2018 IBC Significant Changes

Based on the
2015 and 2018 editions of the
International Building Code®, (IBC®)

LEARNING center

Identify changes between
the 2015 and 2018 IBC

Apply code requirements to design, plan submittals and/or inspection.

OBJECTIVES

- Identify the differences between 2015 IBC and 2018 codes.
- Determine if the change is an addition, deletion, modification or clarification.
- Identify changes in format and technical requirements.
- Explain the intent and application of the changes.

Nick Youngson - link to - http://nyphotographic.com/

Topics

- Administration, Chapters 1 and 2
- Building Planning, Chapters 3 through 6
- Fire Protection, Chapters 7 through 9
- Means of Egress, Chapter 10
- Accessibility, Chapter 11
- Building Envelope, Structural Systems and Construction, Chapters 12 through 26
- Building Services, Special Devices, and Special Conditions, Chapters 27 through 34

Selection of Topics

- Provisions addressed based primarily on:
  - Frequency of application
  - Special significance
  - Change in application

Marginal Markings within the International Building Code

- **Solid vertical lines** in the margins within the body of the code indicate a technical change from the requirements of the 2015 edition.
- **Deletion indicators in the form of an arrow** are provided in the margin where an entire section, paragraph, exception or table has been deleted or an item in a list of items or a table has been deleted.
- **A single asterisk** [*] placed in the margin indicates that text or a table has been relocated within the code.
- **A double asterisk** [**] placed in the margin indicates that the text or table immediately following it has been relocated there from elsewhere in the code.

Letter Designations in Front of Section Numbers

- In each code development cycle, proposed changes to the code are considered at the Code Development Hearings.
- Proposed changes to a code section that has a number beginning with a letter in brackets are considered by a different code development committee.

Letter Designations in Front of IBC Section Numbers

- The content of sections in this code that begin with a letter designation is maintained by another code development committee:

[A] = Administrative Code Development Committee;

[E] = International Energy Conservation Code Development Committee;

[EB] = International Existing Building Code Development Committee;

[F] = International Fire Code Development Committee;

[FG] = International Fuel Gas Code Development Committee;

[M] = International Mechanical Code Development Committee; and

[P] = International Plumbing Code Development Committee.

Format of Significant Changes Series

1804.1

Excavation Near Foundations

Foundation excavation

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CHANGE TYPE: Addition

CHANGE SUMMARY: Basic requirements for providing safe and adequate underpinning at excavations have been added because the code was not specific on how to address excavations adjacent to structures.

2015 CODE: **1804.1 Excavation Near Foundations.** Excavation for any purpose shall not ~~remove~~ reduce lateral support from any foundation or adjacent foundation without first underpinning or protecting the foundation against ~~settlement or lateral translation~~ detrimental lateral or vertical movement, or both.

1804.2 Underpinning. Where underpinning is chosen to provide the protection or support of adjacent structures, the underpinning system shall be designed and installed in accordance with provisions of this chapter and Chapter 33.

1804.2.1 Underpinning Sequencing. Underpinning shall be installed in a sequential manner that protects the neighboring structure and the working construction site. The sequence of installation shall be identified in the approved construction documents.

CHANGE SIGNIFICANCE: Specific requirements related to the excavation of foundations adjacent to structures had not previously been addressed in the IBC. Although Section 3307, Protection of Adjacent Property, requires adjoining public and private property, including footings, foundations, party walls and so forth, to be adequately protected from damage during construction, remodeling and demolition work, there were no specific details provided. Because the IBC contained very little detail, due diligence was required during excavations near neigh-

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Course Icons

Addition **Deletion** **Modification** **Clarification**

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Tips

Guide to a successful class:

- Slides contain some text and iconic images to help you learn.
- Text and commentary is in the handout.
- Follow along in the course handout.
- Ask Questions, ask questions, ASK QUESTIONS!!!!

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Chapter 2

Definitions

12

202 Definition of Greenhouse

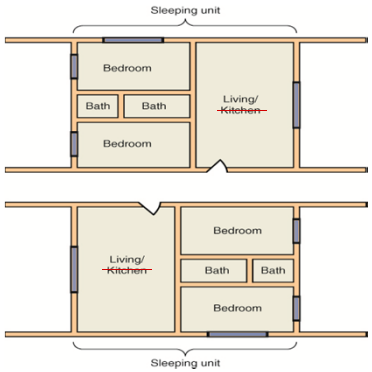
- Structure of thermally-isolated area of building that maintains a specialized sunlit environment
- Focus is on the cultivation, protection and maintenance of plants rather than the structure itself or the presence of plants

202 Definition of Repair Garage

- Motor vehicle:
  - Servicing, or
  - Repair

202 Definition of Sleeping Unit

- Clarifies bedrooms within residential unit not to be considered as sleeping units
- Consistent with dwelling unit provisions



Chapter 2 Removal of Definition References

- References throughout code to Chapter 2 for specific definitions have been removed

~~**502.1 Definitions.** The following terms are defined in Chapter 2:~~

~~**AREA, BUILDING.**~~

~~**BASEMENT.**~~

~~**EQUIPMENT PLATFORM.**~~

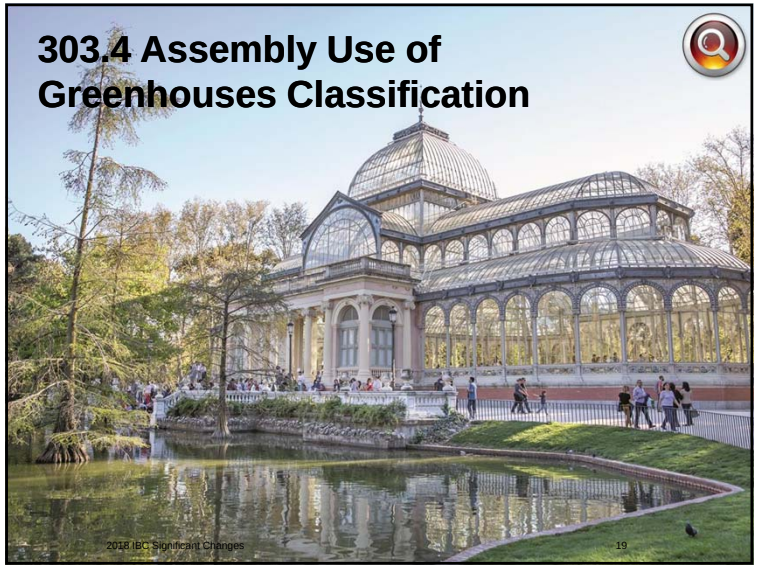
~~**HEIGHT, BUILDING.**~~

~~**MEZZANINE.**~~

Chapter 3

Occupancy Classification and Use

17



310.3, 310.4 Classification of Congregate Living Facilities

- All nontransient congregate living facilities with 16 or fewer occupants to be classified as Group R-3, including:
  - Dormitories
  - Fraternity and sorority houses
  - Convents
- Group R-3 lodging houses to now have 5 or fewer guest rooms and 10 or fewer occupants

310.4.2 Owner-Occupied Lodging Houses

- Owner-occupied lodging houses permitted to comply with IRC where:
  - 5 or fewer guest rooms, and
  - 10 or fewer total occupants

311.1.1 Classification of Accessory Storage Rooms

- Room or space used for storage accessory to another occupancy to be classified as part of that occupancy

311.2 Classification of Self-Service Storage Facilities

312.1 Classification of Communication Equipment Structures

- Group U classification applies where floor area less than 1,500 sf

312.1.1 Classification of Agricultural Greenhouses

- Group U classification applies where greenhouse not classified as another occupancy

Chapter 4

Special Detailed Requirements Based on Occupancy and Use

403.2.1.1 Type of Construction in High-Rise Buildings

- Type IB high-rise buildings containing Group H-2, H-3 or H-5 occupancy not permitted to be regulated as Type IIA for fire-resistance ratings

404.6 Enclosure of Atriums

- Separation between atrium and adjoining spaces not required where smoke control system not required

406.1 Motor Vehicle-Related Occupancies

- Reorganization includes grouping of requirements that apply to all motor-vehicle-related uses

406.3 Regulation of Private Garages

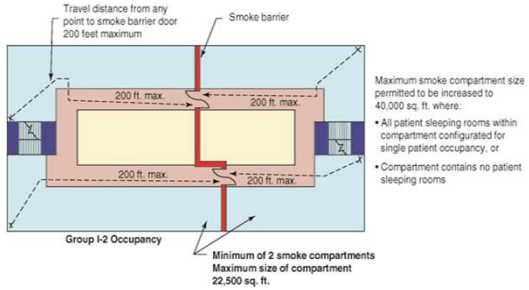
- Private garages now permitted to comply with public parking garage provisions

406.6.2 Ventilation of Enclosed Parking Garages

- Chapters 4 and 5 of IMC now specifically addressed for ventilation and exhaust requirements
- Although limited in application, exception for one- and two-family dwellings has also been established

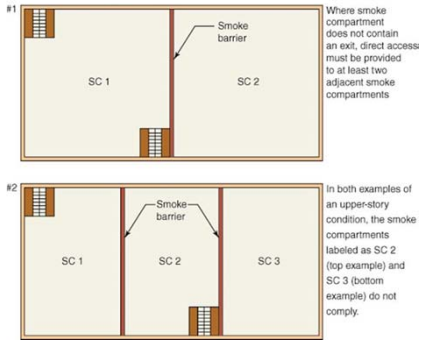
407.5 Maximum Smoke Compartment Size

- Applicable to Group I-2, Condition 2 occupancies

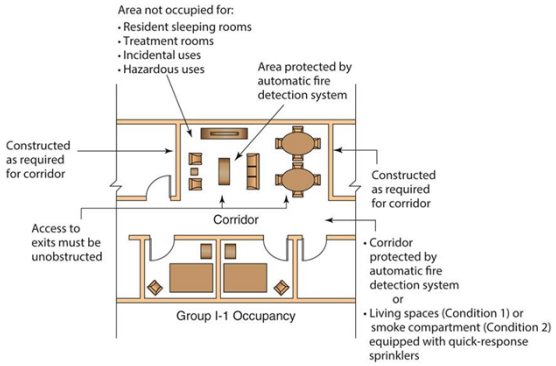


407.5.4 Required Egress from Smoke Compartments

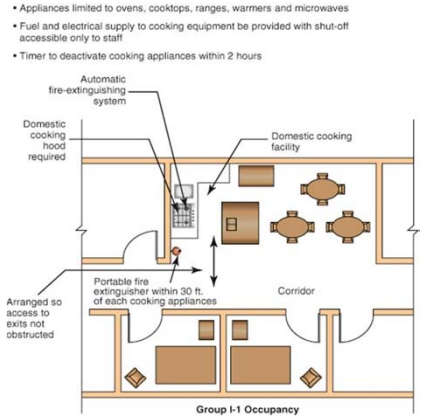
NONCOMPLIANT EXAMPLES



420.7 Corridor Protection in Assisted Living Units



420.8 Group I-1 Cooking Facilities

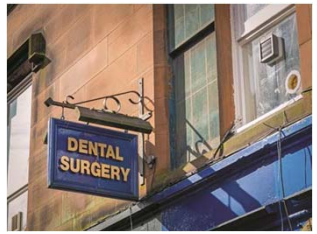


420.10 Dormitory Cooking Facilities

- Domestic cooking appliances for resident use now regulated
- Cooktops, ranges and ovens not permitted in sleeping rooms

