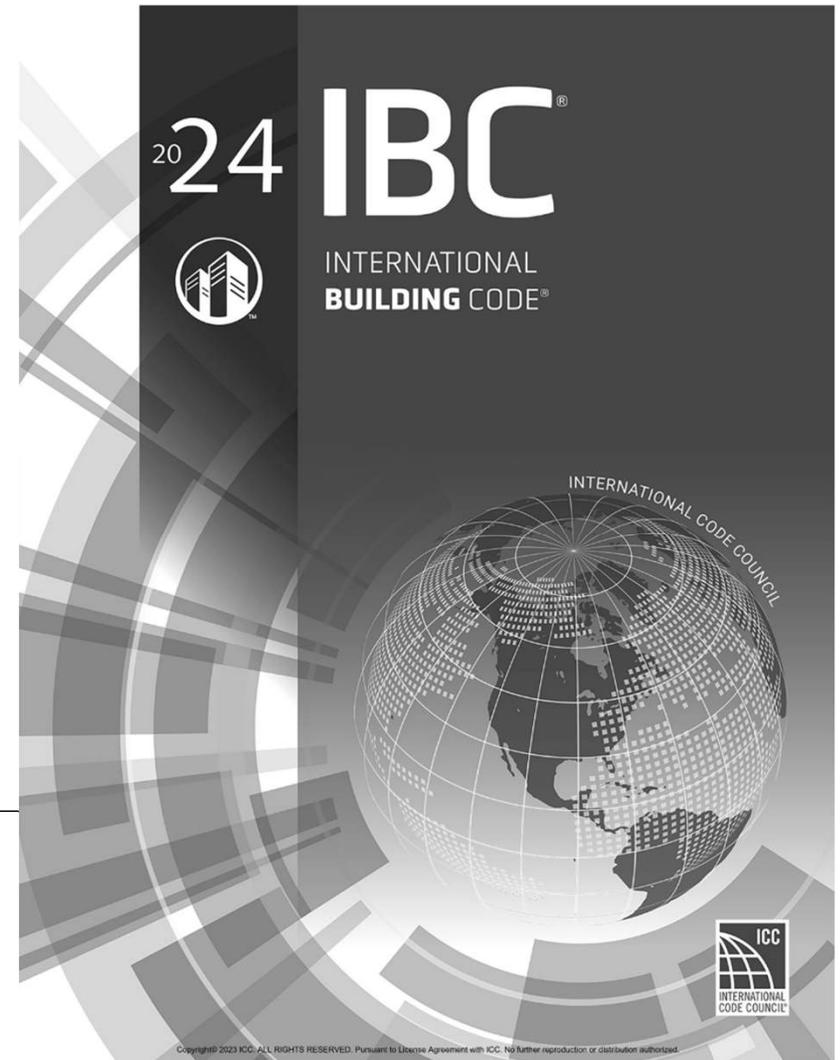


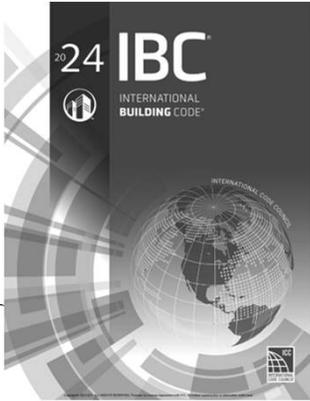
2024 IBC Update

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2024 IBC Update

SHUMS CODA ASSOCIATES



1

Instructor

Steve Thomas, CBO

Colorado Regional Manager, Education Director
 45 years' experience in code administration

ICBO Committees

- Small Jurisdictions
- Fire & Life Safety Code Development
- Means of Egress Review

ICC Means of Egress Code Development, Codes and Standards and Code Correlation Committees

Author of Building Code Basics, based on 2009 & 2012 IBC, Building Code Essentials 2015 & 2018 IBC, Applying Codes to Cannabis Facilities



2

Today's Discussion

- Major revisions to the 2024 International Building Code
- Nonstructural provisions
- Background behind changes
- Application of the changes



3

New Format

CHAPTER
5 GENERAL BUILDING HEIGHTS AND AREAS

User notes:
About this chapter: Chapter 5 establishes the limits to which a building can be built. Building height, number of stories and building area are specified in this chapter. Chapter 5 must be used in conjunction with the occupancies established in Chapter 3 and the types of construction established in Chapter 6. This chapter also specifies the impact that mezzanines, accessory occupancies and mixed occupancies have on the overall size of a building.

