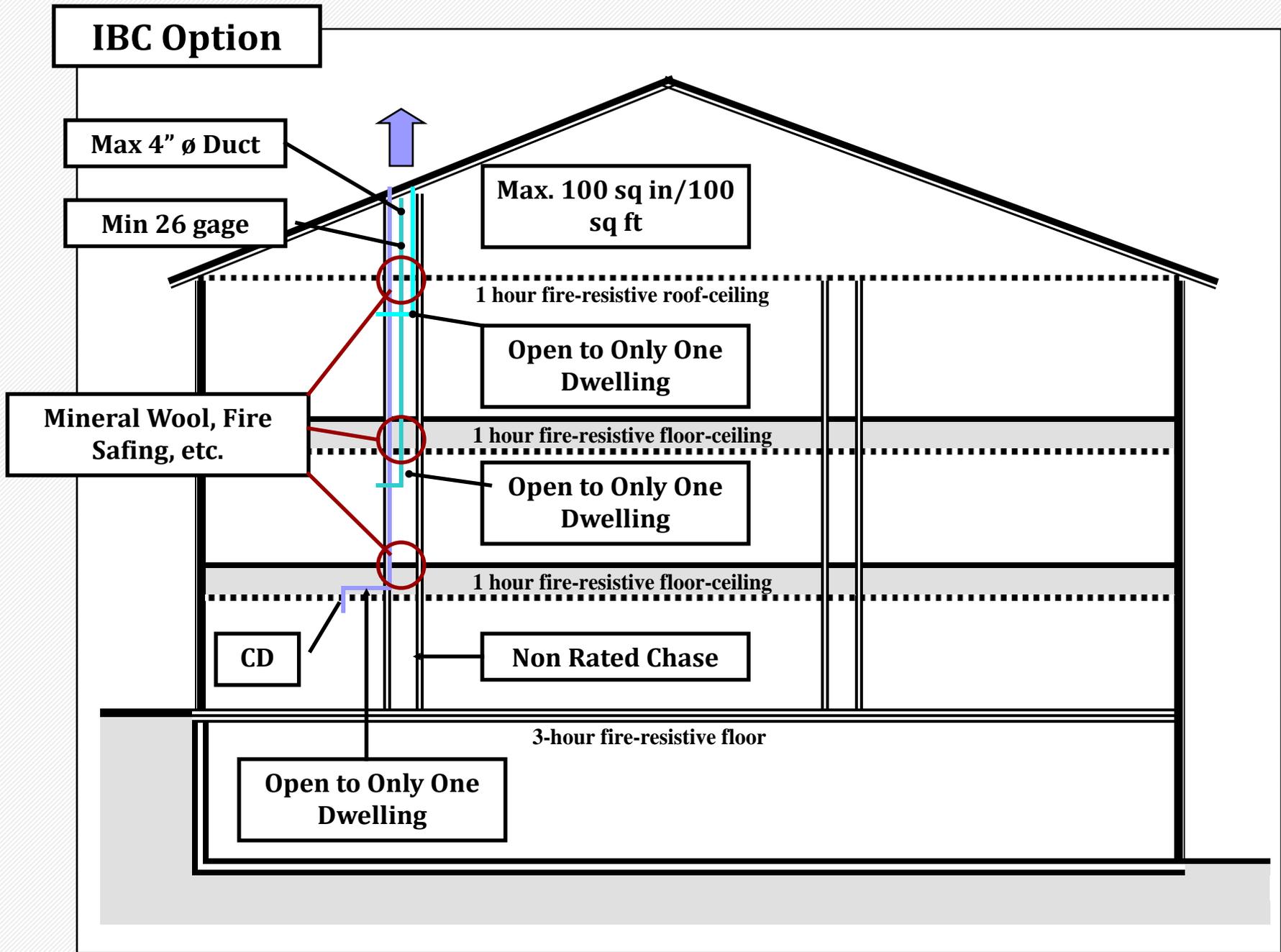


- **IBC Sec. 717.6.1 Exception(not amended):**
- **Exceptions:**
  - 1. A duct is permitted to penetrate three floors or less without a fire damper at each floor, provided the duct meets all of the following requirements:
    - a. The duct shall be contained and located **within the cavity of a wall** and shall be constructed of steel having a minimum wall thickness of 0.0187 inches (No. 26 gage) or the duct shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E 814 or UL 1479. The approved through-penetration firestop system shall have an F rating or T rating of not less than the required rating of the horizontal assembly being penetrated.

# Duct & Air Transfer Openings #1



- b. The duct shall open into only one dwelling or sleeping unit and the duct system shall be continuous from the unit to the exterior of the building.
- c. The duct shall not exceed 4-inch nominal diameter and the total area of such ducts shall not exceed 100 square inches in any 100 square feet of floor area.
- d. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 or UL 263 time temperature conditions under a minimum positive pressure differential of 0.01 inch of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.
- e. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a listed ceiling radiation damper installed in accordance with section 717.6.2.1.



# Duct & Air Transfer Openings #1

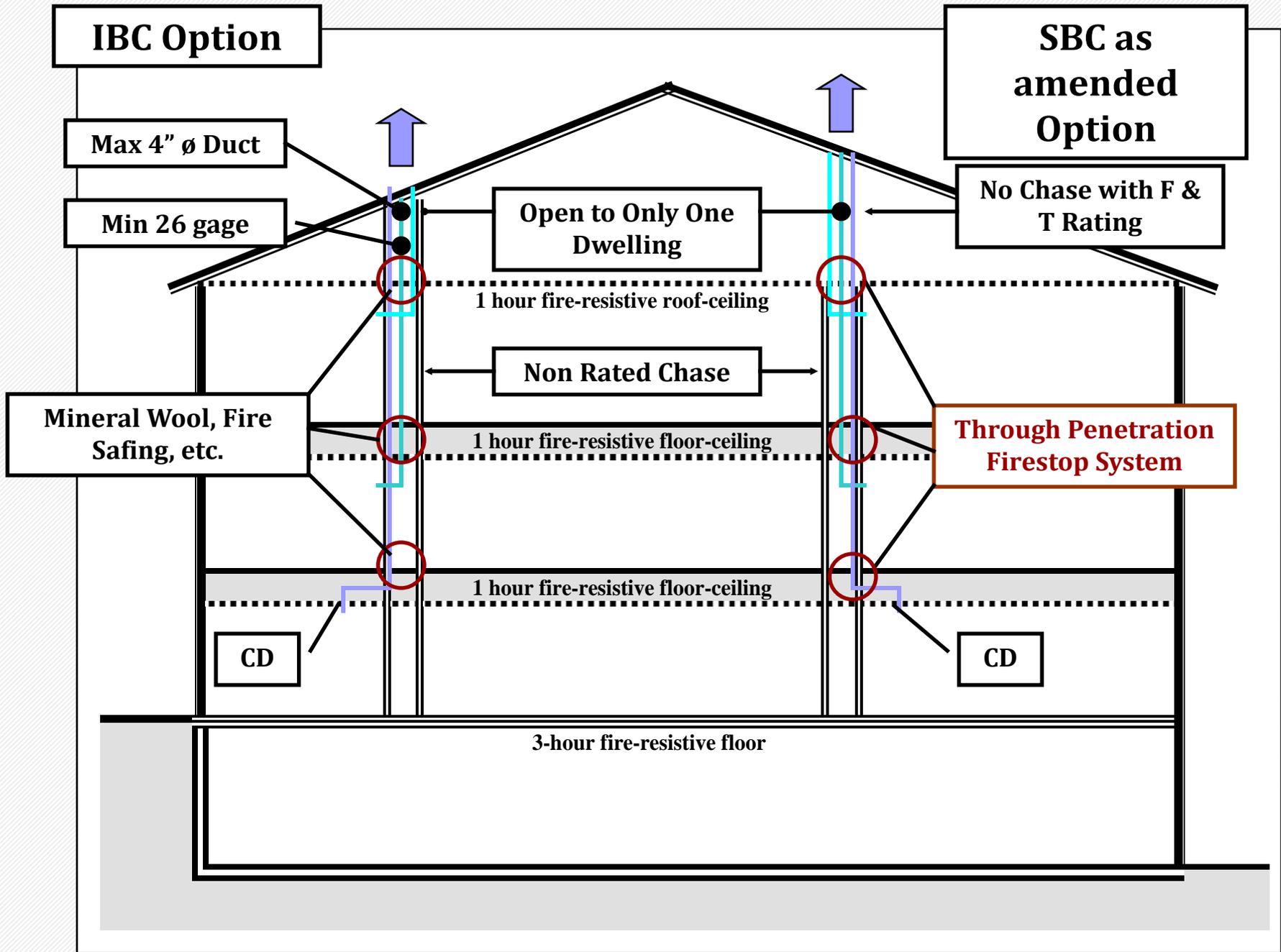


- **IBC Sec.717.6.1 exception 1 of 2 as AMENDED**
  - **Exceptions:**
    - 1. A duct is permitted to penetrate three floors or less without a fire damper at each floor, provided the duct meets all of the following requirements:
      - a. The duct shall be contained and located **within the cavity of a wall** and shall be constructed of steel having a minimum wall thickness of 0.0187 inches (0.4712 mm) (No. 26 gage) **or the duct shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E 814 or UL 1479. The approved through-penetration firestop system shall have an F rating or T rating of not less than the required rating of the horizontal assembly being penetrated.**
- All other conditions b-e unchanged.

# Where do we get that from?



- IBC Sec. 714.4.1.1.1.2 **through-penetration firestop system.**
- Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E 184 or UL 1479, ... The system shall have an F rating/T rating not less than 1 hour but not less than the required rating of the floor penetrated.
  - Exceptions:
    - 1. Floor penetrations contained and located **within the cavity of a wall** above the floor or below the floor **do not require a T rating.**



**IBC Option**

**SBC as amended Option**

Max 4" ø Duct

Min 26 gage

Open to Only One Dwelling

No Chase with F & T Rating

1 hour fire-resistive roof-ceiling

Non Rated Chase

Mineral Wool, Fire Safing, etc.

1 hour fire-resistive floor-ceiling

Through Penetration Firestop System

1 hour fire-resistive floor-ceiling

CD

CD

3-hour fire-resistive floor

# Duct & Air Transfer Openings #2



- **717.6.1 Through penetrations.** In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the International Mechanical Code that penetrates a fire-resistance-rated floor or floor/ceiling assembly that connects not more than two stories is permitted without a shaft enclosure protection, provided a listed fire damper is installed at the floor line or the duct is protected in accordance with section 714.4. For air transfer openings, see section 712.1.8.