422.6 Electrical Systems in Ambulatory Care Facilities

- New references identified for essential electrical systems in ambulatory care facilities:
  - IBC Section 2702: Emergency and Standby Power Systems
  - NFPA 99: *Health Care Facilities Code*



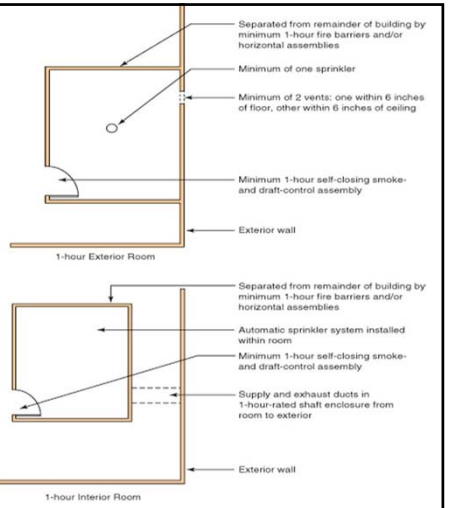
424.1 Children's Play Structures

- Play structures regulated where:
  - Over 10 feet in height, or
  - 150 sf in area

427 Medical Gas Systems

- IFC construction-related provisions for medical gas systems now replicated in IBC

427 Medical Gas Systems



428 Higher Education Laboratories

- Special allowances and provisions for Group B laboratories in college and university buildings
- Similar to 'control area' concept
- Further regulated in IFC and IMC

428 Higher Education Laboratories

TABLE 428.3 Design and Number of Laboratory Suites Per Floor

Floor Level		Percentage of the Maximum Allowable Quantity Per Lab Suitea	Number of Lab Suites Per Floor	Fire-Resistance Rating for Fire Barriers in Hoursb
Above Grade Plane	211	Not allowed	Not Permitted	Not Permitted
	16-20	25	1	2c
	11-15	50	1	2c
	7-10	50	2	2c
	4-6	75	4	1
	3	100	4	1
	1-2	100	6	1
Below Grade Plane	1	75	4	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

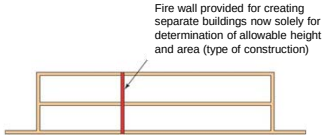
a. Percentages shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2), with all increases allowed in the footnotes to those tables.
b Fire barriers shall include walls, floors and ceilings necessary to provide separation from other portions of the building.
c Vertical fire barriers separating laboratory suites from other spaces on the same floor shall be permitted to be 1-hour fire-resistance rated.

Chapter 5

Allowable Building Heights and Areas

503.1, 706.1 Scope of Fire Wall Use

- Use of fire wall to create separate buildings now limited to only the determination of permissible types of construction, based upon allowable building height and area
- Fire walls to continue to be used for horizontal exits, fire area separations, fire-flow calculations, etc.

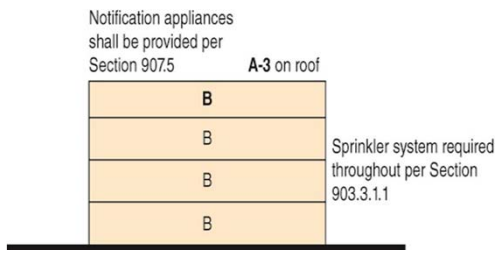


503.1.4 Allowable Height and Area of Occupied Roofs

- Allowable area and height of occupied roofs now addressed
  - Area not to be included in building area
  - Height (in stories) regulated based on uppermost story (unless exception applied)
- Enclosures of occupied roofs limited to 48 inches in height above roof deck, except for:
  - Penthouses, towers, spires, etc.

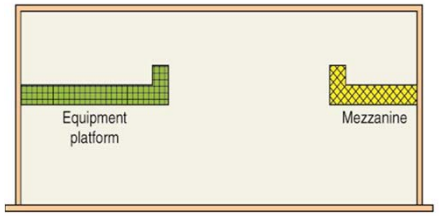
503.1.4 Allowable Height and Area of Occupied Roofs

Example:
If building of Type VA construction,
Group B: 4 stories max. (S)
Group A-3: 3 stories max. (S)



505.2.1.1 Mezzanine and Equipment Platform Area Limitations

Example:
Assume both an equipment platform and a mezzanine are located in the same 24,000 sq. ft. room.



Permitted aggregate size of equipment platform and mezzanine limited to 16,000 sq. ft. (based on ⅔ limitation)

Permitted size of mezzanine limited to 8,000 sq. ft. (based on ⅓ limitation)

Table 506.2, Note i Allowable Area of Type IIB, IIIB and VB Greenhouses

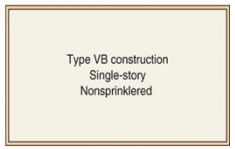
TABLE 506.2 Allowable Area Factor

Occupancy Classification	See Footnotes	Type I		Type II		Type III		Type IV	Type V	
		A	B	A	B	A	B	HT	A	B
U	NS[i]	UL	35,500	19,000	8,500	14,000	8,500	18,000	9,000	5,500
	S1	UL	142,000	76,000	34,000	56,000	34,000	72,000	36,000	22,000
	SM	UL	106,500	57,000	25,500	42,000	25,500	54,000	27,000	16,500

Note:
i. The maximum allowable area for a single-story nonsprinklered Group U greenhouse is permitted to be 9,000 square feet, or the allowable area shall be permitted to comply with Table C102.1 of Appendix C.

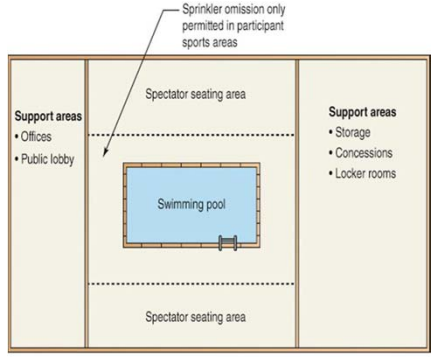
(No changes to other portions of table and notes.)

Maximum allowable area increased to 9,000 sq. ft. (from 5,500 sq. ft.)



Group U Greenhouse

507.4 Sprinklers in Unlimited Area Group A-4 Buildings

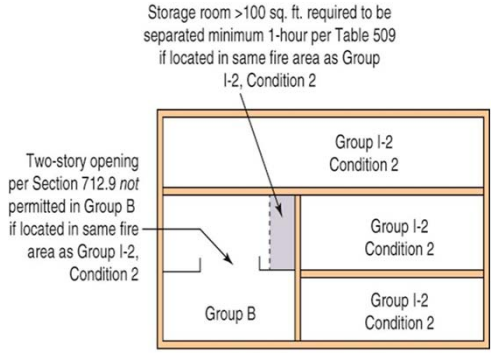


Unlimited Area Group A-4 Occupancy

508.3.1.2 Group I-2, Condition 2 Nonseparated Occupancies

- Where nonseparated occupancies method used in mixed-occupancy condition containing a Group I-2, Condition 2 occupancy, the most restrictive of following provisions apply through fire area containing the Group I-2, Condition 2:
  - Sec. 407 Group I-2
  - Sec. 509 Incidental uses
  - Sec. 712 Vertical openings
- Most restrictive means of egress provisions to also apply from Group I-2, Condition 2 through the exit discharge.

508.3.1.2 Group I-2, Condition 2 Nonseparated Occupancies

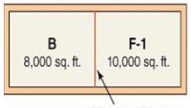


Regulated as Nonseparated Occupancies

508.4.1, Table 508.4 Separated Occupancies vs. Fire Area Separations

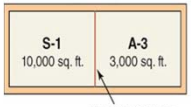
Examples: Nonsprinklered mixed occupancy buildings regulated under separated occupancy provisions of Section 508.4

No sprinkler system



- Occupancy separation not required per separated occupancies and Table 508.4.
- Fire area separation of 3 hours required by Section 903.2.4 and Table 707.3.10.

No sprinkler system



- Occupancy separation of 2 hours required per separated occupancies and Table 508.4.
- Fire area separation of 3 hours required by Sections 903.2.1.3 and 903.2.9 and Table 707.3.10.

Table 509 Incidental Uses

- Limits of stationary storage battery systems now based on energy capacities set forth in IFC
- Reference now made to specific sections in NEC for protection and separation of electrical installations and transformers

Table 509 Incidental Uses

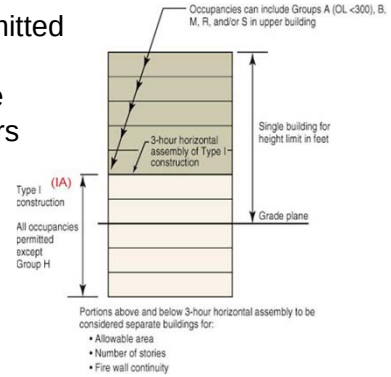
TABLE 509 Incidental Uses

Room or Area	Separation and/or Protection
Stationary storage battery systems having ~~a liquid electrolyte capacity of more than 50 gallons for flooded lead-acid, nickel cadmium or VRLA, or more than 1,000 pounds for lithium-ion and lithium metal polymer~~ an energy capacity greater than the threshold quantity specified in Table 1206.2 of the *International Fire Code*	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies
Electrical installations and transformers	See Sections 110.26 through 110.34 and Sections 450.8 through 450.48 of NFPA 70 for protection and separation requirements

(No changes to other portions of Table 509.)