Code development reminder: Code change proposals to sections preceded by the designation [F] or [BE] will be considered by a code development committee meeting during the 2024 (Group A) Code Development Cycle. All other code change proposals will be considered by a code development committee meeting during the 2025 (Group B) Code Development Cycle.

SECTION 501—GENERAL

501.1 Scope. The provisions of this chapter control the height and area of structures hereafter erected and additions to existing structures.

SECTION 502—BUILDING ADDRESS

[F] 502.1 Address identification. New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure. Address identification shall be maintained.

4

Revisions

SECTION 302—OCCUPANCY CLASSIFICATION AND USE DESIGNATION

302.1 Occupancy classification. Occupancy classification is the formal designation of the primary purpose of the building, structure or portion thereof. Structures shall be classified into one or more of the occupancy groups specified in this section based on the nature of the hazards and risks to building occupants generally associated with the intended purpose of the building or structure. An area, room or space that is intended to be occupied at different times for different purposes shall comply with all applicable requirements associated with such potential multipurpose. Structures containing multiple occupancy groups shall comply with Section 508. Where a structure is proposed for a purpose that is not specified in this section, such structure shall be classified in the occupancy it most nearly resembles based on the fire safety and relative hazard. Occupiable roofs shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard, and shall comply with Section 503.1.4.



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

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5

104.2 Determination of compliance

The building official shall have the authority to determine compliance with this code, to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions.



Such interpretations, policies and procedures:

- 1. Shall be in compliance with the intent and purpose of this code.
- 2. Shall not have the effect of waiving requirements specifically provided for in this code.

6

104.2.1 Listed compliance

Where this code or a referenced standard requires equipment, materials, products or services to be listed and a listing standard is specified, the listing shall be based on the specified standard.

Where a listing standard is not specified, the listing shall be based on an approved listing criteria.

Listings shall be germane to the provision requiring the listing.

Installation shall be in accordance with the listing and the manufacturer's instructions, and where required to verify compliance, the listing standard and manufacturer's instructions shall be made available to the building official.



7

104.2.2 Technical assistance

To determine compliance with this code, the building official is authorized to require the owner or owner's authorized agent to provide a technical opinion and report.



8

104.2.2.1 Cost

A technical opinion and report shall be provided without charge to the jurisdiction.



9

104.2.2.2 Preparer qualifications

The technical opinion and report shall be prepared by a qualified engineer, specialist, laboratory or specialty organization acceptable to the building official.



The building official is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

10

104.2.2.3 Content

The technical opinion and report shall analyze the properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon to identify and propose necessary recommendations.



11

104.2.2.4 Tests

Where there is insufficient evidence of compliance with the provisions of this code, the building official shall have the authority to require tests as evidence of compliance.



Test methods shall be as specified in this code or by other recognized test standards.

In the absence of recognized test standards, the building official shall approve the testing procedures.

Such tests shall be performed by a party acceptable to the building official.

12

104.2.3 - Alternative materials, design and methods of construction and equipment

The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved.

- New exception: Performance-based alternative materials, designs or methods of construction and equipment complying with the International Code Council Performance Code. This exception shall not apply to alternative structural materials or to alternative structural designs.



13

104.2.3.1 Approval authority

An alternative material, design or method of construction shall be approved where the building official finds that the proposed alternative is satisfactory and complies with Sections 104.2.3 through 104.2.3.7, as applicable.



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104.2.3.2 Application and disposition

Where required, a request to use an alternative material, design or method of construction shall be submitted in writing to the building official for approval.

Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.



15

104.2.3.3 Compliance with code intent

An alternative material, design or method of construction shall comply with the intent of the provisions of this code.



16

104.2.3.4 Equivalency criteria

An alternative material, design or method of construction shall, for the purpose intended, be not less than the equivalent of that prescribed in this code with respect to all of the following, as applicable:

- 1. Quality.
- 2. Strength.
- 3. Effectiveness.
- 4. Durability.
- 5. Safety, other than fire safety.
- 6. Fire safety.



104.2.3.5 Tests



Tests conducted to demonstrate equivalency in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict performance of the end use configuration.

Tests shall be performed by a party acceptable to the building official.

104.2.3.5.1 Fire Tests

Tests conducted to demonstrate equivalent fire safety in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict fire safety performance of the end use configuration.



Tests shall be performed by a party acceptable to the building official.

104.2.3.6 Reports



Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall comply with Sections 104.2.3.6.1 and 104.2.3.6.2.

104.2.3.6.1 Evaluation reports

Evaluation reports shall be issued by an approved agency and use of the evaluation report shall require approval by the building official for the installation.

The alternate material, design or method of construction and product evaluated shall be within the scope of the building official's recognition of the approved agency.

Criteria used for the evaluation shall be identified within the report and, where required, provided to the building official.



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104.2.3.6.2 Other reports

Reports not complying with Section 104.2.3.6.1 shall describe criteria, including but not limited to any referenced testing or analysis, used to determine compliance with code intent and justify code equivalence.

The report shall be prepared by a qualified engineer, specialist, laboratory or specialty organization acceptable to the building official.

The building official is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.



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104.2.3.7 Peer review

The building official is authorized to require submittal of a peer review report in conjunction with a request to use an alternative material, design or method of construction, prepared by a peer reviewer that is approved by the building official.



23

104.4.1 Warrant

Where the building official has first obtained a proper inspection warrant or other remedy provided by law to secure entry, an owner, the owner's authorized agent, occupant or person having charge, care or control of the structure or premises shall not fail or neglect, after a proper request is made as herein provided, to permit entry therein by the building official for the purposes of inspection and examination pursuant to this code.



24

104.7 Official records

The building official shall keep official records as required by Sections 104.7.1 through 104.7.5.

Such official records shall be retained for not less than 5 years or for as long as the building or structure to which such records relate remains in existence, unless otherwise provided by other regulations.



25

104.7.1 Approvals

A record of approvals shall be maintained by the building official and shall be available for public inspection during business hours in accordance with applicable laws.



26

104.7.2 Inspections

The building official shall keep a record of each inspection made, including notices and orders issued, showing the findings and disposition of each.



27

104.7.3 - Code alternatives and modifications

Application for alternative materials, design and methods of construction and equipment in accordance with Section 104.2.3; modifications in accordance with Section 104.2.4; and documentation of the final decision of the building official for either shall be in writing and shall be retained in the official records.



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104.7.4 Tests

The building official shall keep a record of tests conducted to comply with Sections 104.2.2.4 and 104.2.3.5.



29

104.7.5 Fees

The building official shall keep a record of fees collected and refunded in accordance with Section 109.



30

202 Definitions

HIGH-RISE BUILDING.

A building with an occupied floor or occupied roof located more than 75 feet above the lowest level of fire department vehicle access.



31

202 Definitions

LIMITED VERBAL OR PHYSICAL ASSISTANCE

Describes persons who, because of age, physical limitations, cognitive limitations, treatment or chemical dependency, may not independently recognize, respond or evacuate without limited verbal or physical assistance during an emergency situation.

Limited verbal assistance includes prompting, giving and repeating instructions. Limited physical assistance includes assistance with transfers to walking aids or mobility devices and assistance with egress.



32

Definitions

202

OCCUPIABLE ROOF

An exterior space on a roof that is designed for human occupancy, other than maintenance or repair, and is equipped with a means of egress system meeting the requirements of this code.