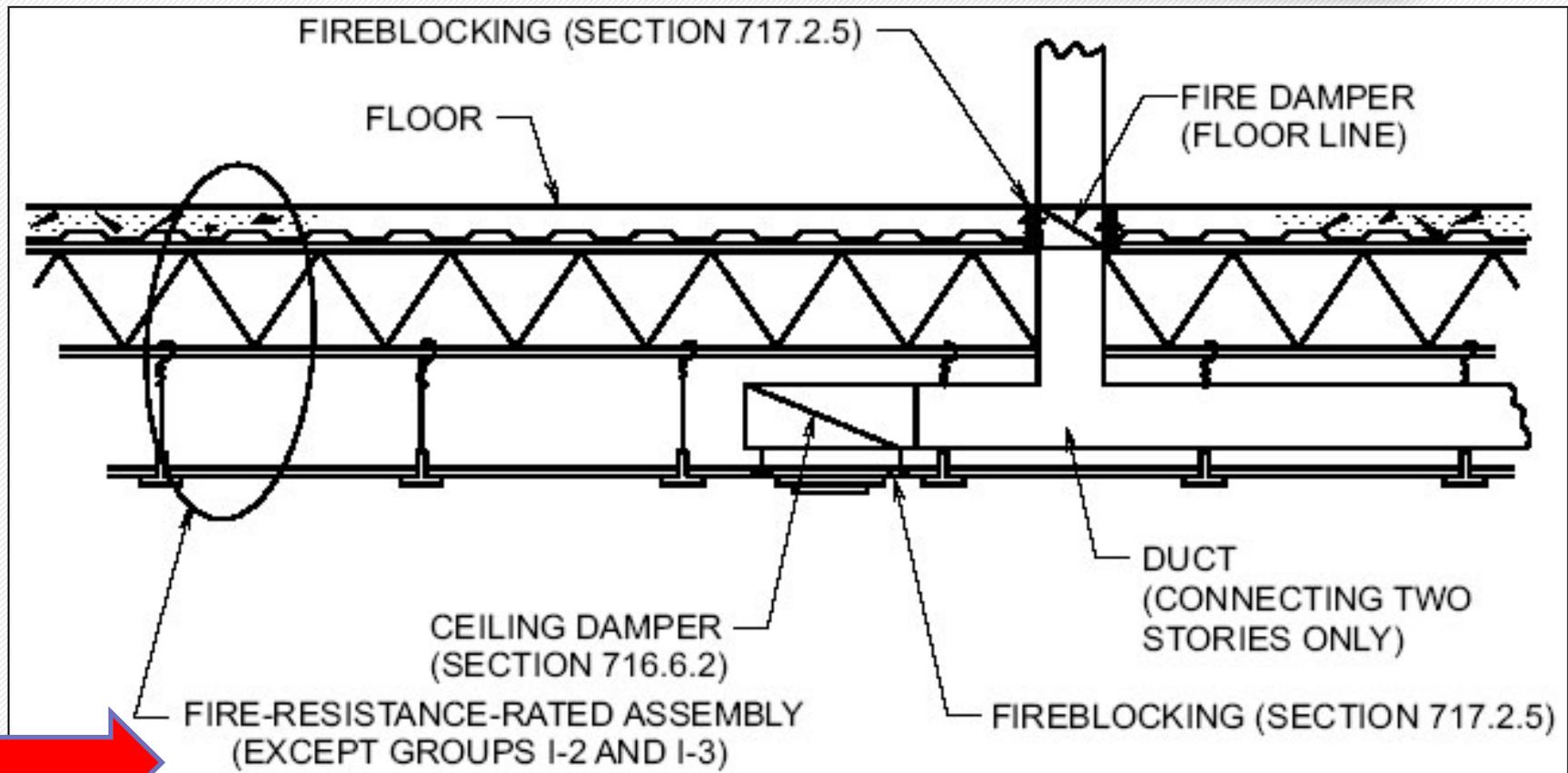
# Duct & Air Transfer Openings #2



- IBC Sec. 717.6.1 exception 2 added:
- 2. In Groups I-2 and I-3 occupancies, a duct constructed of approved materials in accordance with the International Mechanical Code that penetrates a fire-resistance-rated floor or floor/ceiling assembly **that connects not more than two stories** is permitted **without a shaft enclosure protection**, provided a listed **smoke/fire damper is installed at the floor line**.

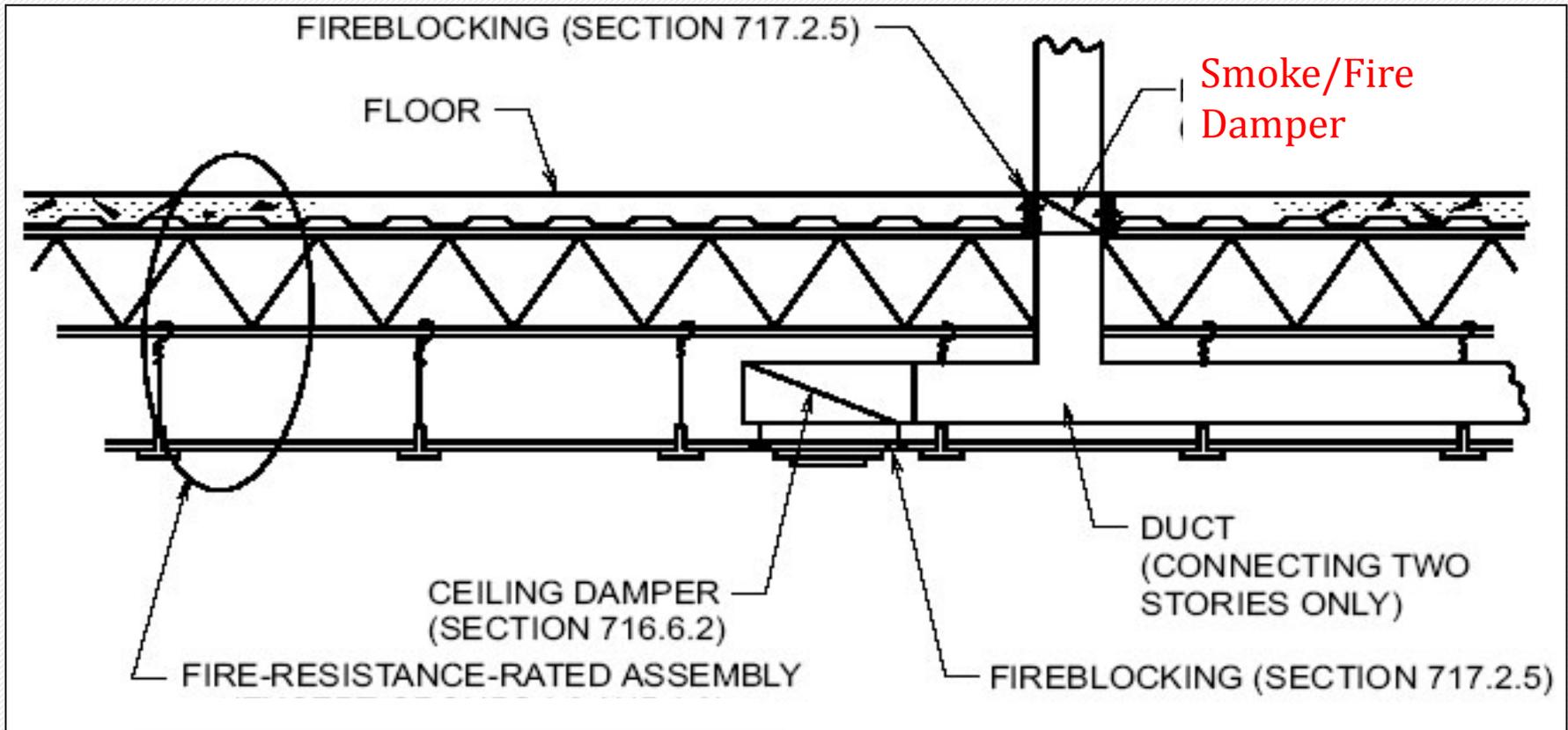
# Duct & Air Transfer Openings #2

## Un-Amended



# Duct & Air Transfer Openings #2

## As amended.



# Chapter 9

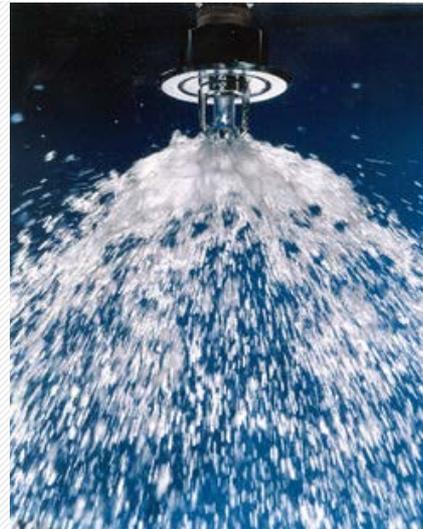
## Fire Protection Systems





**FIRE SPRINKLER**

# Sprinkling



# Sprinkling - FYI



- Group B - Ambulatory Care Facilities (4 or more care recipients or located on level other than LOED)
- Group E drops from 20,000 sf to 12,000 sf
- Group M Display and sale of mattresses or upholstered furniture > 5000 sf (in lieu of 12,000 sf)
- Group F-1 Manufacturing of mattresses or upholstered furniture > 2500 sf (in lieu of 12,000 sf)
- Group S-1 Storage of mattresses or upholstered furniture > 2500 sf (in lieu of 12,000 sf)

# Sprinkling Group R



- **903.2.8 Group R.** An automatic sprinkler system installed in accordance with section 903.3 shall be provided **throughout all buildings with a Group R fire area.** For the purposes of this provision, fire walls, party walls, or attached multiple fire-resistive exterior walls shall only create separate buildings where providing separation from occupancies other than Group R.
- **Exceptions:**
  1. A Group **R-1 or R-2 fire area** or combined fire areas less than **4,500 square feet** of building area.
  2. Group **R-3 or R-4 dwelling units** with less than **4,500 square feet of building area, excluding garages.**
  3. An automatic fire sprinkler system shall not be required if additions or alterations are made to existing Group R-3 or R-4 buildings or a portion thereof that do not have an automatic sprinkler system installed, unless required by a Minnesota license.