510.2 Horizontal Building Separation

- Vertical offsets permitted where offset and supporting structure rated at least 3 hours



Chapter 6

Types of Construction

57

Table 601, Note b Fire Protection of Structural Roof Members

TABLE 601 Fire-Resistance Rating Requirements for Building Elements

Building Element	Type I A	Type I B	Type II A	Type II B	Type III A	Type III B	Type IV HT	Type V A	Type V B
Primary structural frame [f]	3[a,b]	2[a,b]	1[b]	0	1[b]	0	HT	1[b]	0
Roof construction and associated secondary members	1½[b]	1[b,c]	1[b,c]	0[c]	1[b,c]	0	HT	1[b,c]	0

b. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members in roof construction shall not be required, including protection of primary structural frame members, roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

(No changes to other portions of Table 601 and notes.)

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Table 601, Note b Fire Protection of Structural Roof Members

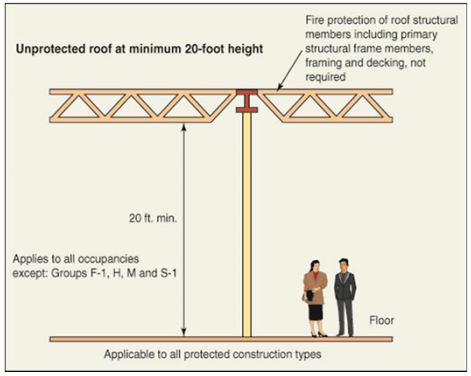

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Table 602, Note i Group R-3 Fire Separation Distance

TABLE 602 Fire-Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance

Fire Separation Distance	Type of Construction	Occupancy Group H	Occupancy Group F-1, M, S-1	Occupancy Group A, B, E, F-2, I, R[i], S-2, U
X < 5	All	3	2	1
5 ≤ X < 10	IA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB	2	1	1
	IIB, VB	1	0	0
	Others	1	1	1
X ≥ 30	All	0	0	0

i. For a Group R-3 building of Type IIB or Type VB construction, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater.

(No changes to other portions of Table 602 and notes.)

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602.3, 602.4.1 FRT Wood Sheathing in Exterior Wall Assemblies

- Fire-retardant-treated wood framing and sheathing permitted within exterior walls of Type III and IV construction
  - Minimum of 6 inches in thickness
  - 2-hour rating or less

Chapter 7

Fire and Smoke Protection Features

704.2, 704.4.1 Column Protection in Light-Frame Construction

- Required fire-resistance rating permitted to be provided with membrane protection for studs, columns and boundary elements

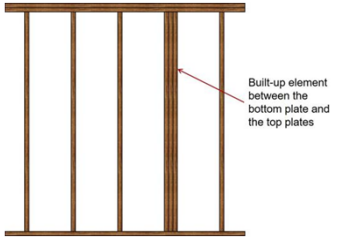


Table 705.2 Extent of Projections

- Minimum clearance measured to line used to determine fire separation distance has been revised to be consistent with 2012 IBC

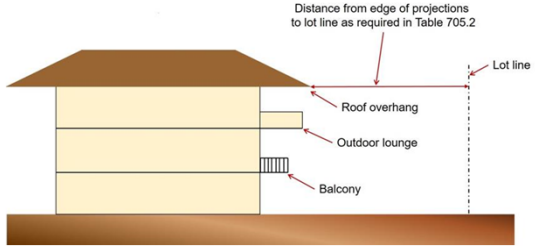


Table 705.2 Extent of Projections

TABLE 705.2 Minimum Distance of Projection

Fire Separation Distance – FSD ~~(FSD)~~ (feet)	Minimum Distance from Line Used to Determine FSD
0 ~~feet~~ to less than 2 ~~feet~~	Projections not permitted
~~Greater than~~ 2 ~~feet~~ to less than 3 ~~feet~~	24 inches
~~Greater than~~ 3 ~~feet~~ to less than ~~30~~ 5 feet	24 inches plus 8 inches for every foot of FSD beyond 3 feet or fraction thereof
~~30 feet~~ 5 or greater	~~20 feet~~ 40 inches

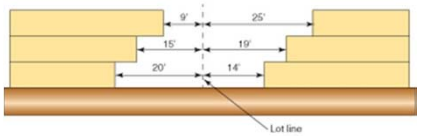
For SI: 1 foot 5 304.8 mm; 1 inch 5 25.4 mm.

705.2.3, 705.2.3.1, 705.2.4 Combustible Balconies, Projections, and Bay Windows

- Provisions relocated from Section 1406 (Combustible Materials on the Exterior Side of Exterior Walls)
- Plastic composites now permitted to be installed in guard components where untreated wood allowed

705.8.1 Measurement of Fire Separation Distance for Opening Protection

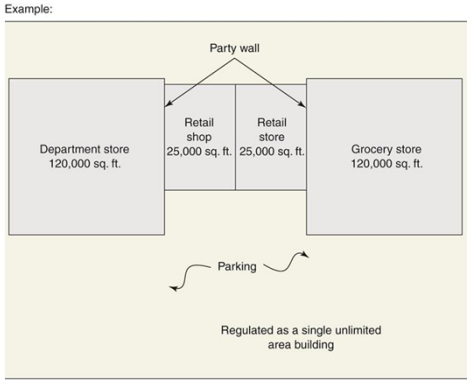
- Where addressing allowable area of exterior openings, fire separation distance to be measured in same manner as when determining exterior wall rating
- Fire separation distance is measured on a story-by-story basis



706.1.1 Party Walls Not Constructed as Fire Walls

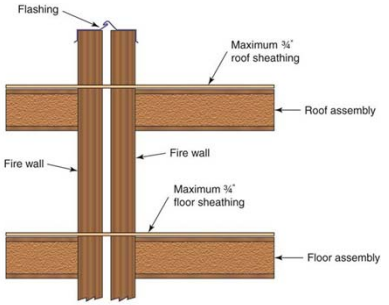
- Fire walls not required on lot lines dividing a building for ownership purposes where:
  - Aggregate height and area do not exceed maximum requirements
  - Dedicated access easements and contractual agreements are provided to allow access for purposes of maintaining fire and life safety systems necessary for building operation
    - Subject to review and approval by building official

706.1.1 Party Walls Not Constructed as Fire Walls



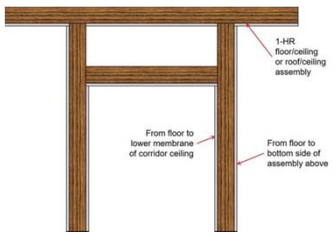
706.2 Structural Continuity of Double Fire Walls

- Applicable only in SDCs D, E and F
- Allows for continuous diaphragm for floor and/or roof assembly
- Also stabilizes double fire walls to resist impact during seismic event



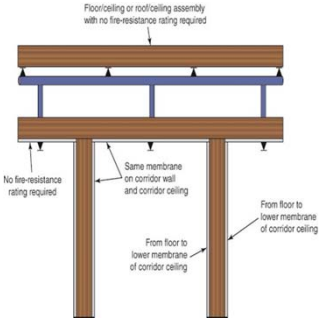
708.4 Continuity of Fire Partitions

- Reformatted into 3 distinct areas:
  - Continuity in regard to enclosure limits
  - Supporting construction components
  - Fireblocking and draftstopping



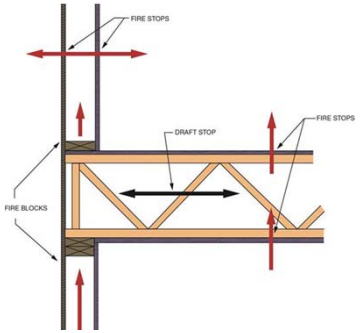
708.4 Continuity of Fire Partitions

- Additional enclosure continuity method for corridor walls that do not extend above lower membrane of corridor ceiling:
  - Applicable to sprinklered buildings where sprinklers installed in concealed space



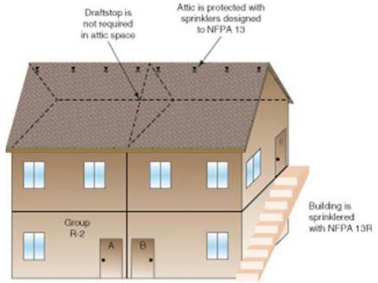
708.4.2 Fireblocking and Draftstopping at Fire Partitions

- General reorganization and consolidation effort
- Now only applicable in Group R-2 with four or more dwelling units and Group R-3 with more than two dwelling units



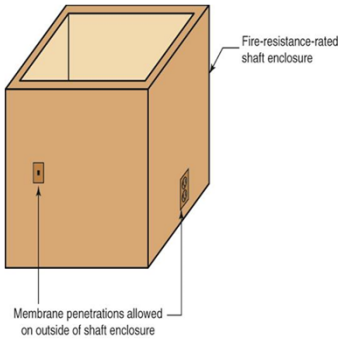
708.4.2 Fireblocking and Draftstopping at Fire Partitions

- Clarifies that where building has NFPA 13R sprinkler system, attic protection to be based on NFPA 13 system in order to eliminate required fireblocking/ draftstopping



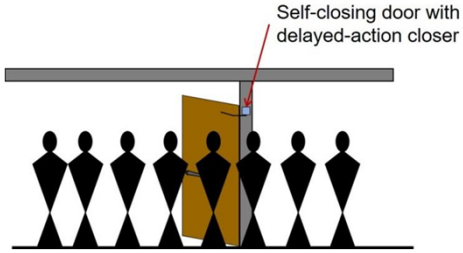
713.8.1 Membrane Penetrations of Shaft Enclosures

- Consistent with allowance for interior exit stairway membrane penetrations when protected per Section 714.4.2



716.2.6.5 Delayed-Action Self-Closing Doors

- Delay-action closers permitted where automatic-closing not required
- Defined as mechanical devices with an adjustable delay
- Time delay not specifically addressed



Chapter 8

Interior Finishes

77

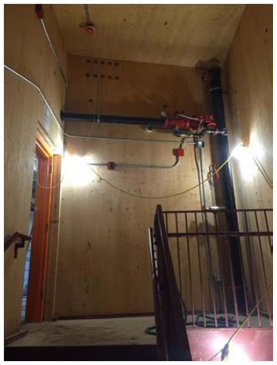
803.1.1, 803.1.2 Interior Wall and Ceiling Finish Testing