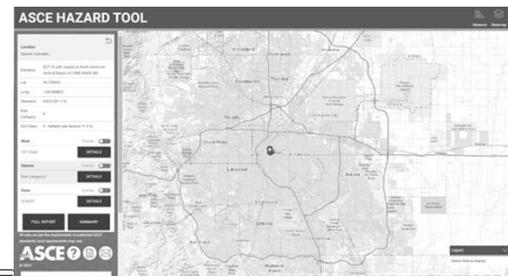
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202

Definitions

WIND DESIGN GEODATABASE.

The ASCE database (version 2022-1.0) of geocoded wind speed design data. The ASCE Wind Design Geodatabase of geocoded wind speed design data is available at <https://asce7hazardtool.online/>.

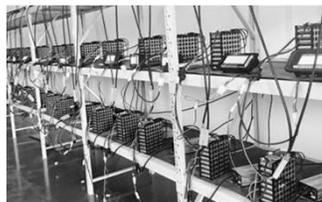


34

304.1

Business Group B

Lithium-ion or lithium metal battery testing, research and development



35

306.2 - Moderate-hazard

factory industrial, Group F-1

Beverages: over 20-percent alcohol content

Energy storage systems (ESS) and equipment containing lithium-ion or lithium metal batteries

Lithium-ion batteries

Vehicles powered by lithium-ion or lithium metal batteries



36

306.3 - Low-hazard factory industrial, Group F-2

Beverages: up to and including 20-percent alcohol content



37

Table 307.1(1) Flammable Gas

[F] TABLE 307.1(1) - MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD^{a,c,d,e,m} - continued

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE ^b			USE-CLOSED SYSTEMS ^b			USE-OPEN SYSTEMS ^b	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)
Flammable gas	Gaseous	H-2	NA	NA	1,000 ^{d,e}	NA	NA	1,000 ^{d,e}	NA	NA
	1A and 1B (High BV) ^f				162,500 ^{d,e}			162,500 ^{d,e}		
	1B (Low BV) ^f				(150) ^{d,g}			(150) ^{d,g}		
	Liquefied				(10,000) ^{d,g}			(10,000) ^{d,g}		
	1A and 1B (High BV) ^f									
	1B (Low BV) ^f									

p. "High BV" Category 1B flammable gas has a burning velocity greater than 3.9 inches per second. "Low BV" Category 1B flammable gas has a burning velocity of 3.9 inches per second or less.

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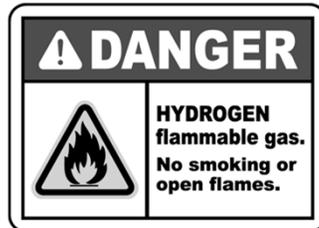
Table 307.1(1) Flammable Gas

1. Category 1A. A gas that meets either of the following:

- 1.1. Ignitable at 14.7 psia when in a mixture of 13 percent or less by volume with air.
- 1.2. A flammable range at 14.7 psia with air of at least 12 percent, regardless of the lower limit, unless data shows compliance with Category 1B.

2. Category 1B. A gas that meets the flammability criteria for Category 1A, is not pyrophoric or chemically unstable, and meets one or more of the following:

- 2.1. A lower flammability limit of more than 6 percent by volume of air.
- 2.2. A fundamental burning velocity of less than 3.9 inches/second.



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Flammable Gas Examples

Class 1A

- propane, acetylene, and butane

Class 1B

- Difluoromethane, 1,1,1-trifluoroethane; and 2,3,3,3-tetrafluoro-1-propene

Category 2 flammable gases are not regulated as flammable gases in the Fire/Building Code



40

307.1.1 Occupancy Exemptions

Storage, use and handling of hazardous materials in accordance with Table 307.1.1 shall not be counted as contributing to Maximum Allowable Quantities and shall not cause classification of an occupancy to be Group H.



Such storage, use and handling shall comply with applicable provisions of the International Fire Code.