# Sprinkling Group R



- **903.2.8 Group R.** An automatic sprinkler system installed in accordance with section 903.3 shall be provided **throughout all buildings with a Group R fire area.** For the purposes of this provision, fire walls, party walls, or attached multiple fire-resistive exterior walls shall only create separate buildings where providing separation from occupancies other than Group R.
- **Exceptions:**
  4. A **Group R-1 multiunit resort buildings, as defined in Minnesota Statute 157.15 and licensed by the Minnesota Department of Health, with less than 9,250 square feet** of building area.

# Sprinkling Group R – Continued



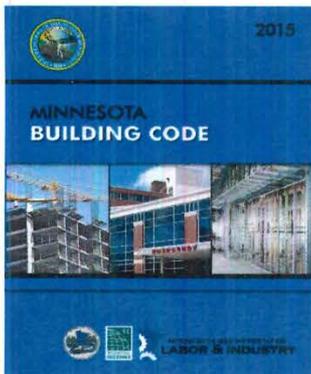
- **903.2.8.1 Group R-3 or R-4 congregate residences.** An automatic **sprinkler system** installed in accordance with section **903.3.1.3** shall be permitted in Group R-3 or R-4 congregate residences with 16 or fewer residents.
- **903.2.8.2 State licensed facilities.** Group R-3 or R-4 occupancies containing facilities licensed by the state of Minnesota shall be provided with an automatic sprinkler system **as required by applicable licensing provisions or this section, whichever is more restrictive.**
- **903.2.8.3 Residential hospice facilities.** An automatic sprinkler system installed in accordance with **NFPA 13** shall be provided throughout all buildings with a Group R-3 or R-4 fire area containing a residential hospice facility.

**Exception:** An automatic sprinkler system installed in accordance with Section 903.3.1.2 or 903.3.1.3 shall be allowed, provided that all habitable spaces and closets are sprinklered.

# Sprinkling Group R – Continued

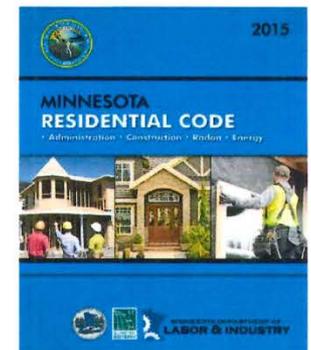


## Quick Reference Guide To The Requirement for Automatic Sprinkler Systems in Residential Occupancies



**2015 Minnesota Building Code**

**2015 Minnesota Residential Code**



# Sprinkling Group R – Continued



## 2015 Minnesota Residential Code WHEN FIRE SPRINKLERS ARE REQUIRED <sup>(c)</sup>

OCCUPANCY CLASSIFICATION	USE	USE DESCRIPTION/EXAMPLES	WHEN SPRINKLERS ARE REQUIRED	SPRINKLER SYSTEM REQUIREMENTS
IRC-1	Detached Single-family dwelling	Any building that contains one dwelling unit used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or occupied for living purposes.	≥ 4500 sq. ft. Floor Area <sup>(a)(b)</sup>	NFPA 13D or IRC P2904
IRC-2	Two-family dwelling	Any building that contains two separate dwelling units with separation either horizontal or vertical on one lot that is used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or occupied for living purposes.	All <sup>(b)</sup>	NFPA 13D <sup>(d)</sup> or IRC P2904 <sup>(d)</sup>
IRC-3	Townhouse	A single-family dwelling unit constructed in a group of two or more attached units in which each unit extends from the foundation to the roof and having open space on at least two sides of each unit. Each single-family dwelling unit shall be considered to be a separate building. Separate building service utilities shall be provided to each single-family dwelling unit when required by other chapters of the State Building Code.	All <sup>(b)</sup>	NFPA 13D <sup>(d)</sup> or IRC P2904 <sup>(d)</sup>

- (a)** Floor area shall include all floors and basements, excluding garages.
- (b)** An automatic residential fire sprinkler system shall not be required if additions, alterations, or repairs are made to existing buildings that do not have an automatic residential sprinkler system installed.
- (c)** Facilities licensed by the State of Minnesota shall be provided with an automatic sprinkler system as required by applicable licensing provisions or this section, whichever is more restrictive.
- (d)** Automatic sprinkler systems required in two-family dwellings and townhouse buildings shall be installed in accordance with the following:
  1. Attached garages are required to have one dry head sprinkler located within 5 lineal feet of each door installed in the common wall separating the dwelling unit and the attached garage;
  2. Attached covered patios, covered decks, covered porches, and similar structures are required to have automatic sprinklers with a minimum of one dry head for every 20 lineal feet (6.096 m) of common wall between the dwelling unit and the covered patio, covered deck, covered porch, or similar structure.

**Exception:** Attached roofs of covered patios, covered decks, covered porches, or similar structures that do not exceed 40 square feet (3,716 m<sup>2</sup>) of floor area.

# Sprinkling Group R – Continued



## 2015 Minnesota Building Code

### WHEN FIRE SPRINKLERS ARE REQUIRED IN GROUP R OCCUPANCIES <sup>(d)</sup>

OCCUPANCY GROUP	USE	USE DESCRIPTION/EXAMPLES	WHEN SPRINKLERS ARE REQUIRED	SPRINKLER SYSTEM REQUIREMENTS
R-1	Multiunit resort building <sup>(f)</sup>	MN§ 157.15: "Resort" means a building, structure, enclosure, or any part thereof located on, or on property neighboring, any lake, stream, skiing or hunting area, or any recreational area for purposes of providing convenient access thereto, kept, used, maintained, or advertised as, or held out to the public to be a place where sleeping accommodations are furnished to the public, and primarily to those seeking recreation for periods of one day, one week, or longer, and having for rent five or more cottages, rooms, or enclosures.	> 9250 sq. ft. of Building Area <sup>(a)</sup>	903.3.1.1 or 903.3.1.2
R-1	All others	<ul style="list-style-type: none"> <li>• Bed and breakfast with 6 or more guest rooms</li> <li>• Transient boarding houses with &gt; 10 occupants</li> <li>• Transient congregate living facilities</li> <li>• Hotels</li> <li>• Motels</li> </ul>	≥ 4500 sq. ft. of Building Area <sup>(a)</sup>	903.3.1.1 or 903.3.1.2
R-2	All	<ul style="list-style-type: none"> <li>• Apartment houses</li> <li>• Nontransient boarding houses</li> <li>• Nontransient congregate living facilities with &gt; 16 occupants</li> <li>• Convents</li> <li>• Dormitories</li> <li>• Fraternities and sororities</li> <li>• Nontransient hotels</li> <li>• Monasteries</li> <li>• Nontransient Motels</li> <li>• Timeshares</li> </ul>	≥ 4500 sq. ft. of Building Area <sup>(a)</sup>	903.3.1.1 or 903.3.1.2
R-3 <sup>(g)</sup>	Dwelling unit <sup>(e)</sup>	Identified in <a href="#">MR 1305.0302 Table 302.2</a> as "R-3 Dwelling Unit"	≥ 4500 sq. ft. of Building Area <sup>(a)(b)(h)</sup>	903.3.1.1, 903.3.1.2, or 903.3.1.3

# Sprinkling Group R – Continued



OCCUPANCY GROUP	USE	USE DESCRIPTION/EXAMPLES	WHEN SPRINKLERS ARE REQUIRED	SPRINKLER SYSTEM REQUIREMENTS
R-3 <sup>(g)</sup>	Dwelling unit	One dwelling unit in mixed occupancy buildings	≥ 4500 sq. ft. of Building Area <sup>(a)(b)(h)</sup>	903.3.1.1 or 903.3.1.2 <sup>(c)</sup>
R-3 <sup>(g)</sup>	All others	<ul style="list-style-type: none"> <li>Identified in <a href="#">MR 1305.0302 Table 302.2</a> as “R-3”</li> <li>Nontransient boarding houses with 16 or fewer occupants</li> <li>Transient boarding houses with 10 or fewer occupants</li> <li>Nontransient congregate living facilities with 16 or fewer occupants</li> <li>Transient congregate living facilities with 10 or fewer occupants</li> <li>Two dwelling units in mixed occupancy building</li> </ul>	All <sup>(h)</sup>	903.3.1.1 or 903.3.1.2 <sup>(c)(i)</sup>
R-4 <sup>(g)</sup>	All	Identified in <a href="#">MR 1305.0302 Table 302.2</a> as “R-4”	All <sup>(h)</sup>	903.3.1.1 or 903.3.1.2 <sup>(c)(i)</sup>

- <sup>(a)</sup> For the purposes of these provisions, fire walls, party walls, or attached multiple fire resistive exterior walls shall only create separate buildings where providing separation from occupancies other than Group R.
- <sup>(b)</sup> Excludes garages.
- <sup>(c)</sup> An automatic sprinkler system installed in accordance with section 903.3.1.3 shall be permitted in Group R-3 or R-4 congregate residences with 16 or fewer residents.
- <sup>(d)</sup> Facilities licensed by the State of Minnesota shall be provided with an automatic sprinkler system as required by applicable licensing provisions or this section, whichever is more restrictive.
- <sup>(e)</sup> As classified in [MR 1305.0302 Table 302.2](#).
- <sup>(f)</sup> As defined in [Minnesota Statute 157.15](#) and licensed by the Minnesota Department of Health.
- <sup>(g)</sup> Not regulated under MR 1309.
- <sup>(h)</sup> An automatic fire sprinkler system shall not be required if additions or alterations are made to existing Group R-3 or R-4 buildings or a portion thereof that do not have an automatic sprinkler system installed, unless required by a Minnesota license.
- <sup>(i)</sup> An automatic sprinkler system installed in accordance with NFPA 13 shall be provided throughout all buildings with a Group R-3 or R-4 fire area containing a residential hospice facility.

**Exception:** An automatic sprinkler system installed in accordance with Section 903.3.1.2 or 903.3.1.3 shall be allowed, provided that all habitable spaces and closets are sprinklered.

# Other sections affected-



- Group R –
- Other effected sections:
- NFPA 13R & 13D standard
- Fire-resistive corridors Table 1018.1 (table assumes sprinkled R's)
- Emergency escape & rescue openings (section assumes sprinkled R's)

# Elevators & sprinkling



# Elevators & Sprinkling



- **IBC [F] section 903.3.1.1.1.** IBC [F] section 903.3.1.1.1 is amended by adding a new item 7 to the list of exempt locations to read as follows:
  7. Sprinkler protection shall not be installed in elevator shafts, elevator pits, or elevator machine rooms.