- Criteria reorganized by:
  - Initially addressing allowance for compliance with NFPA 286 for all applications
  - Followed by testing under ASTM E84 and UL 723
  - Then other methods identified for special conditions such as textile coverings

2018 IBC Significant Changes 78

803.3 Interior Finish Requirements for Heavy Timber Members

- Now applicable to interior exit stairways, interior exit ramps and exit passageways



2018 IBC Significant Changes 79

803.11 803.12 Flame Spread Testing of Laminates and Veneers

- Addresses flame spread testing for:
  - Factory-produced laminated products over a wood substrate
  - Facings and wood veneers applied over a wood substrate on site

2018 IBC Significant Changes 80

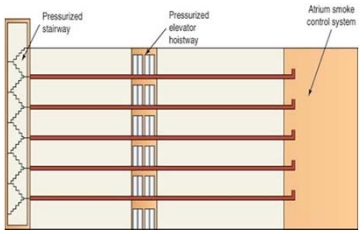
Chapter 9

Fire Protection and Life Safety Systems

81

901.6.2 Integrated Fire Protection System Testing

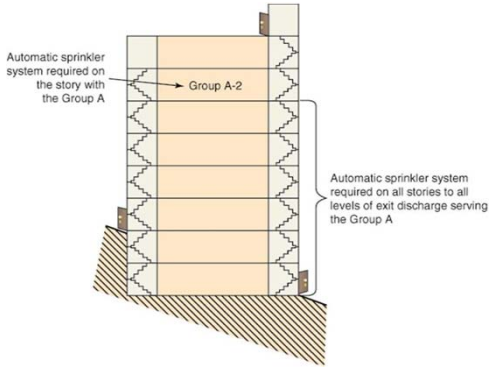
- Where two or more fire protection or life safety systems are interconnected, the acceptance process and testing must evaluate all systems as a whole
- Reference is made to NFPA 4
- Integrated testing required for:
  - High-rise buildings
  - Smoke control systems



902 Fire Pump and Fire Sprinkler Riser Rooms

- Prescriptive provisions added for:
  - Access
  - Marking on access doors
  - Environment
  - Lighting

903.2.1 Sprinklers Required in Group A Occupancies



903.2.3 Sprinklers in Group E Occupancies

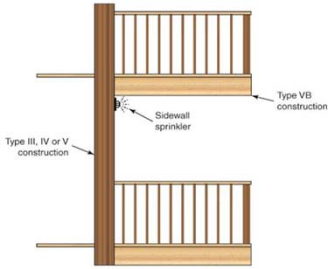
- Sprinkler protection now also required for Group E occupancies where fire area:
  - Located on a floor other than the level of exit discharge, or
  - Has an occupant load of 300 or more

903.3.1.1.2 Omission of Sprinklers in Group R-4 Bathrooms

- Group R-4 now included with other residential occupancies where sprinkler protection not required in small bathrooms

903.3.1.2.1 Sprinkler Protection at Balconies and Decks

- Allowance previously in Section 1406.3 for extension of sprinkler protection to exterior balconies in order to be of nonrated Type V construction has been relocated



903.3.1.2.3 Protection of Attics in Group R Occupancies

- Additional sprinkler protection or acceptable alternative methods now required for attics in multi-family occupancies equipped with an NFPA 13R system
- Applicable where roof assembly more than 55 feet above LLFDA
- Method of determining height of roof assembly established as greatest of:
  - Eave of highest pitched roof
  - Intersection of highest roof to exterior wall
  - Top of highest parapet

903.3.1.2.3 Protection of Attics in Group R Occupancies

- Methods of protection include:
  - Provide sprinkler protection
  - Construct attic of noncombustible materials
  - Construct attic of FRT wood
  - Fill attic with noncombustible insulation

904.12 Commercial Cooking Operations

- Automatic fire-extinguishing system for commercial cooking systems to now be installed in accordance with NFPA 96
- Where automatic water mist systems are used, they shall comply with NFPA 750

904.13 Domestic Cooking Protection in Institutional and Residential Occupancies

- Automatic fire-extinguishing system now required at required hood over any domestic cooktop or range in:
  - Group I-1 occupancies
  - Group R-2 college dormitories
- As alternative, burners tested and listed to prevent ignition of cooking oil permitted

904.14 Aerosol Fire Extinguishing Systems

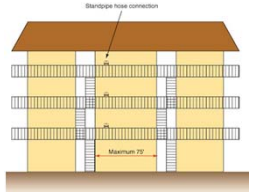
- IFC and NFPA 2010 now referenced for installation, inspection, testing and maintenance of aerosol fire-extinguishing systems
- Previously recognized in ICC-ES Acceptance Criteria and resulting evaluation report

905.3.1 Class III Standpipes

- Class III standpipe system required where four or more stories above or below grade plane
- Class I standpipes now allowed:
  - In Group B occupancies
  - In Group E occupancies
  - Where occupant-use hose lines will not be utilized by trained personnel or fire department

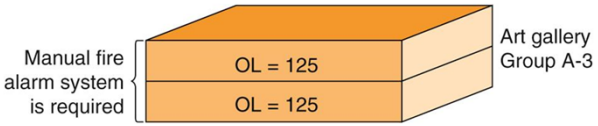
905.4 Class I Standpipe Connection Locations

- Hose connections to be located at main floor landing in interior exit stairways
  - Unless otherwise approved by fire code official
- Single hose connection permitted in open corridor or open breezeway between open stairs



907.2.1 Fire Alarms in Group A Occupancies

- Manual fire alarm system required where Group A occupant load exceeds 100 above or below the lowest level of exit discharge



907.2.10 Group R-4 Fire Alarm Systems

- Installation of manual fire alarm system and automatic smoke detection system no longer required in Group R-4 occupancies

Chapter 10

Means of Egress

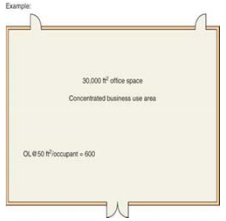
97

Table 1004.5, 1004.8 Occupant Load Calculation in Business Use Areas

TABLE ~~1004.1.2~~ 1004.5 Maximum Floor Area Allowances Per Occupant

Function of Space	Occupant Load Factor[a]
Business areas	~~100~~150 gross
Concentrated business use areas	See Section 1004.8

(No changes to other portions of table.)



1006.2.1, Table 1006.2.1 Group R Spaces with One Exit or Exit Access Doorway

- Single exit Group R-4 spaces now allow for a maximum occupant load of 20

TABLE 1006.2.1 Spaces With One Exit or Exit Access Doorway

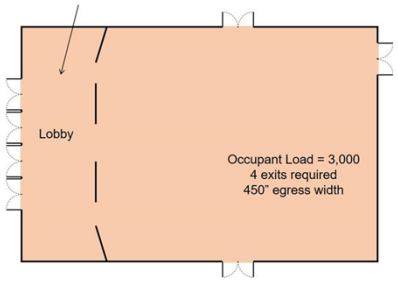
Occupancy	Maximum Occupant Load of Space	Maximum Common Path of Egress Travel Distance (feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
R-2	~~10~~ 20	NP	NP	125 [a]
R-3 [e]	~~10~~ 20	NP	NP	125 [a,g]
R-4 [e]	~~10~~ 20	~~75~~ NP	~~75~~ NP	125 [a,g]

(Portions of table not shown are unchanged.)

a. *No change*
b. *No change*
c. *No change*
d. *No change*
e. The ~~length of~~ common path of egress travel distance shall only apply in a Group R-3 occupancy located in a mixed occupancy building.
f. *No change*
g. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6.

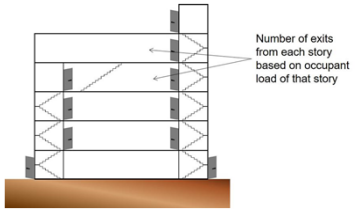
1006.2.1, Exception 1 Cumulative Occupant Load

- Cumulative occupant loads only applied for capacity purposes in foyers and lobbies



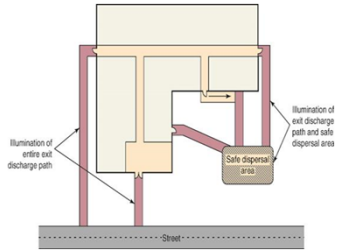
1006.3 Egress Through Adjacent Stories

- Path of egress travel to an exit shall not pass through more than one adjacent story
  - Five conditions where travel through more than one story permitted



1008.2.3 Illumination of the Exit Discharge

- Where safe dispersal area is utilized, illumination required along exit discharge path as well as in dispersal area

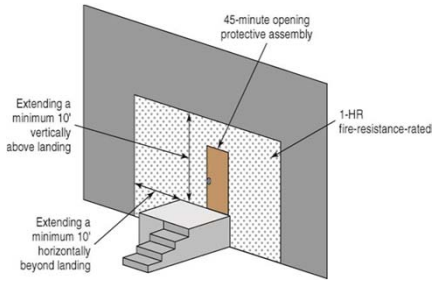


1008.3.5, 1008.2.2 Emergency Illumination in Group I-2

- Emergency lighting required in Group I-2 occupancies such that failure of single lamp in a luminaire maintains minimum 1 foot-candle illumination level
- Previously based on failure of single lighting unit

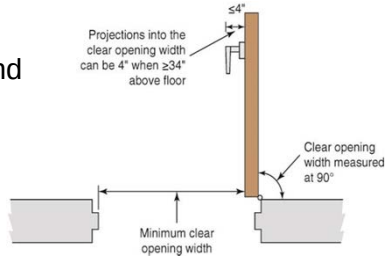
1009.7.2 Protection of Exterior Areas of Assisted Rescue

- Wall rating and opening protectives not required where building fully sprinklered



1010.1.1 Size of Doors

- Door width provisions reorganized and revised to correlate with technical requirements of ICC A117.1, ADA, IFC and IPC