**Exception to #7:** Health care occupancies that are **licensed by the Minnesota Department of Health** or that participate in Title XVIII (Medicare) or Title XIX (Medicaid) of the Social Security Act



# Section 905 Standpipe Systems



# Remember this slide? Small Hose Connection



- "Small hose connection" means a 1 1/2-inch connection supplied inside of a building for firefighting overhaul operations in sprinkler-protected structures.
- In reference to 1305.0905 Subp. 6a.
- We'll talk later about this.....

# Small Hose Connections



- Subp. 6a. **IBC [F] section 905.3.10.** IBC [F] section 905.3 is amended by adding a subsection to read as follows:
- **905.3.10 Group R-2 occupancies small hose connections.** ~~Class III wet standpipes~~ **Small hose connections** shall be installed in Group R-2 occupancies three or more stories in height where any portion of the building's interior area **is more than 200 feet (60,960 mm) of travel, vertically or horizontally, from the nearest point of fire department vehicle access.** Small hose connections required by this section shall be **installed in enclosed stairways.** comply with the following:
  1. Supply one 1-1/2-inch (38-mm) fire hose valve at each floor level or intermediate stair landing in each required and enclosed stairway.
  2. The water for the small hose connections shall be supplied separately from the sprinkler system protecting that area so that the small hose connections are still functional if the water supply to the sprinkler system is shut down following fire extinguishment.

# Small Hose Connections



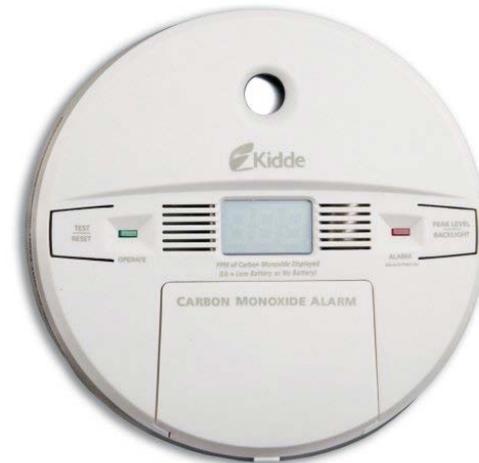
- Subp. 6a. **IBC [F] section 905.3.10.** IBC [F] section 905.3 is amended by adding a subsection to read as follows:
  3. The piping shall be a minimum of 1-1/2 inch (38 mm).
  4. The water shall be supplied from a wet-pipe sprinkler system only.
  5. The piping shall be comprised of metallic piping and hose valve connections.

Permanent signage shall be required which reads "**Fire Department Overhaul Hose Connection**" at each connection in the building. If a separate standpipe system is provided, a sign shall also be provided at the exterior FD connection.

# Section 908 Emergency Alarm Systems



Smoke isn't the only thing that can kill you.



# CO Alarms – Statute 299F.51



- **299F.51 REQUIREMENTS FOR CARBON MONOXIDE ALARMS.**
- **Subdivision 1. Generally.**
- Every single family dwelling and every dwelling unit in a multifamily dwelling must have an approved and operational carbon monoxide alarm installed within ten feet of each room lawfully used for sleeping purposes.
- **Subd. 2. Owner's duties.**
- The owner of a multifamily dwelling unit which is required to be equipped with one or more approved carbon monoxide alarms must:
  - (1) provide and install one approved and operational carbon monoxide alarm within ten feet of each room lawfully used for sleeping; and
  - (2) replace any required carbon monoxide alarm that has been stolen, removed, found missing, or rendered inoperable during a prior occupancy of the dwelling unit and which has not been replaced by the prior occupant prior to the commencement of a new occupancy of a dwelling unit. (see full Statute text)

# CO alarms - 1305



- **908.7 Carbon monoxide alarms.** Group I or R occupancies located in a building containing a fuel-burning appliance or in a building that has an attached garage shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be:
  - A. listed as complying with UL 2034;
  - B. installed and maintained in accordance with NFPA 720 and the manufacturer's instructions; and
  - C. installed **within 10 feet** of each sleeping unit or sleeping room.

# CO alarms - 1305



**Exception:** Individual sleeping units or dwelling units that do not contain a fuel-burning appliance or have an attached garage, but are located in a multiunit building with a fuel-burning appliance or attached garage, **need not be equipped with a single-station carbon monoxide alarm** if:

(1) the sleeping unit or dwelling unit is **not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage**; and

(2) the building is equipped with **a common area carbon monoxide alarm system.**

# Chapter 10 Means of Egress



# Locking 2007 SBC vs 2015 SBC



- **2007 SBC:**
- Special Egress Control Devices (Health care: dementia, nurseries, psych wards)
- Special Locking (time out rooms)
- Access-Controlled Egress (sensor)
- Delayed Egress (schools)
  
- **2015 SBC:**
- Special Egress Control **is now** Special Door Locking arrangements
- Special Locking **is now** Special Detention
- Access-Controlled **is now** Electromagnetically Locked
- Delayed Egress remained Delayed Egress

# Locking 2015 IBC – the list



- Subp. 6. **IBC section 1008.1.9.3.** IBC section 1008.1.9.3 is amended to read as follows:
- **1008.1.9.3 Locks and latches.** Locks and latches shall be permitted to prevent operation of doors where any of the following exists:
  1. Places of detention or restraint.
  2. In buildings in occupancy Group A having an occupant load of 300 or less, in buildings in occupancy Groups B, F, M, and S, and in ~~churches~~ **places of religious worship**, the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
    - 2.1. The locking device is readily distinguishable as locked
    - 2.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED. The sign shall be in letters 1 inch high on a contrasting background.
    - 2.3. The use of the key-operated locking device is revokable by the building official for due cause.

# Locking 2015 IBC



3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts has no doorknob or surface-mounted hardware.
4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt, or security chain, provided such devices are openable from the inside without the use of a key or tool.
5. Fire doors, after the minimum elevated temperatures have disabled the unlatching mechanism, in accordance with listed fire door test procedures.
6. **Delayed egress** locks, installed and maintained in conformance with section 1008.1.9.7.
7. **Special egress-control devices-locking** arrangements installed and maintained in accordance with section 1008.1.9.6.
8. Electromagnetically locked egress doors, installed and maintained in conformance with section 1008.1.9.9.
9. In rooms, other than cells, where occupants are being restrained for safety or security reasons, **special locking detention** arrangements which that comply with the requirements of section 1008.1.10 1008.1.11 are permitted.

# Special Door Locking



- **1008.1.9.6 Special door locking arrangements in Group I-1, I-2, R-3, or R-4 occupancies.** Approved special door locking arrangements shall be permitted in a Group I-1, I-2, R-3, or R-4 occupancy when a person's clinical needs require such locking. Special locking devices shall be permitted on doors in these occupancies when the building is equipped throughout with an approved automatic sprinkler system in accordance with IBC section 903.3.1.1 and an approved automatic smoke or heat detection system is installed in accordance with section 907. The special locking arrangements and devices are permitted if they are installed and comply with the requirements in items 1 through 10 below. **Items 1 through 4 shall not apply to special locking arrangements in areas where persons who, because of clinical needs, require restraint or containment as part of the function of a psychiatric treatment area.**

# Special Door Locking



- 1. The special locking devices shall unlock upon actuation of either the automatic sprinkler system or the automatic fire-detection system.
- 2. The special locking devices shall unlock upon loss of power controlling the lock or lock mechanism.
- 3. The special locking devices shall have the capability of being unlocked by a signal from the fire-command center, a nursing station, or other approved location.
- 4. A building occupant shall not be required to pass through more than one door equipped with a special egress lock before entering an exit.
- 5. The procedures for the operations of the unlocking system shall be described and approved as part of the emergency planning and preparedness required by IFC chapter 4.
- 6. All clinical staff shall have the keys, codes, or other means necessary to operate the locking devices.
- 7. Emergency lighting shall be provided at a door containing a special locking device.

# Special Door Locking



- 8. 24-hour patient supervision is provided within the secured area.
- 9. The special locking devices are designed to fail in the open position.
- 10. Floor levels within the building or portion of the building with special locking arrangements shall be divided into at least two compartments by smoke barriers meeting the requirements of section 709.

**Exception to item #10:** In existing Group R-3 occupancies where the construction of smoke barrier compartmentation is not practical, an existing sleeping room provided with smoke-tight construction and having an escape window complying with section 1029 is allowed.

# Delayed Egress



- **1008.1.9.7 Delayed egress door locks.** Approved, listed, delayed egress locks shall be permitted to be installed on doors serving any occupancy except Assembly Group A occupancies and High Hazard Group occupancies, **and assembly uses within Educational Group E occupancies.** Delayed egress locks shall be installed only in buildings that are equipped throughout with an automatic sprinkler system in accordance with section 903.3.1.1 **or** an approved smoke detection system installed in a means of egress system serving the locked area, provided that the doors unlock in accordance with Items 1 through 4 below. A building occupant shall not be required to pass through more than one door equipped with a delayed egress lock before entering an exit



# Why did we need to do that?

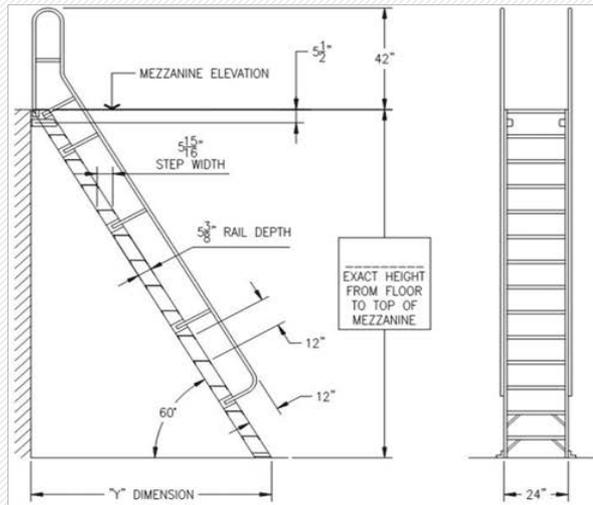


- IBC section 303 Assembly Group A
- IBC Sec. 303.1.3 Associated with Group E occupancies. A room or space used for assembly purposes that is associated with a Group E occupancy is not considered a separate occupancy.

# Stairways and Handrails



VS.



# Alternating Tread Device



- Subpart 1. **IBC section 1009.13.** IBC section 1009.9 1009.13 is amended to read as follows:
- **1009.13 Alternating tread devices.** Alternating tread devices are limited to an element of a means of egress in buildings of Groups F, H, and S from a mezzanine not more than 250 square feet in area and which serves not more than five occupants; in buildings of Group I-3 from a guard tower, observation station, or control room not more than 250 square feet in area and **for access to unoccupied roofs. Access to mechanical equipment or appliances on a roof shall be in accordance with section 1209.3.1 and the Minnesota Mechanical Code.** (IBC sections 1009.13.1, 1009.13.2, and the exception still apply.)

# Ships Ladders



- **IBC section 1009.14.** IBC section 1009.14 is amended to read as follows:

**1009.14 Ships ladders.** Ships ladders constructed as required for permanent stairs in accordance with Minnesota Rules, part 1305.1209, shall be permitted to be used as a means of egress component at the following locations:

1. Ships ladders are permitted to be used in Group I-3 occupancies for means of egress at control rooms or elevated facility observation stations not more than 250 square feet in floor area.

# Ships Ladders



2. Ships ladders are permitted to be used as a component for means of egress at recessed or elevated floors or platforms when the area served has an occupant load of five or less and the space meets **all of the following criteria:**

(a) access to the area served is limited to building facilities staff, maintenance staff, employees, or other authorized personnel;

(b) required access to the area served is limited and periodic;

(c) the area served is used for building maintenance service functions, or for equipment access or monitoring;

(d) the area served is not required to have a second means of egress by other provisions of this code; and

(e) the area served is not classified as a Group H occupancy.

3. Ships ladders are permitted to be used for access to unoccupied spaces in accordance with Minnesota Rules, part 1305.1209.

# Alternating Tread Device -Definition



- ALTERNATING TREAD DEVICE. A device that has a series of steps between 50 and 70 degrees from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time. **A ships ladder in compliance with Minnesota Rules, part 1305.1209, shall be considered equivalent to an alternating tread device.**

# Window Fall Protection



# Window Fall Protection



- **IBC section 1013.8.** IBC section 1013.8 is amended to read as follows:
- **1013.8 Window sills.** In occupancy groups **R-1, R-2, and R-3** where the lowest part of the opening of an operable window is located **more than 72 inches (1829 mm) above the finished grade** or other surface below, the lowest part of the window opening shall be at a height **not less than 36 inches (914 mm) above the finished floor surface** of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4-inch-diameter (102 mm) sphere where such openings are located within 36 inches (914 mm) of the finished floor.

# Window Fall Protection

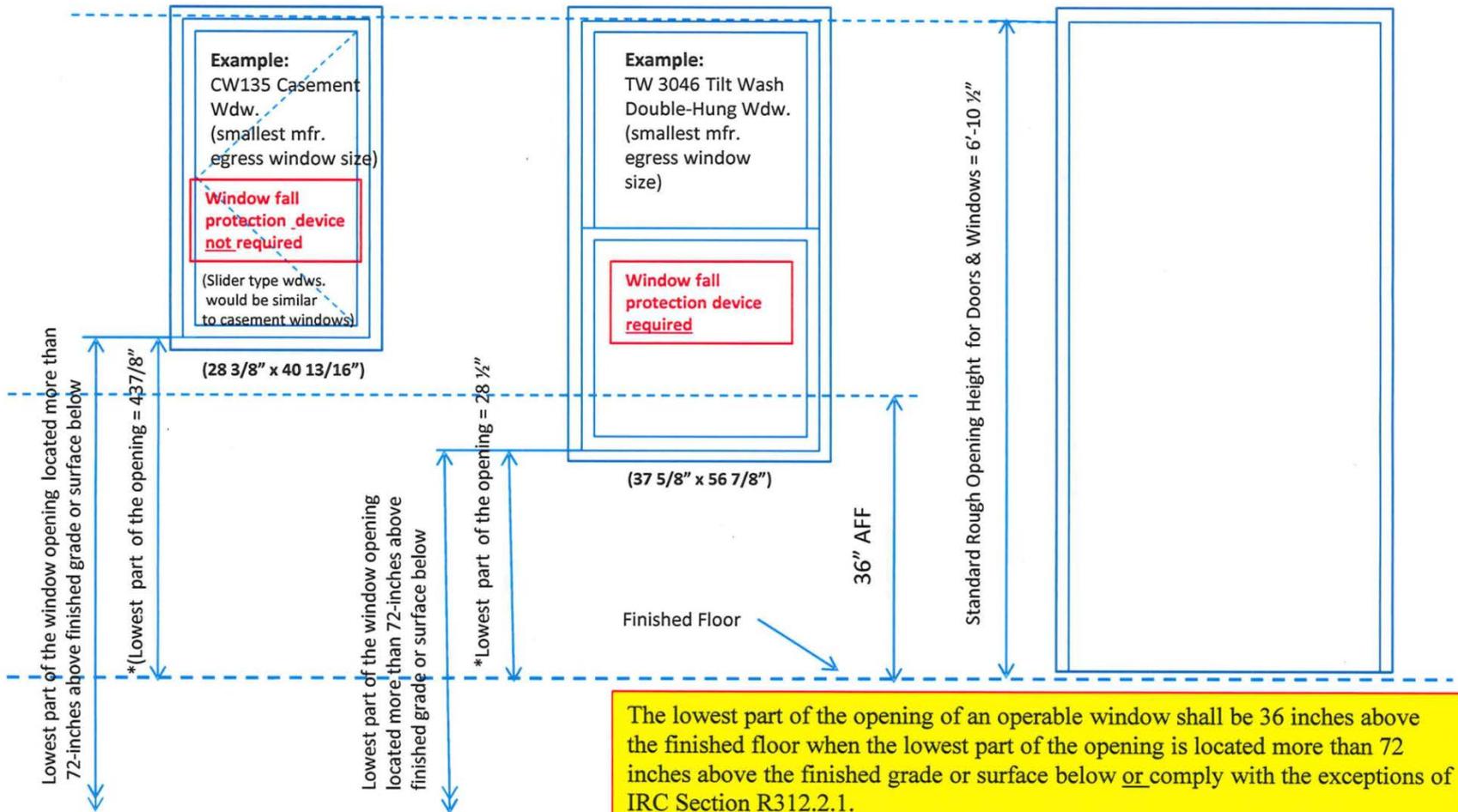


- **Exceptions:**
- 1. Operable windows where the lowest part of the opening is located **more than 75 feet** (22860 mm) above the finished grade or other surface below and that are provided with **window fall-prevention devices** that comply with **ASTM F 2006**.
- 2. Windows whose openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.
- 3. Openings that are provided **with window fall-prevention devices** that comply with **ASTM F 2090**.
- 4. Windows that are provided with **window opening control devices** that comply with section 1013.8.1.
- 5. Replacement windows for occupancy groups R-1, R-2, and R-3 located on or below the third story above grade plane.

# 2012 IBC

## Window Fall Protection

This drawing is not drawn to scale



Window Number	Top of Subfloor to Top of Inside Sill Stop Inches
*TW3042	32 1/2"
*CW 135	43 7/8"

\* From window manufactures product guide

# Window Fall Protection



- **Exceptions:**
- 3. Openings that are provided **with window fall-prevention devices** that comply with **ASTM F 2090**.



# Window Fall Protection



- **Exceptions:**
- 4. Windows that are provided with **window opening control devices** that comply with section 1013.8.1..



# Window Fall Protection



- **1013.8.1 Window opening control devices.** Window opening control devices shall comply with ASTM F 2090. The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the minimum net clear opening area of the window unit to less than the area required by **section 1029.2.** (Emergency Escape and Rescue)



## ASTM F2006 and ASTM F2090 What's the difference?

- **ASTM F2006**  
Standard Safety Specification for Window Fall Prevention Devices **for Non-Emergency Escape (Egress) and Rescue (Ingress) Windows**
- **ASTM F2090**  
Standard Specification for Window Fall Prevention Devices **with Emergency Escape (Egress) Release Mechanisms**

# Fire-Resistance Rated Corridors

## Part 1 & 2



# Fire-Resistance Rated Corridors Part 1



- Remember our sprinkler amendment? 9250 sf & 4500 sf?
- IBC Table 1018.1:

CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system <sup>c</sup>
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	Not Permitted	0
R	Greater than 10	Not Permitted	0.5
I-2 <sup>a</sup> , I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 <sup>b</sup>

a. For requirements for occupancies in Group I-2, see Section 407.3.

b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

# Fire-Resistance Rated Corridors Part 1

## IBC Table 1018.1



**CORRIDOR FIRE-RESISTANCE RATING**

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system <sup>c</sup>
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	<b>1</b>	0
R	Greater than 10	Not Permitted	0.5
I-2 <sup>a</sup> , I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 <sup>b</sup>

- a. For requirements for occupancies in Group I-2, see Section 407.3.
- b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.
- c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

# Fire-Resistance Rated Corridors Part 2



- Usually in non-sprinkled Group A, B, E, F, H, M, and S buildings
- OR
- Group R or Group I Occupancies

**CORRIDOR FIRE-RESISTANCE RATING**

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system <sup>c</sup>
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	<sup>1</sup> Not Permitted	0.5
I-2 <sup>a</sup> , I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 <sup>b</sup>

a. For requirements for occupancies in Group I-2, see Section 407.3.

b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.