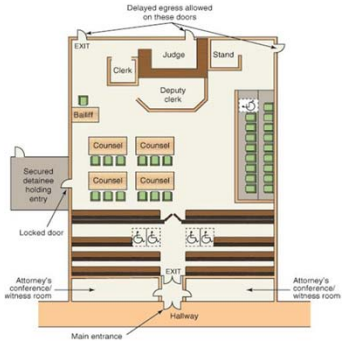


1010.1.4.4 Locking Arrangements in Educational Occupancies

- Applicable to both Groups E and B educational occupancies
- Addresses locking devices designed to keep intruders from entering room
- Conditions include:
  - Allows for outside unlocking
  - Openable from within room
  - Modifications to door hardware or closers not permitted

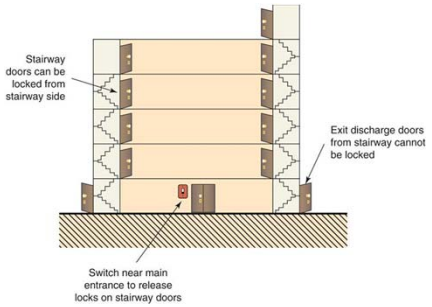
1010.1.9.8 Use of Delayed Egress Locking Systems in Group E Classrooms

- Delayed egress locking devices now permitted on Group E classrooms with an occupant load < 50
- Also permitted on courtroom means of egress doors other than main door(s) where building is sprinklered



1010.1.9.12 Locks on Stairway Doors

- Allowance for locking of stairway doors no longer limited to stairways serving four stories or less



1010.3.2 Security Access Turnstiles

- Allows for use as component of means of egress system where:
  - Building fully sprinklered
  - Minimum clear passage of 22 inches
  - Barrier automatically retracts to open position under each of 5 conditions
- Egress capacity limit to 50 persons where < 32 inches clear

1013.2 Floor Level Exit Sign Location

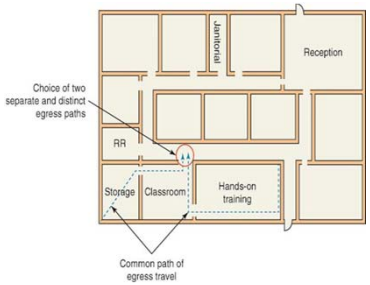
- Bottom of 'low-level' exit signs now limited to maximum 18 inches above floor level

1015.6, 1015.7 Fall Arrest for Rooftop Equipment

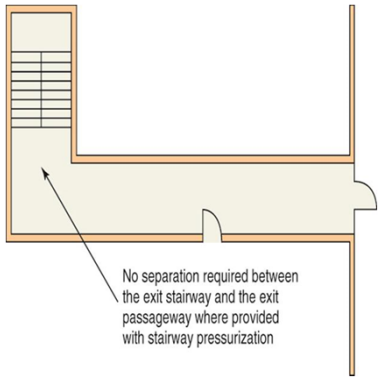
- Prescriptive provisions for placement of personal fall arrest/restraint anchorage connector devices deleted
- Reference now made to ANSI/ASSE Z 359.1
- Standard provides guidance on actual roof system and equipment location

1017.3, 202 Measurement of Egress Travel

- Common path measurement applicable to every room, area or space
- Removed reference to "within a story"



1023.3.1 Stairway Extensions



1023.5, 1024.6 Exit Stairway and Exit Passageway Penetrations

- Allowable penetrations into or through interior exit stairways/ramps and exit passageways now also include:
  - Security systems
  - Two-way communication systems

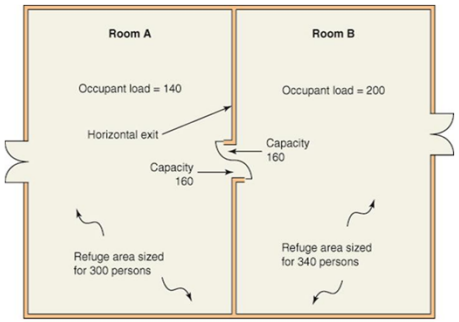
1025.1 Luminous Egress Path Marking in Group I-1 Occupancies

- Luminous egress path markings no longer required in high-rise buildings classified as Group I-2, I-3 or I-4 occupancies

1026.4 Refuge Areas for Horizontal Exits

- Refuge area to accommodate:
  - Original occupant load of refuge area, plus
  - Occupant load anticipated from adjoining compartment
- Anticipated occupant load to be based on:
  - Capacity of horizontal exit doors entering the refuge area, or
  - Total occupant load of adjoining compartment, whichever is less
- Floor area/occupant now references Chapter 4

1026.4 Refuge Areas for Horizontal Exits

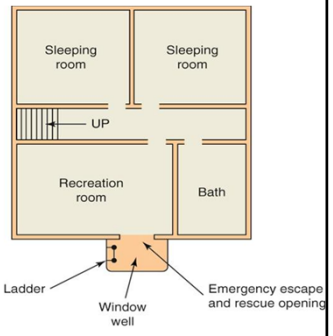


1029.6, 1029.6.3, 202 Open-Air Assembly Seating

- Outdoor smoke-protected assembly seating now referred to as “open-air assembly seating”
- New definition recognizes seating served by means of egress not subject to smoke accumulation within or under a structure and open to atmosphere

1030.1 Required Emergency Escape and Rescue Openings

- Clarified scope of provisions regarding single-exit stories
- Group R-4 now specifically addressed
- In sprinklered buildings, basement sleeping rooms not required to have EEROs where:
  - One MOE and one EERO, or
  - Two MOEs provided



Chapter 11

Accessibility

1103.2.14 Access to Walk-In Coolers and Freezers

- Walk-in cooler and freezer <u>equipment</u> exempted from accessibility provisions where accessed <u>only</u> from work areas

1109.2.1.2 Fixtures in Family or Assisted-Use Toilet Rooms

- Additional fixtures permitted in a family or assist-use toilet room now include:
  - Child-height water closet
  - Child-height lavatory
- Provides additional accommodation on an optional basis

1109.15 Access to Gaming Machines and Gaming Tables

- Access to gaming areas in casinos and similar facilities now regulated separately for:
  - Gaming machine type
  - Gaming table type
- Requirement for front approach at gaming machines and gaming tables deleted

1110.4.13 Access to Play Areas for Children

- Play areas containing children's play components to be located on accessible route

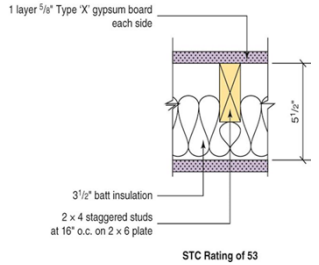
Chapter 12

Interior Environment

125

1206.2, 1207.3 Engineering Analysis of Sound Transmission

- Performance-based approach to sound transmission compliance
- Based on a comparison with designs tested to ASTM E90 or ASTM E492
- Applies to both:
  - Air-borne sound
  - Structural-borne sound



Chapter 14

Exterior Walls

127

Table 1404.2 Weather Covering Minimum Thickness

TABLE ~~1405.2~~ 1404.2 Minimum Thickness of Weather Coverings

Covering Type	Minimum Thickness (inches)
Adhered masonry veneer	~~0.25~~
• Architectural cast stone	0.75
• Other	0.25
Anchored masonry veneer	~~2.625~~
• Stone (natural)	2.0
• Architectural cast stone	1.25
• Other	2.625
~~Stone (cast artificial, anchored)~~	~~1.5~~
~~Stone (natural)~~	~~2.0~~

(Portions of table and footnotes not shown remain unchanged.)

1404.18 Polypropylene Siding

- Polypropylene siding now permitted for use on exterior walls of all types of construction
- Previously limited to Type VB construction

Chapter 15

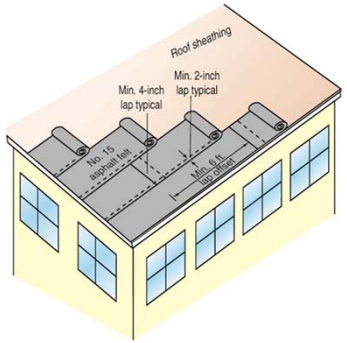
Roof Assemblies and Rooftop Structures

1504.3.3 Metal Roof Shingles

- Metal roof shingles now addressed independent from other metal panel roof systems
- Reference made to applicable standards for:
  - Labeling
  - Testing for wind resistance

1507.1 Underlayment

- Underlayment and ice barrier requirements relocated to a single location in code to address:
  - Type
  - Attachment
  - Application



1507.1 Underlayment

TABLE 1507.1.1(2) Underlayment Application

Roof Covering	Section	Maximum Basic Design Wind Speed, V < 140 mph	Maximum Basic Design Wind Speed, V ≥ 140 mph
Asphalt shingles	1507.2	For roof slopes from two units vertical in 12 units horizontal (2:12), up to four units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied as follows: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm). End laps shall be 4 inches (102 mm) and shall be offset by 6 feet (1829 mm). Distortions in the underlayment shall not interfere with the ability of the shingles to seal. For roof slopes of four units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied as follows: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm). Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches (102 mm) and shall be offset by 6 feet (1829 mm).	Same as Maximum Basic Design Wind Speed, V < 140 mph except all laps shall be not less than 4 inches (102 mm).

1507.18, 202 Building Integrated Photovoltaic Panels (BIPV)

- BIPV roof panels function as components of the building envelope
- Roof covering requirements established for BIPV panel systems
  - Deck requirements
  - Deck slope
  - Underlayment
  - Material standards
  - Attachment
  - Wind resistance

Chapter 16

Structural Design

1603.1 Construction Documents

- Additional loads to be identified for conventional light-frame construction:
  - Floor and roof dead loads
  - Rain load data
- Slope factor to now be included in roof snow load data
- Rain intensity to be shown regardless of whether rain loads govern the design

1604.3.7 Deflection of Glass Framing

- Deflection of framing members supporting glass now addressed based on length of member span
- When subjected to 0.6 times the component and cladding wind loads, deflection limited to:
  - 1/175 of span length not more than 13 feet 6 inches
  - 1/240 + ¼ inch for members with greater lengths

1604.5.1 Multiple Occupancies

- Where assigning a risk category to a building with a storm shelter, the normal occupancy of building shall apply
  - Storm shelter independently regulated where designated emergency shelter

1604.10 Storm Shelters

- ICC 500 standard now referenced for load determinations of storm shelters
  - Provides wind speeds for tornado and hurricane shelter design using ASCE 7 load combinations

Table 1607.1 Deck Live Load

TABLE 1607.1 Minimum Uniformly Distributed Live Loads, L_o, and Minimum Concentrated Live Loads

Occupancy or Use	Uniform (psf)	Concentrated (pounds)
5. Balconies and decks[h]	1.5 times the live load for the area served, not required to exceed 100 ~~Same as occupancy served~~	—

h. See Section 1604.8.3 for decks attached to exterior walls.