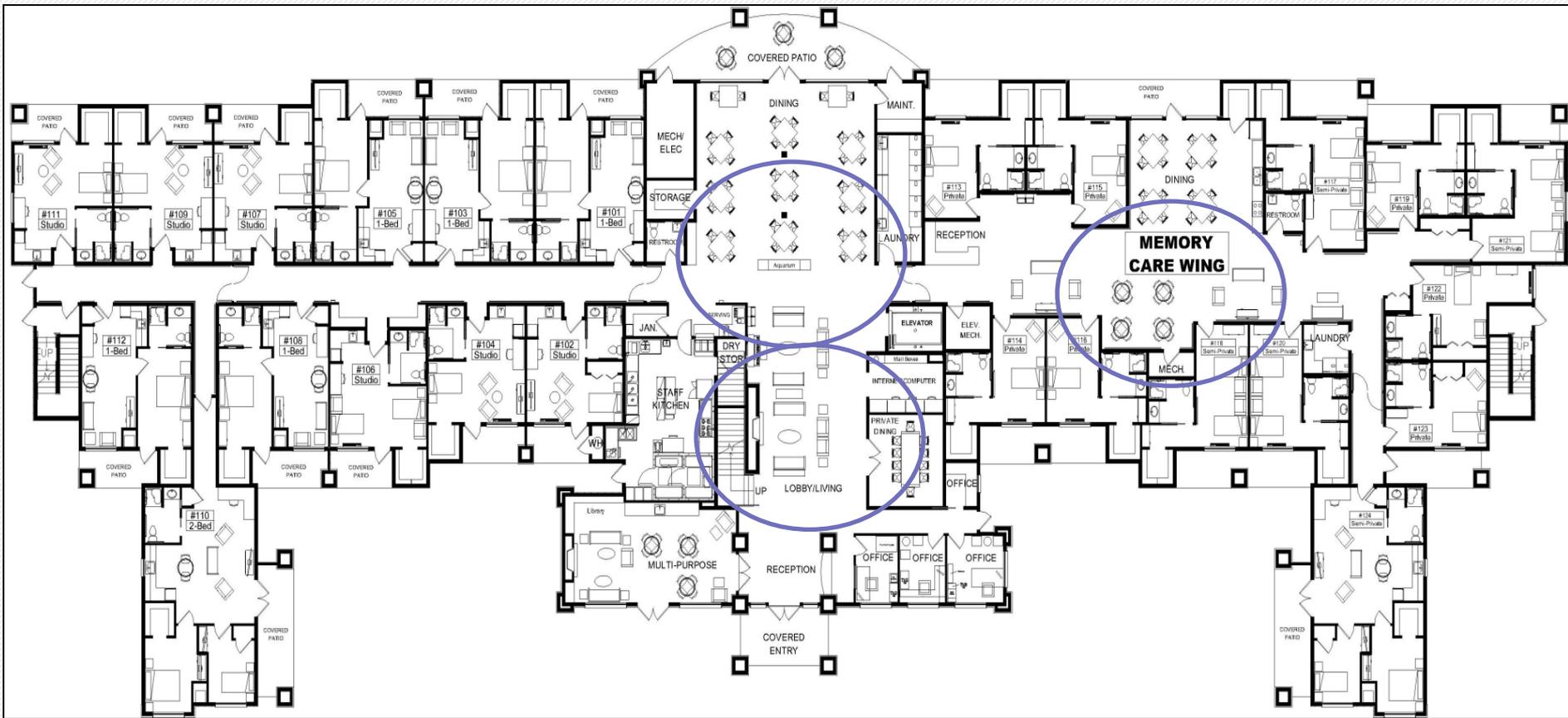
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

# Fire-Resistance Rated Corridors Part 2 – Un-amended



- IBC Section 1018.6 Corridor continuity. Fire-resistance-rated corridors **shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms.** When the path of egress travel within a fire-resistance-rated corridor to the exit includes travel along unenclosed exit access stairways or ramps, the fire resistance-rating shall be continuous for the length of the stairway or ramp and for the length of the connecting corridor on the adjacent floors leading to the exit.
  - Exception: Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.

# Corridors – Group I-1 Assisted Living



# Corridors - Hotels



# Fire-Resistance Rated Corridors Part 2 - Amended



- IBC Section 1018.6 Corridor continuity. Fire-resistance-rated corridors **shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms.** When the path of egress travel within a fire-resistance-rated corridor to the exit includes travel along unenclosed exit access stairways or ramps, the fire resistance-rating shall be continuous for the length of the stairway or ramp and for the length of the connecting corridor on the adjacent floors leading to the exit.

# Fire-Resistance Rated Corridors Part 2



- **Exceptions:**
- 1. Foyers, lobbies, or reception rooms constructed as required for corridors shall not be construed as intervening rooms if the **aggregate area** of these spaces **does not exceed 1,000 square feet per floor**.
- 2. Foyers, lobbies, or reception rooms that **are more than 1,000 square** feet per floor in aggregate area and **other rooms** or spaces that are constructed as required for corridors shall not be construed as intervening rooms when the rooms or spaces meet the following:
  - (a) The spaces are not occupied as dwelling units, sleeping units, incidental uses or hazardous uses.
  - (b) The rooms, spaces, or corridors are protected by an automatic smoke detection system that initiates alarm notification devices in all normally occupied rooms or spaces that use the corridor for a means of egress.
  - (c) The room or space is arranged so that it does not obstruct access to the required exits.
  - (d) **Group R occupancies shall be provided with an automatic sprinkler system throughout to allow the use of exception #2.**

# Stair enclosures and Exit Passageways:



- Two sections; same exception

# Stair & Ramp Enclosures



- **IBC Sec. 1022.5 Unamended:**
- **1022.5 Penetrations.** Penetrations into and openings through interior exit stairways and ramps are prohibited except for required exit doors, equipment, and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communications systems and electrical raceway serving the interior exit stairway or ramp and terminating at a steel box not exceeding square inches (0.010 m<sup>2</sup>). Such penetrations shall be protected in accordance with section 714. There shall be no penetrations or communicating openings, whether protected or not, between any other interior exit stairways and ramps.
  - **Exception:** Membrane penetrations shall be permitted on the outside of the interior exit stairway and ramp. Such penetrations shall be protected in accordance with Section 714.3.2

# Exit Passageways



- **IBC Sec. 1023.6 unamended:**
- **1023.6 Penetrations.** Penetrations into and openings through an exit passageway are prohibited except for required exit doors, equipment, and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication, and electrical raceway serving the exit passageway and terminating at a steel box not exceeding 16 square inches (0.010 m<sup>2</sup>). Such penetrations shall be protected in accordance with section 714. There shall be no penetrations or communicating openings, whether protected or not, between any other exit passageway.
  - **Exception:** Membrane penetrations shall be permitted on the outside of the exit passageway. Such penetrations shall be protected in accordance with Section 714.3.2

# Why the exception?



# The problem:



# Stair & Ramp Enclosures – As amended



- **IBC Section 1022.5** is amended to read as follows:
- **1022.5 Penetrations.** Penetrations into and openings through interior exit stairways and ramps are prohibited except for required exit doors, equipment, and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communications systems and electrical raceway serving the interior exit stairway or ramp and terminating at a steel box not exceeding square inches (0.010 m<sup>2</sup>). Such penetrations shall be protected in accordance with section 714. There shall be no penetrations or communicating openings, whether protected or not, between any other interior exit stairways and ramps.

# Exit Passageways – As Amended



- **IBC Section 1023.6** is amended to read as follows:
- **1023.6 Penetrations.** Penetrations into and openings through an exit passageway are prohibited except for required exit doors, equipment, and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication, and electrical raceway serving the exit passageway and terminating at a steel box not exceeding 16 square inches (0.010 m<sup>2</sup>). Such penetrations shall be protected in accordance with section 714. There shall be no penetrations or communicating openings, whether protected or not, between any other exit passageway.



# Emergency Escape & Rescue

Parts 1, 2 & 3





- **1029.1 General.** In addition to the means of egress required by this chapter, provisions shall be made for emergency escape and rescue openings in **Group R-2 occupancies in accordance with Tables 1021.2(1) and 1021.2(2) and Group R-3 occupancies.** Basements and sleeping rooms below the fourth story above grade plane shall have at least one exterior emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such opening openings shall open directly into a public way, public alley, or to a yard or court that opens to a public way.

# General Requirement amended 2012 IBC



- **1029.1 General.** In addition to the means of egress required by this chapter, provisions shall be made for emergency escape and rescue in Group R ~~as applicable in Section 101.2 and Group I-1 openings in Group R-2 occupancies in accordance with Tables 1021.2(1) and 1021.2(2) and Group R-3 occupancies.~~ Basements and sleeping rooms below the fourth story above grade plane shall have at least one exterior emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such opening openings shall open directly into a public way, public alley, or to a yard or court that opens to a public way.

# Emergency Escape & Rescue – Part 1

## General Requirement



- **Exceptions:**
- 1. In other than openings in Group R-2 occupancies in accordance with Tables 1021.2(1) , **Stories with one exit or access to one exit for R-2 occupancies**, and Table 1021.2(2), **Stories with one exit or access to one exit for all other occupancies**, and Group R-3 occupancies buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
- 2. In other than Group R-3 occupancies, sleeping rooms provided with a door to a fire-resistance-rated corridor having access to two remote exits in opposite directions.
- 3. The emergency escape and rescue opening is permitted to open onto a balcony within an atrium in accordance with the requirements of Section 404, provided the balcony provides access to an exit and the dwelling unit or sleeping unit has a means of egress that is not open to the atrium.
- 4. High-rise buildings in accordance with Section 403.

# Emergency Escape & Rescue – Part 1

## General Requirement



- 5. Emergency escape and rescue openings are not required from basements or sleeping rooms which have an exit door or exit access door that opens directly into a public way, or to a yard, court, or exterior exit balcony that opens to a public way.
- 6. Basements without habitable spaces and having no more than 200 square feet in floor area shall not be required to have emergency escape windows.
- 7. Basements or basement bedrooms in Group R-3 occupancies, when the building is protected by an automatic sprinkler system installed in accordance with section 903.3.
- 8. Basements in Group R-3 occupancies used only to house mechanical equipment that do not exceed a total floor area of 200 square feet.

# Emergency Escape & Rescue – Part 1

## General Requirement



- 9. Basements or basement bedrooms in Group R-3 occupancies that comply with all of the following conditions:
  - A. constructed prior to August 1, 2008;
  - B. undergoing an alteration or repair; and
  - C. the entire basement area is protected with an automatic sprinkler system in accordance with section 903.3 and all portions of the means of egress to the level of exit discharge, and all areas on the level of exit discharge that are open to the means of egress, are protected with an automatic sprinkler system in accordance with section 903.3.



## Emergency Escape & Rescue – Part 2 Operational Constraints



# Emergency Escape & Rescue – Part 2

## Operational Constraints



- Subp. 2. **IBC section 1029.4 Operational constraints.** IBC section 1029.4 is amended by adding an exception to read as follows:

**Exception:** Window opening control devices approved and installed in accordance with ASTM F 2090 that do not require the use of keys or tools to operate.



# Emergency Escape & Rescue – Part 3

## Replacement Windows



# Emergency Escape & Rescue – Part 3

## Replacement Windows



- IBC section 1029 is amended to read as follows:
- **1029.6 Replacement windows.** Replacement windows installed in buildings regulated by the International Building Code shall be exempt from the minimum size and maximum sill height requirements of sections 1029.2, 1029.2.1, and 1029.3, if the replacement window is the **manufacturer's largest standard size window** that will fit within the existing frame or existing rough opening. The replacement window shall be the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.
- **82.6 1029.6.1 Licensed facilities.** Windows in rooms used for foster care or day care licensed or registered by the state of Minnesota shall comply with the provisions of section 1029.6 or all of the following conditions, whichever is more restrictive:
  - (a) Minimum of 20 inches in clear opening width;
  - (b) Minimum of 20 inches in clear opening height;
  - (c) Minimum of 648 square inches (4.5 square feet) clear opening; and
  - (d) Maximum of 48 inches from the floor to the sill height.



# Exterior Wall Testing

Wrong place; wrong time

# Exterior Wall Testing

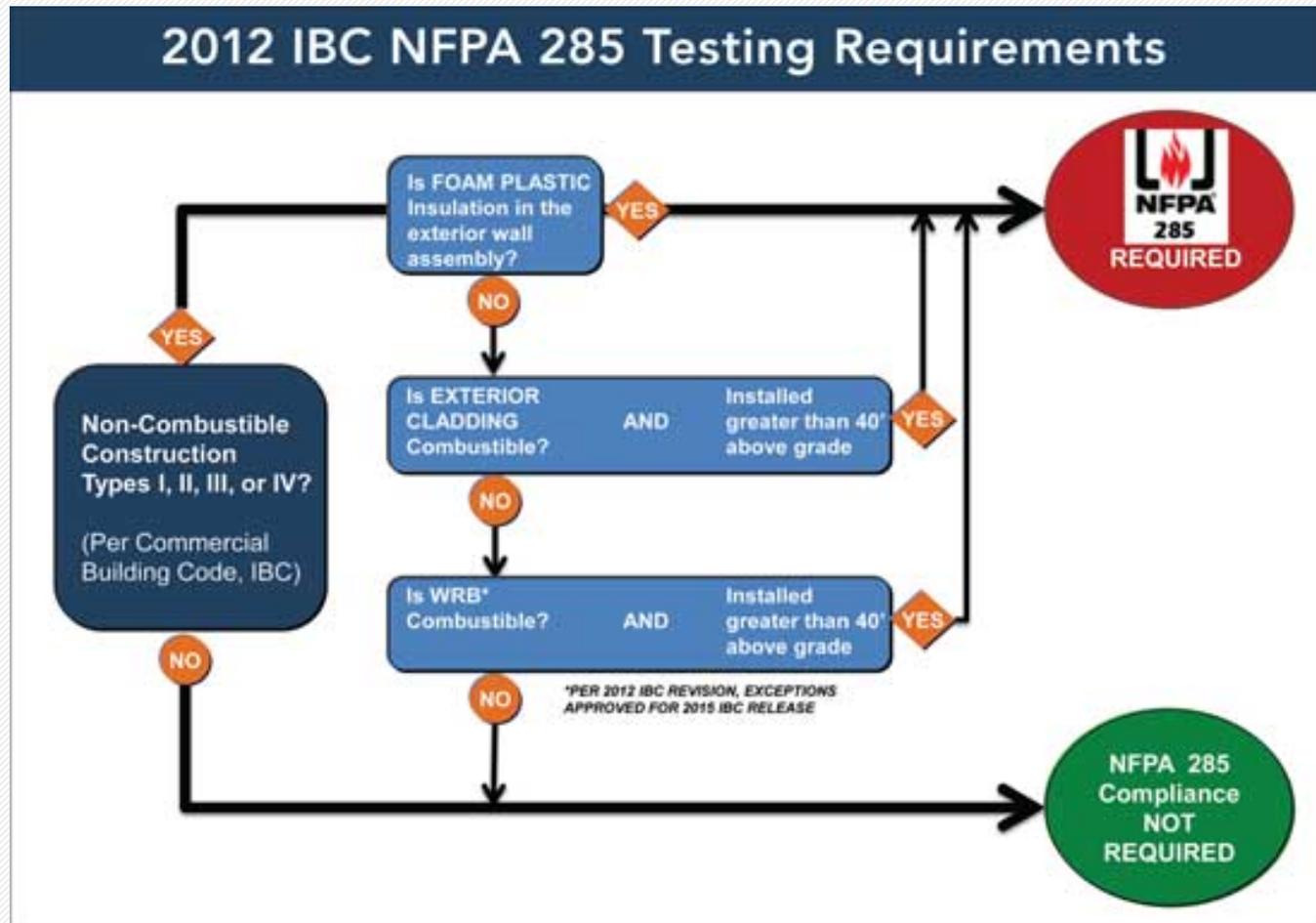


- IBC Sec. 1403.5 Vertical and lateral flame propagation.
- Exterior walls on buildings of Type I, II, III or IV construction that are greater than 40 feet in height above grade plane and contain a combustible water-resistive barrier **shall be tested** in accordance with and comply with the acceptance criteria of **NFPA 285**.

# Exterior Wall Testing



## 2012 IBC NFPA 285 Testing Requirements



# Exterior Wall Testing



## History of NFPA 285

**Energy Crisis:**  
Leads to  
increased  
exterior  
insulation  
applications

**1988:**  
Uniform  
Building Code  
adopts UBC  
17-6

**1997:**  
Uniform  
Building Code  
adopts UBC  
26-9

**2000:**  
IBC begins  
requiring NFPA  
285 testing

**1970s**

**1980s**

**1990s**

**2000s**

**2010s**

**Late 70s:**  
SPI develops  
full-scale test

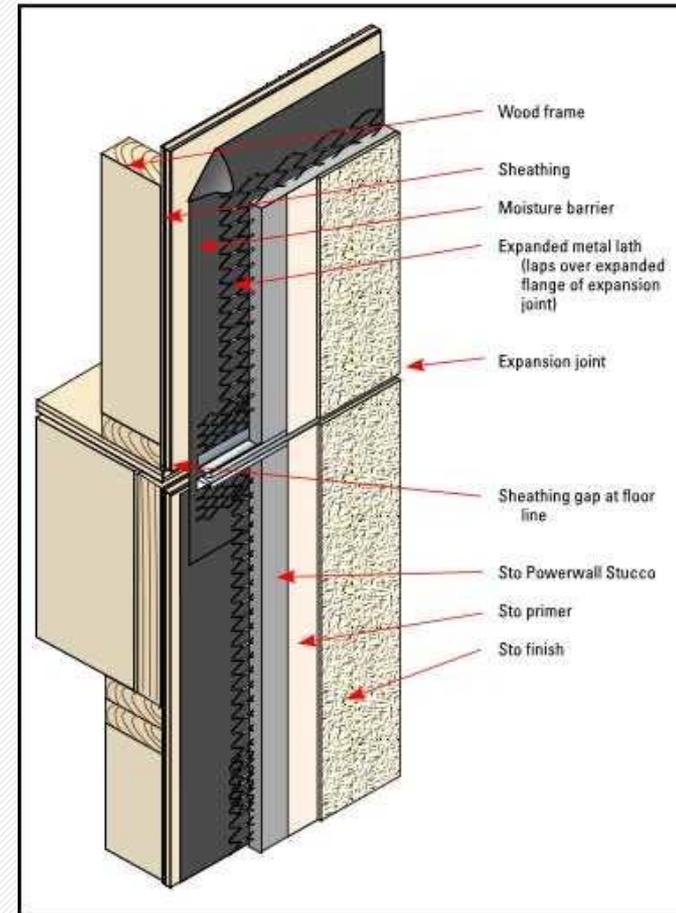
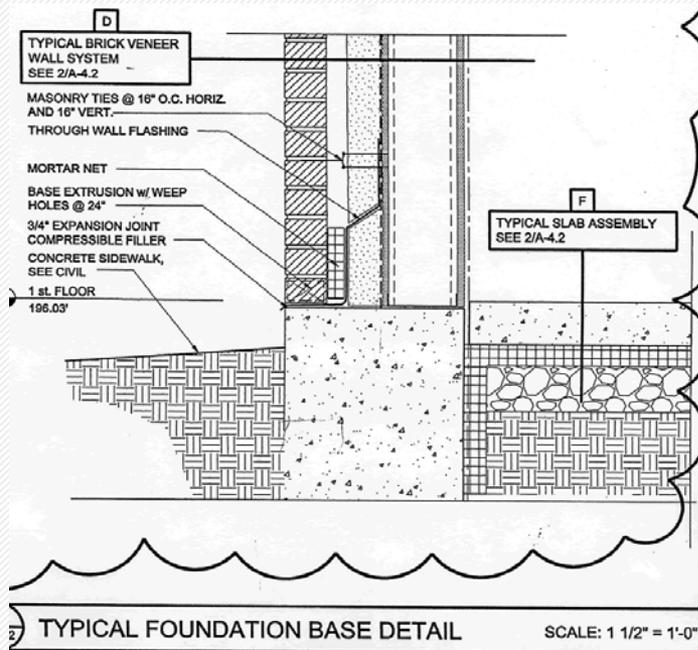
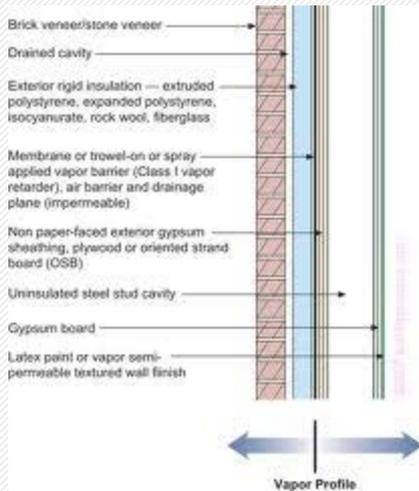
**1998:**  
NFPA adopts  
UBC 26-9 as  
NFPA 285

**2012:**  
IBC expands  
NFPA 285  
testing to WRB



- Standard is used to evaluate fire propagation and the exterior wall assemblies ability to resist:
  - Flame propagation over the exterior face of the wall assembly
  - Vertical flame propagation within the combustible components from one story to the next
  - Vertical flame propagation over the interior surface of the wall assembly from one story to the next
  - Lateral flame propagation from the compartment of fire origin to adjacent compartments or spaces
- Test assumes interior “**flashover**” condition
- Replicates fire from **interior to exterior** at window openings

# Exterior Wall Testing



# Our Response



- **IBC section 1403.5** is deleted in its entirety.

# Chapter 29 Plumbing Systems

## Toilets Part 1 and 2



# Toilets Part 1 – 2007 SBC



- **2902.2 Separate facilities.** Where plumbing fixtures are required, separate facilities shall be provided for each sex.