Table 1607.1 Live Load Reduction

- Table 1607.1 now clarified as to where heavy live loads greater than 100 psf may be reduced
- Three conditions addressed by footnotes:
  - "m" Not permitted
  - "n" Only per Section 1607.11.1.2 or Item 1 of Section 1607.11.2
  - "o" Only per Section 1607.11.1.3 or Item 2 of Section 1607.11.2

Table 1607.1 Live Load Reduction

Occupancy or Use	Uniform (psf)	Concentrated (pounds)
26. Roofs		
Occupiable roofs:		
Roof gardens	100	
Assembly areas	100[m]	
All other similar areas	Note l	Note l
29. Sidewalks, vehicular driveways and yards, subject to trucking	250[d, m, n]	8,000[e]

(Footnotes a-k not included for brevity.)

l. Areas of occupiable roofs, other than roof gardens and assembly areas, shall be designed for appropriate loads as approved by the building official. Unoccupied landscaped areas of roofs shall be designed in accordance with Section ~~1607.12.3~~ 1607.13.3.

m. Live load reduction is not permitted ~~unless specific exceptions of Section 1607.10 apply~~.

n. Live load reduction is only permitted in accordance with Section 1607.11.2 or Item 1 of Section 1607.11.2.

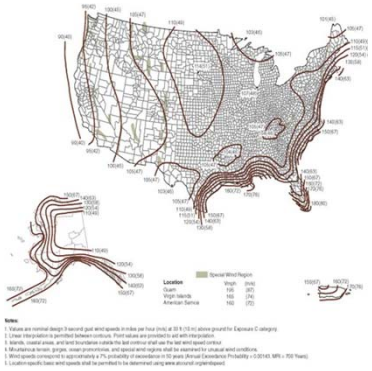
o. Live load reduction is only permitted in accordance with Section 1607.11.3 or Item 2 of Section 1607.11.2.

1607.14.2 Minimum Fire Load for Fire Walls

- Minimum lateral loading required for fire walls now established at 5 psf
- Based on assumption that structure on one side of wall has collapsed
- Consistent with fire walls designed in accordance with NFPA 221

1609 Wind Loads

- Updated wind speed maps, including maps for Hawaii
- Terminology changed from "ultimate design" to "basic design" wind speeds



1613 Earthquake Loads

- Values of site coefficients now in alignment with newest generation of ground motion attenuation equations
- Modifications made for both short period and 1-second period parameters
- Previous coefficients based on soil studies performed in early 1990s

1613 Earthquake Loads

TABLE 1613.3.3(1) 1613.2.3(1) Values of Site Coefficient F_a[a]

Site Class	Mapped Risk Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameter at short period					
	$S_s \le 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \ge 1.25$	$S_s \ge 1.5$
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.9 1.0	0.9 1.0	0.9 1.0	0.9 1.0	0.9 1.0	0.9
C	1.3 1.2	1.3 1.2	1.2 1.1	1.2 1.0	1.2 1.0	1.2
D	1.6	1.4	1.2	1.1	1.0	1.0
E	2.4 2.5	1.7	1.3 1.2	Note b 0.9	Note b 0.9	Note b
F	Note b	Note b	Note b	Note b	Note b	Note b

a. Use straight-line interpolation for intermediate values of mapped spectral response acceleration at short period, S_s.
b. Values shall be determined in accordance with Section 11.4.7 11.4.8 of ASCE 7.

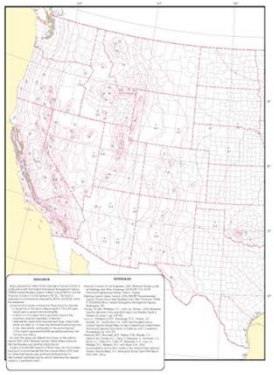
TABLE 1613.3.3(2) 1613.2.3(2) Values of Site Coefficient F_v[a]

Site Class	Mapped Risk Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameter at 1-second period					
	$S_1 \le 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	$S_1 \ge 0.5$	$S_1 \ge 0.6$
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.8 1.0	0.8 1.0	0.8 1.0	0.8 1.0	0.8 1.0	0.8
C	1.5 1.7	1.5 1.6	1.5	1.5 1.4	1.5 1.3	1.4
D	2.4	2.2 2.0	2.0 1.0	1.9 1.6	1.8 1.5	1.7
E	4.2 3.5	3.3 3.2	2.8	2.4	2.2 2.4	2.0
F	Note b	Note b	Note b	Note b	Note b	Note b

a. Use straight-line interpolation for intermediate values of mapped spectral response acceleration at 1-second period, S_1.
b. Values shall be determined in accordance with Section 11.4.7 11.4.8 of ASCE 7.
c. See requirements for site-specific ground motions in Section 11.4.7 11.4.8 of ASCE 7.

1613.2.1 Seismic Maps

- Seismic maps updated to match new maps in
  - 2015 NEHRP
  - 2016 ASCE 7



1615, 1604.5 Tsunami Loads

- New section and definitions address tsunami-resistant design of critical infrastructure and essential facilities
- Applicable to Risk Category III and IV structures located in Tsunami Design Zones

Chapter 17

Special Inspections and Tests

149

1704.6 Structural Observation

- Structural observation now also required in all buildings classified as:
  - High-rise
  - Risk Category IV

2018 IBC Significant Changes 150

1705.5.2 Metal-plate-connected Wood Trusses

- Special inspection of wood trusses required where:
  - Clear span exceeds 60 feet, or
  - Overall height is 60 inches or greater
- Inspection to verify installation of permanent individual truss member restraint/bracing installed per approved truss submittal package

2018 IBC Significant Changes 151

1705.12.1, 1705.13.1 Seismic Force-Resisting Systems

- Exceptions for special inspection of structural steel in seismic force-resisting systems have been clarified for structures in moderate and high-seismic regions
  - Applicable to all SDCs except A

2018 IBC Significant Changes 152

1705.12.6 Fire Sprinkler Clearance

- Provisions added for periodic special inspection of minimum clearance of fire sprinkler components to mechanical, electrical and plumbing systems
  - Not required where flexible sprinkler hose fittings are used

Chapter 18

Soils and Foundations

1804.4 Site Grading

- Impervious surfaces now permitted to slope less than 2% where surface is a door landing or ramp required to comply with egress provisions
- General provisions require minimum 2% slope to allow for water drainage away from building

1807.2 Retaining Walls

- Presence of a keyway in a retaining wall no longer recognized in the sliding analysis of the wall
- Keyway may still be used when designed using the principles of soil mechanics and accepted engineering practice

1810.3.8.3 Precast Prestressed Piles

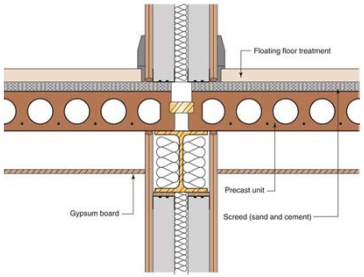
- Equations addressing precast prestressed piles have been updated

Chapter 19

Concrete

1901.2 Seismic Loads for Precast Concrete Diaphragms

- In the design of precast concrete diaphragms used in buildings located in high seismic regions, applicable provisions of ASCE 7 to be used

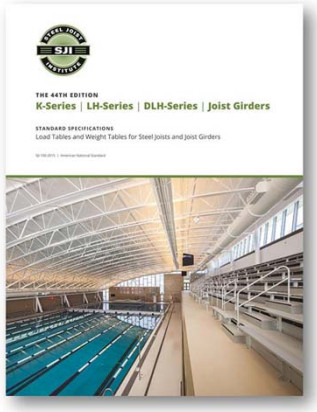


Chapter 22

Steel

2207.1 SJI Standard

- 2015 edition of combined SJI1-100 standard now referenced for steel joists



2209.2 Cantilevered Steel Storage Racks

- Reference is now made to RMI standard for cantilevered steel storage racks

2211 Cold-Formed Steel Light-Frame Construction

- 2015 editions of AISI standards for cold-formed steel now referenced

Chapter 23

Wood

2303.2.2 Fire-Retardant-Treated Wood

- Engineered lumber of FRT wood to be impregnated with chemicals
- Paints, coating, stains and other surface treatments not an approved method

2303.6 Nails and Staples

- Nails and staples to also comply with Supplement 1 of ASTM F 1667
- Minimum average bending moment values have been added for staples

Table 2304.9.3.2 Mechanically Laminated Decking

- New alternative fastener schedule for construction of mechanically laminated decking
- Provides for equivalency where power-driven fasteners are used instead of 30 penny nails

Table 2304.9.3.2 Mechanically Laminated Decking

TABLE 2304.9.3.2 Fastening Schedule for Mechanically Laminated Decking Using Laminations of 2-inch Nominal Thickness

Minimum Nail Size (Length × Diameter) (inches)	Maximum Spacing Between Face Nails[a,b] (inches)		Number of Toenails into Supports[c]
	Decking Supports ≤ 48 inches o.c.	Decking Supports > 48 inches o.c.	
4 × 0.192	30	18	1
4 × 0.162	24	14	2
4 × 0.148	22	13	2
3½ × 0.162	20	12	2
3½ × 0.148	19	11	2
3½ × 0.135	17	10	2
3 × 0.148	11	7	2
3 × 0.128	9	5	2
2¾ × 0.148	10	6	2
2¾ × 0.131	9	6	3
2¾ × 0.120	8	5	3

For SI: 1 inch = 25.4 mm

a. Nails shall be driven perpendicular to the lamination face, alternating between top and bottom edges.

b. Where nails penetrate through two laminations and into the third, they shall be staggered one-third of the spacing in adjacent laminations. Otherwise, nails shall be staggered one-half of the spacing in adjacent laminations.

c. Where supports are 48 inches (1219 mm) on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches (1219 mm) on center, alternate laminations shall be toenailed to every support.

Table 2304.10.1 Ring Shank Nails

- 8-penny common or ring shank nails now addressed for fastening of roof sheathing when nailing 6 inches or 12 inches on center
- Provides for alignment of 2018 IBC and IRC

Table 2304.10.1 Ring Shank Nails

TABLE 2304.10.1 Fastening Schedule, roof requirements

Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing			
		Spacing and Location	
Building Element	Number and Type of Fastener	Edges (inches)	Intermediate supports (inches)
~~31.~~ 30. ⅜" - ½"	8d ~~box~~ common or deformed (2½" × ~~0.113~~0.131") (roof), or RSRS-01 (2⅜" × 0.113") nail (roof)[d]	6	12
	2⅜" × 0.113" nail (roof)	4	8
	1-¾" 16 gage staple, 7/16" crown (roof)	3	6
~~32.~~ 31. 19/32" - ¾"	8d common or deformed (2½" × 0.131") (roof), or RSRS-01 (2⅜" × 0.113") nail (roof)[d]	6	12
	2⅜" × 0.113" nail; or 2" 16 gage staple, 7/16" crown	4	8
~~33.~~ 32. ⅞" - 1¼"	10d common (3" × 0.148"); or 8d deformed (2½" × 0.131")	6	12

For SI: 1 inch = 25.4 mm.
d. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F 1667.
(No changes to footnotes a–c.)

2304.10.5 Fasteners in Treated Wood

- Staples used in preservative-treated wood and fire-retardant-treated wood now required to be made of stainless steel
- More susceptible to corrosion due to thinner wire gages

2304.11 Heavy-Timber Construction

- Heavy timber provisions of Chapter 23 have been reorganized
- Table on engineered lumber dimensional equivalencies relocated from Section 602.4

2304.11 Heavy-Timber Construction

~~TABLE 602.4~~TABLE 2304.11 ~~Wood Member Size Equivalencies~~ Minimum Dimensions of Heavy Timber Structural Members

Supporting	Heavy Timber Structural Elements	Minimum Nominal Solid Sawn Size		Minimum Glued-laminated Net Size		Minimum Structural Composite Lumber Net Size	
		Width, inch	Depth, inch	Width, inch	Depth, inch	Width, inch	Depth, inch
Floor loads only or combined floor and roof loads	• Columns; • Framed sawn or glue-laminated timber arches which spring from the floor line • Framed timber trusses	8	8	6¾	8¼	7	7½
	• Wood beams and girders	6	10	5	10½	5¼	9½
Roof loads only	• Columns (roof and ceiling loads) • Lower half of wood-frame or glue-laminated arches which spring from the floor line or from grade	6	8	5	8¼	5¼	7½
	• Upper half of wood-frame or glue-laminated arches which spring from the floor line or from grade	6	6	5	6	5¼	5½
	• Framed timber trusses and other roof framing[c] • Framed or glue-laminated arches that spring from the top of walls or wall abutments	4[b]	6	3[b]	6¾	3½[b]	5½

For SI: 1 inch = 25.4 mm.

a. Spaced members shall be permitted to be composed of two or more pieces not less than 3 inches (76 mm) nominal in thickness where blocked solidly throughout their intervening spaces or where spaces are tightly closed by a continuous wood cover plate of not less than 2 inches (51 mm) nominal in thickness secured to the underside of the members. Splice plates shall be not less than 3 inches (76 mm) nominal in thickness.

b. Where protected by approved automatic sprinklers under the roof deck, framing members shall be not less than 3 inches (76 mm) nominal in width.

2304.12.2.5, 2304.12.2.6 Supporting Members for Permeable Floors and Roofs

- Where an impervious moisture barrier system is used to protect the wood structure supporting floors, positive drainage shall be provided for water that infiltrates the moisture-permeable floor topping

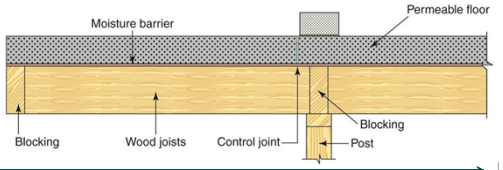


Table 2308.4.1.1 (1) Header and Girder Spans – Exterior Walls

TABLE 2308.4.1.1(1) Header and Girder Spans[a,b] for Exterior Bearing Walls

Headers and Girders Supporting	Size	Ground Snow Load (psf)[e]							
		30						50	
		Building Width[c] (feet)							
		12		24		36		12	
		Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]
Roof and Ceiling	1-2 × 6	4 - 0	1	3 - 1	2	2 - 7	2	3 - 5	1
	1-2 × 8	5 - 1	2	3 - 11	2	3 - 3	2	4 - 4	2
	1-2 × 10	6 - 0	2	4 - 8	2	3 - 11	2	5 - 2	2
	1-2 × 12	7 - 1	2	5 - 5	2	4 - 7	3	6 - 1	2
	2-2 × 4	4 - 0	1	3 - 1	1	2 - 7	1	3 - 5	1
	2-2 × 6	6 - 0	1	4 - 7	1	3 - 10	1	5 - 1	1
	2-2 × 8	7 - 7	1	5 - 9	1	4 - 10	2	6 - 5	1
	2-2 × 10	9 - 0	1	6 - 10	2	5 - 9	2	7 - 8	2
	2-2 × 12	10 - 7	2	8 - 1	2	6 - 10	2	9 - 0	2
	3-2 × 8	9 - 5	1	7 - 3	1	6 - 1	1	8 - 1	1
	3-2 × 10	11 - 3	1	8 - 7	1	7 - 3	2	9 - 7	1
	3-2 × 12	13 - 2	1	10 - 1	2	8 - 6	2	11 - 3	2
	4-2 × 8	10 - 11	1	8 - 4	1	7 - 0	1	9 - 4	1
	4-2 × 10	12 - 11	1	9 - 11	1	8 - 4	1	11 - 1	1
	4-2 × 12	15 - 3	1	11 - 8	1	9 - 10	2	13 - 0	1
Roof, ceiling and one center-bearing floor	1-2 × 6	3 - 3	1	2 - 7	2	2 - 2	2	3 - 0	2
	1-2 × 8	4 - 1	2	3 - 3	2	2 - 9	2	3 - 9	2
	1-2 × 10	4 - 11	2	3 - 10	2	3 - 3	3	4 - 6	2

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas fir-larch, hem-fir, Southern pine and spruce-pine-fir. ~~No. 1 or better grade lumber shall be used for Southern Pine.~~

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (for example, cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

Table 2308.4.1.1 (2) Header and Girder Spans – Interior Walls

TABLE 2308.4.1.1(2) Header and Girder Spans[a,b] for Interior Bearing Walls

Headers and Girders Supporting	Size	Building Width[c] (feet)					
		12		24		36	
		Span[a]	NJ[d]	Span[a]	NJ[d]	Span[a]	NJ[d]
One floor only	2-2 × 4	4 - 1	1	2 - 10	1	2 - 4	1
	2-2 × 6	6 - 1	1	4 - 4	1	3 - 6	1
	2-2 × 8	7 - 9	1	5 - 5	1	4 - 5	2
	2-2 × 10	9 - 2	1	6 - 6	2	5 - 3	2
	2-2 × 12	10 - 9	1	7 - 7	2	6 - 3	2
	3-2 × 8	9 - 8	1	6 - 10	1	5 - 7	1
	3-2 × 10	11 - 5	1	8 - 1	1	6 - 7	2
	3-2 × 12	13 - 6	1	9 - 6	2	7 - 9	2
	4-2 × 8	11 - 2	1	7 - 11	1	6 - 5	1
	4-2 × 10	13 - 3	1	9 - 4	1	7 - 8	1
	4-2 × 12	15 - 7	1	11 - 0	1	9 - 0	2
Two floors	2-2 × 4	2 - 7	1	1 - 11	1	1 - 7	1
	2-2 × 6	3 - 11	1	2 - 11	2	2 - 5	2
	2-2 × 8	5 - 0	1	3 - 8	2	3 - 1	2
	2-2 × 10	5 - 11	2	4 - 4	2	3 - 7	2
	2-2 × 12	6 - 11	2	5 - 2	2	4 - 3	3
	3-2 × 8	6 - 3	1	4 - 7	2	3 - 10	2
	3-2 × 10	7 - 5	1	5 - 6	2	4 - 6	2
	3-2 × 12	8 - 8	2	6 - 5	2	5 - 4	2
	4-2 × 8	7 - 2	1	5 - 4	1	4 - 5	2
	4-2 × 10	8 - 6	1	6 - 4	2	5 - 3	2
	4-2 × 12	10 - 1	1	7 - 5	2	6 - 2	2

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas fir-larch, hem-fir, Southern pine and spruce-pine-fir. ~~No. 1 or better grade lumber shall be used for Southern Pine.~~

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

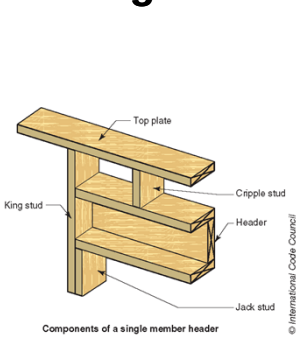
d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

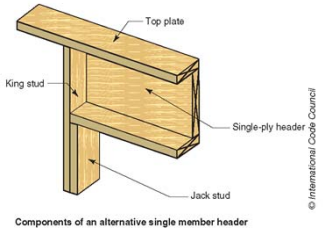
e. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (for example, cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

2308.5.5.1 Openings in Exterior Bearing Walls

- Single member headers now permitted under conventional light-frame construction provisions of Section 2308
- Typically limited to spans of two to four feet as set forth in Table 2308.4.1.1(1)
- Increases energy efficiency by allowing for a greater thickness of cavity insulation

2308.5.5.1 Openings in Exterior Bearing Walls





Chapter 24

Glass and Glazing

2407.1 Structural Glass Baluster Panels

- Guards with structural glass baluster panels need not be installed with an attached top rail where:
  - Tested per ASTM E2353 to remain in place as barrier following impact or glass breakage
- Previous acceptance limited to building official approval

Chapter 25

Gypsum Board, Gypsum Panel Products and Plaster

181

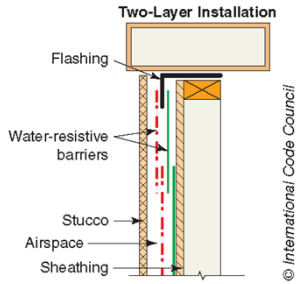
2510.6 Water-Resistive Barrier

- Where a water-resistive barrier is applied over wood based sheathing, a ventilated air space shall be provided between the stucco and water-resistive barrier
  - Applicable in Climate Zones 1A, 2A or 3A
- Provides a means to mitigate the potential for moisture migration into the wall assembly