## **Exceptions:**

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. Separate facilities shall not be required in structures or tenant spaces with total occupant load, including both employees and customers, of 15 or less .
3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 50 or less.
4. Separate facilities shall not be required in Group B occupancies not exceeding 2,000 gross square feet of floor area. When using this exception, the individual unisex restroom shall have not less than one water closet, **one urinal**, and one lavatory.

# Toilets Part 1 – 2007 SBC



# Toilets Part 1 – 2015 SBC



- **2902.2 Separate facilities.** Where plumbing fixtures are required, separate facilities shall be provided for each sex.

## **Exceptions:**

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 20 or less .
3. Separate facilities shall not be required in mercantile occupancies which the maximum occupant load is 100 or less
4. ~~Separate facilities shall not be required in Group B occupancies not exceeding 2,000 gross square feet (185.8 m<sup>2</sup>) of floor area. When using this exception, the individual unisex restroom shall have not less than one water closet, **one urinal**, and one lavatory.~~

# Toilets Part 2 – 2007 SBC



- **2902.2 Separate facilities.** Where plumbing fixtures are required, separate facilities shall be provided for each sex.

## **Exceptions:**

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. **Separate facilities shall not be required structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or less .**
3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 50 or less.

# Toilets Part 2 – 2015 SBC



- **2902.2 Separate facilities.** Where plumbing fixtures are required, separate facilities shall be provided for each sex.

## **Exceptions:**

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. **Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of ~~15~~ 20 or less .**
3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 100 or less.

# Toilets Part 2 – 2015 SBC – FYI IBC Change



- **2902.2 Separate facilities.** Where plumbing fixtures are required, separate facilities shall be provided for each sex.

## **Exceptions:**

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 20 or less .
3. **Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is ~~50~~ 100 or less.**

# Window Cleaning Safety



# Window Cleaning Safety



IBC Chapter 31 is amended by adding a new section to the chapter:

**Section 3112, Window cleaning anchors.** Building anchors for window cleaning safety shall be provided for buildings four or more stories above grade plane. Building anchors for window cleaning safety shall be designed, installed and located in accordance with the design criteria of ASI/IWCA I-14.1-2001.

## **Exceptions:**

1. Buildings without windows.
2. Existing buildings undergoing reconstruction, alteration or repair that does not include the exposure of primary structural roof components.
3. The commissioner of the Minnesota Department of Labor and Industry may waive all or a portion of the requirements for existing buildings if the installation of the dedicated anchorages would not result in significant safety improvements due to limits on the size of the project, or other factors as determined by the commissioner.



# Solar Photovoltaic Power Systems



# General Philosophy:



- 1. Limit the size of the PV arrays.**
- 2. Provide fire department access points to the roof.**
- 3. Provide pathways on the roof from the fire department access points.**
- 4. The Pathways shall lead to roof venting options for fire department personnel**
- 5. Hope they installed the PV system in accordance with the 2014 NEC!**

# General Philosophy:



- **Size Limitation per array**
  - 150 ft. by 150 ft.
- **Access to the Roof**
  - Residential: Points that do not required ladder over window or doors, not conflict with overhead obstructions.
  - Commercial: 6 ft. clear at roof perimeter (reduced to 4 ft. for buildings/axis <150 ft.)
- **Pathways around panels**
  - Residential (typically 3 feet)
  - Commercial (typically 4 feet)
  - Fire fighter live load

# Specific Requirements:



- **Access to:**
  - Residential: ridge via hip valley or roof edge
  - Commercial : centerline axis, ridge, smoke vents, skylights, standpipes, roof access hatch
- **Provide Smoke Ventilation Option:**
  - Residential: no array closer than 3 ft. to ridge
  - Commercial:
    - Pathway min. 8 ft. in width
    - Pathway min. 4 ft. bordering skylights or smoke/heat vents
    - Pathway min. 4 ft. bordering 4' x 8' venting cutouts every 20 ft. on alternating sides of pathway

# Actual Language



- **IBC section 3113.** IBC chapter 31 is amended to add a section to read as follows:
- **3113. Solar photovoltaic power systems; general.** Solar photovoltaic power systems shall be installed in accordance with this part and Minnesota Rules, chapter 1315.
  - **Exception:** Detached, nonhabitable Group U structures including parking shade structures, carports, solar trellises, and similar structures shall not be subject to the requirements of this part. Minnesota Rules, chapter 1315, applies.



- **3113.1 Access and pathways.** Roof access, pathways, and spacing requirements shall be provided in accordance with sections 3113.1 through 3113.3.
- **Exceptions:**
  - 1. Residential structures shall be designed so that each photovoltaic array is **no greater than 150 feet by 150 feet** in either axis.
  - 2. Panels/modules shall be permitted to be located up to the roof ridge where an alternative ventilation method approved by the fire department has been provided or where the fire department has determined vertical ventilation techniques will not be employed.
- **3113.1.1 Roof access points.** Roof access points shall be located in areas that do not require the placement of fire department ground ladders over openings such as windows or doors, and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires, or signs.



- **3113.1.2 Residential systems for dwelling units.** Access to residential systems for dwelling units shall be provided in accordance with sections 3113.1.2.1 through 3113.1.2.4.
- **3113.1.2.1 Residential buildings with hip roof layouts.** Panels or modules installed on residential buildings with hip roof layouts shall be located in a manner that provides a 3-foot-wide clear access pathway from the eave to the ridge on each roof slope where panels/modules are located. The access pathway shall be located at a location on the building capable of supporting the live load of firefighters accessing the roof.
  - **Exception:** These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.



- **3113.1.2.2 Residential buildings with a single ridge.** Panels or modules installed on residential buildings with a single ridge shall be located in a manner that provides two 3-foot-wide clear access pathways from the eave to the ridge on each roof slope where panels/modules are located.
  - **Exception:** This requirement shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.
- **3113.1.2.3 Residential buildings with roof hips and valleys.** Panels or modules installed on residential buildings with roof hips and valleys shall be located no closer than 18 inches to a hip or valley where panels/modules are to be placed on both sides of a hip or valley. Where panels are to be located on only one side of a hip or valley that is of equal length, the panels shall be permitted to be placed directly adjacent to the hip or valley.
  - **Exception:** These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.
- **3113.1.2.4 Residential building smoke ventilation.** Panels or modules installed on residential buildings shall be located no higher than 3 feet below the ridge in order to allow for fire department smoke ventilation operations.

# Actual Language



- **3113.2 Other than residential buildings.** Access to systems for occupancies other than dwelling units shall be provided in accordance with sections 3113.2.1 through 3113.2.1.2.
  - **Exception:** Where it is determined by the fire department that the roof configuration is similar to that of dwelling units, the residential access and ventilation requirements in sections 3113.1.2 through 3113.1.2.4 shall be permitted.

# Actual Language



- **3113.2.1 Access.** There shall be a minimum 6-foot-wide clear perimeter around the edges of the roof.
  - **Exception:** Where either **access axis** of the building is 250 feet or less, there shall be a minimum 4-foot-wide clear perimeter around the edges of the roof.
- **3113.2.1.2 Pathways.** The solar installation shall be designed to provide designated pathways. The pathways shall meet the following requirements:
  - 1. The pathway shall be over areas capable of supporting the live load of firefighters accessing the roof.
  - 2. The centerline **access axis** pathways shall be provided in both axes of the roof. Centerline **access axis** pathways shall run where the roof structure is capable of supporting the live load of firefighters accessing the roof.
  - 3. The pathway shall be a straight line not less than 4 feet clear to skylights or ventilation hatches.
  - 4. The pathway shall be a straight line not less than 4 feet clear to roof standpipes.
  - 5. The pathway shall provide not less than 4 feet clear around roof access hatch with at least one not less than 4 feet clear pathway to parapet or roof edge.



- **3113.3 Smoke ventilation.** The solar installation shall be designed to meet the following requirements:
  1. Arrays shall be no greater than 150 feet by 150 feet in distance in either axis in order to create opportunities for fire department smoke ventilation operations.
  2. Smoke ventilation options between array sections shall be one of the following:
    1. 2.1 A pathway 8 feet or greater in width.
    2. 2.2 A 4-foot or greater in width pathway and bordering roof skylights or smoke and heat vents.
    3. 2.3 A 4-foot or greater in width pathway and bordering 4-foot by 8-foot "venting cutouts" every 20 feet on alternating sides of the pathway.

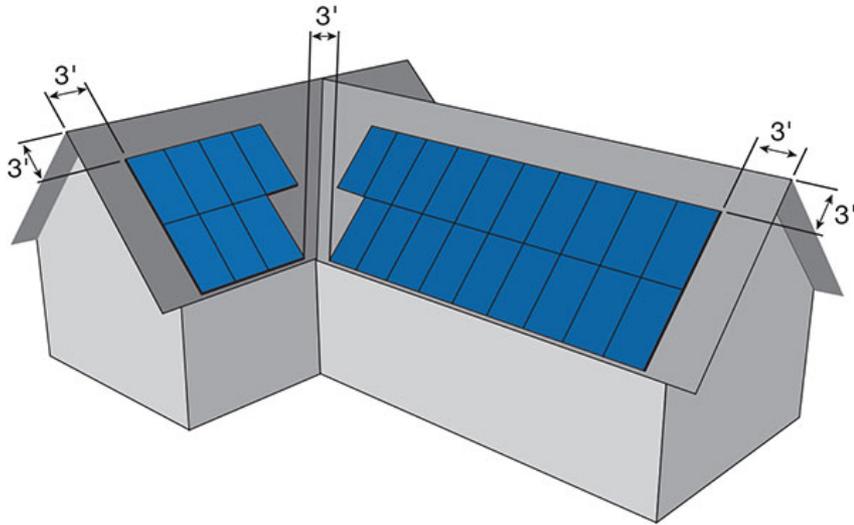


VS.



VS.





**Figure 3** Where installers position PV modules on both sides of a roof hip or valley, the fire codes require an 18-inch setback on either side. As shown here, this results in an additional 3-foot pathway for emergency access or egress.



# Ground-Mounted



- **3113.4 Ground-mounted photovoltaic arrays.** Ground-mounted photovoltaic arrays shall comply with this part and Minnesota Rules, chapter 1315. **Setback requirements shall not apply to ground-mounted, free-standing photovoltaic arrays.** A clear, brush-free area of 10 feet shall be required for ground-mounted photovoltaic arrays.



Sometimes the  
questions are  
complicated  
and the  
answers are  
simple.



Questions??????????

**Live long & Prosper**