2510.6 Water-Resistive Barrier

Two-Layer System

- Each layer of water-resistive barrier is individually installed in a ship lapped fashion
- Interior layer forms continuous drainage plane and is integrated with flashing



Water-resistive barrier

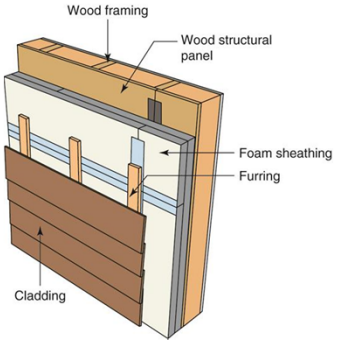
Chapter 26

Plastic

184

2603.13 Cladding Attachment over Foam Sheathing to Wood Framing

- IBC now consistent with IRC regarding cladding over foam sheathing and wood framing
- New provisions added addressing both direct attachment and furred cladding attachment



2603.13 Cladding Attachment over Foam Sheathing to Wood Framing

TABLE 2603.13.1 Cladding Minimum Fastening Requirements for Direct Attachment over Foam Plastic Sheathing to Support Cladding Weight[a]

Cladding Fastener Through Foam Sheathing into:	Cladding Fastener - Type and Minimum Size[b]	Cladding Fastener Vertical Spacing (inches)	Maximum Thickness of Foam Sheathing[c] (inches) 16" o.c. Fastener Horizontal Spacing — Cladding Weight: 3 psf	11 psf	18 psf	25 psf	24" o.c. Fastener Horizontal Spacing — Cladding Weight: 3 psf	11 psf	18 psf	25 psf
Wood Framing (minimum 1¼ - inch penetration)	0.113" diameter nail	6	2.00	1.45	0.75	DR	2.00	0.85	DR	DR
		8	2.00	1.00	DR	DR	2.00	0.55	DR	DR
		12	2.00	0.55	DR	DR	1.85	DR	DR	DR
	0.120" diameter nail	6	3.00	1.70	0.90	0.55	3.00	1.05	0.50	DR
		8	3.00	1.20	0.60	DR	3.00	0.70	DR	DR
		12	3.00	0.70	DR	DR	2.15	DR	DR	DR
	0.131" diameter nail	6	4.00	2.15	1.20	0.75	4.00	1.35	0.70	DR
		8	4.00	1.55	0.80	DR	4.00	0.90	DR	DR
		12	4.00	0.90	DR	DR	2.70	0.50	DR	DR
	0.162" diameter nail	6	4.00	3.55	2.05	1.40	4.00	2.25	1.25	0.80
		8	4.00	2.55	1.45	0.95	4.00	1.60	0.85	0.50
		12	4.00	1.60	0.85	0.50	4.00	0.95	DR	DR

For SI: 1 inch = 25.4 mm; 1 pound per square foot (psf) = 0.0479 kPa
DR = design required
o.c. = on center

a. Wood framing shall be spruce-pine-fir or any wood species with a specific gravity of 0.42 or greater in accordance with ANSI/AWC NDS.
b. Nail fasteners shall comply with ASTM F 1667, except nail length shall be permitted to exceed ASTM F 1667 standard lengths.
c. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C 578 or ASTM C 1289.

2603.13 Cladding Attachment over Foam Sheathing to Wood Framing

TABLE 2603.13.2 Furring Minimum Fastening Requirements for Application over Foam Plastic Sheathing to Support Cladding Weight[a,b]

Furring Material	Framing Member	Fastener Type and Minimum Size	Minimum Penetration into Wall Framing (inches)	Fastener Spacing in Furring (inches)	Maximum Thickness of Foam Sheathing[d] (inches) 16" o.c. Furring[e] — Siding Weight: 3 psf	11 psf	18 psf	25 psf	24" o.c. Furring[e] — Siding Weight: 3 psf	11 psf	18 psf	25 psf
Minimum 1x Wood Furring[f]	Minimum 2x Wood Stud	0.131" diameter nail	1¼	8	4.00	2.45	1.45	0.95	4.00	1.60	0.85	DR
				12	4.00	1.60	0.85	DR	4.00	0.95	DR	DR
				16	4.00	1.10	DR	DR	3.05	0.60	DR	DR
		0.162" diameter nail	1¼	8	4.00	4.00	2.45	1.60	4.00	2.75	1.45	0.85
				12	4.00	2.75	1.45	0.85	4.00	1.65	0.75	DR
				16	4.00	1.90	0.95	DR	4.00	1.05	DR	DR
		No. 10 wood screw	1	12	4.00	2.30	1.20	0.70	4.00	1.40	0.60	DR
				16	4.00	1.65	0.75	DR	4.00	0.90	DR	DR
				24	4.00	0.90	DR	DR	2.85	DR	DR	DR
		¼" lag screw	1½	12	4.00	2.65	1.50	0.90	4.00	1.65	0.80	DR
				16	4.00	1.95	0.95	0.50	4.00	1.10	DR	DR
				24	4.00	1.10	DR	DR	3.25	0.50	DR	DR

For SI: 1 inch = 25.4 mm; 1 pound per square foot (psf) = 0.0479 kPa
DR = design required
o.c. = on center

a. Wood framing and furring shall be spruce-pine-fir or any wood species with a specific gravity of 0.42 or greater in accordance with ANSI/AWC NDS.
b. Nail fasteners shall comply with ASTM F 1667, except nail length shall be permitted to exceed ASTM F 1667 standard lengths.
c. Where the required cladding fastener penetration into wood material exceeds ¾ inch (19 mm) and is not more than 1¾ inches (38 mm), a minimum 2x wood furring or an approved design shall be used.
d. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C 578 or ASTM C 1289.
e. Furring shall be spaced not greater than 24 inches (610 mm) on center in a vertical or horizontal orientation. In a vertical orientation, furring shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, the indicated 8-inch (203 mm) and 12-inch (305 mm) fastener spacing in furring shall be achieved by use of two fasteners into studs at 16 inches (406 mm) and 24 inches (610 mm) on center, respectively.

Chapter 30

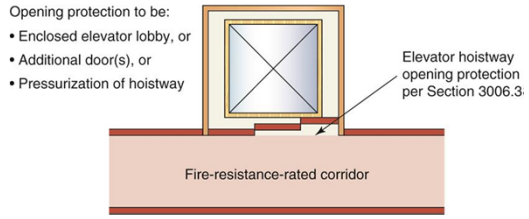
Elevators and Conveying Systems

3001.2 Emergency Elevator Communication Systems

- Two-way communication system to be provided in accessible elevators:
- System to be visual and text-based, video-based and 24/7 live interactive
- Accessible to individuals who are deaf, hard of hearing and speech impaired

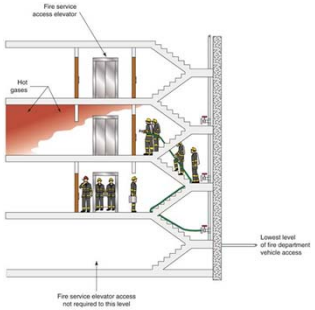
3006.2.1 Corridors Adjacent to Elevator Hoistway Openings

- Elevator hoistway openings to be protected from smoke intrusion where corridors to be fire-resistance-rated per Section 1020.1



3007.1 Extent of Fire Service Access Elevator Travel

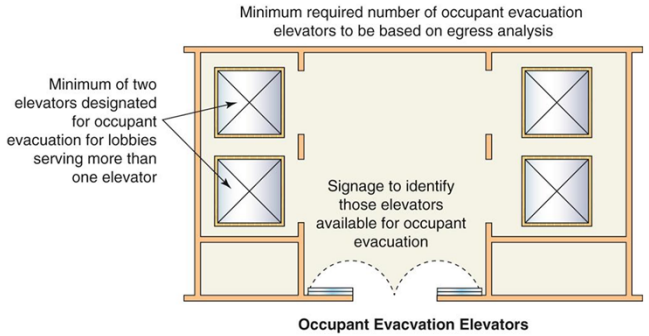
- Only floors at and above lowest level of fire department vehicle access need to served by fire service access elevators
- Not required for elevators that only serve parking garage and lobby levels



3008.1.1 Required Number of Occupant Evacuation Elevators

- Minimum number of required occupant evacuation elevators based on one of two egress scenarios
  - Full building evacuation in less than 1 hour, or
  - Evacuation of 5 consecutive floors with highest accumulated occupant load in less than 15 minutes

3008.1.1 Required Number of Occupant Evacuation Elevators



Occupant Evacvation Elevators

Chapter 31

Special Construction

3112, 202 Relocatable Buildings

- Relocatable building defined as *partially or completely assembled building intended to be reused multiple times and transported to different building sites*
- Compliance required as for new construction
- Provisions address:
  - Supplemental information
  - Manufacturer's data plate
  - Inspection agencies

Chapter 33

Safeguards During Construction

3310.1 Stairways in Buildings under Construction

- Stairway to be provided where building construction exceeds 40 feet above lowest level of fire department vehicle access
- As construction progresses, stairway to extend within one floor of highest point with secured decking/flooring

3314 Fire Watch During Construction

- Fire watch can be required by fire code official
  - Provided during non-business hours
  - Applicable where construction exceeds 40 feet above lowest adjacent grade

Appendix G

Flood-Resistant Construction

G103.6 Watercourse Alteration

- Applicant to notify all “adjacent” government jurisdictions, rather than just those ‘affected’, where watercourse to be altered
- Now consistent with NFIP regulations

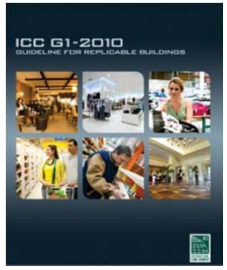
Appendix N

Replicable Buildings

201

Appendix N Guidelines for Replicable Buildings

- Based on ICC Guideline G1
- Benefits include:
  - More uniform review process
  - Elimination of repetitive reviews
  - Reduces time between permit submittal and construction mobilization



Discussion Activity

Final Reflection

This slide will help the learner to reflect on the day and what they will take back to the job and apply.

- **What?** What happened and what was observed in the training?
- **So what?** What did you learn? What difference did this training make?
- **Now what?** How will you do things differently back on the job as a result of this training?

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