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MATERIAL CLASSIFICATION	OCCUPANCY OR APPLICATION	EXEMPTION
Combustible fiber	Baled cotton	Densely packed baled cotton shall not be classified as combustible fiber, provided that the bales comply with the packing requirements of ISO 8115.
Corrosive	Building materials	The quantity of commonly used building materials that are classified as corrosive materials is not limited.
	Personal and household products	The quantity of personal and household products that are classified as corrosive materials is not limited in retail displays, provided that the products are in original packaging.
	Retail and wholesale sales occupancies	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited. To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Explosives	Groups B, F, M and S	Storage of special industrial explosive devices is not limited.
	Groups M and R-3	Storage of black powder, smokeless propellant and small arms primers is not limited.
Flammable and combustible liquids and gases	Aerosols	Buildings and structures occupied for the storage of aerosol products, aerosol cooking spray products, or plastic aerosol 3 products shall be classified as Group S-1.
	Alcoholic beverages	The quantity of alcoholic beverages in liquor stores and distributors without bulk storage is not limited. The quantity of alcoholic beverages in distilling or brewing of beverages is not limited.

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307.3.1 - Occupancies containing explosives not classified as H-1

The following occupancies containing explosive materials shall be classified as follows:

2. Division 1.4 explosive materials shall be allowed in Group H-3 occupancies.

- Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.



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307.4 High-hazard Group H-2

Buildings and structures containing materials that pose a deflagration hazard or a hazard from accelerated burning shall be classified as Group H-2. Such materials shall include, but not be limited to, the following:

- Category 1A flammable gases.
- Category 1B flammable gases having a burning velocity greater than 3.9 inches per second



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307.5 High-hazard Group H-3



Buildings and structures containing materials that readily support combustion or that pose a physical hazard shall be classified as Group H-3. Such materials shall include, but not be limited to, the following:

- Category 1B flammable gases having a burning velocity of 3.9 inches per second or less

45

310.2 Residential Group R-1

Residential Group R-1 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily transient in nature, including:

- Lodging houses with more than five guestrooms



46

310.3 Residential Group R-2

Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

Congregate living facilities (nontransient) with more than 16 occupants

- Emergency services living quarters

Hotels (nontransient) with more than five guest rooms

Motels (nontransient) with more than five guest rooms



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310.4 Residential Group R-3

Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:

Congregate living facilities (nontransient) with 16 or fewer occupants

- Emergency services living quarters

Hotels (nontransient) with five or fewer guest rooms

Motels (nontransient) with five or fewer guest rooms



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311.2 Moderate-hazard storage, Group S-1



Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosol products, Levels 2 and 3, aerosol cooking spray, plastic aerosol 3 (PA3)

Beverages over 20-percent alcohol content

Lithium-ion or lithium metal batteries

Vehicle repair garages for vehicles powered by lithium-ion or lithium metal batteries

311.3 Low-hazard storage, Group S-2

Storage Group S-2 occupancies include, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings.



Beverages up to and including 20-percent alcohol

414.2.5.4 Flammable gas

The aggregate quantity of Category 1B flammable gas having a burning velocity of 3.9 inches per second or less stored and displayed within a single control area of a Group M occupancy or stored in a single control area of a Group S occupancy is allowed to exceed the maximum allowable quantities per control area specified in Table 307.1(1) without classifying the building or use as a Group H occupancy, provided that the materials are stored and displayed in accordance with the International Fire Code and quantities do not exceed the amounts specified in Table 414.2.5.4.



[F] TABLE 414.2.5.4—MAXIMUM ALLOWABLE QUANTITY OF LOW BURNING VELOCITY CATEGORY 1B FLAMMABLE GAS IN GROUP M AND S OCCUPANCIES PER CONTROL AREA*

CATEGORY 1B (Low BV) ^a	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
	Sprinklered ^b	Nonsprinklered
Gaseous	390,000 cu ft	195,000 cu ft
Liquefied	40,000 lb ^c	20,000 lb

For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m², 1 cubic foot = 0.028 m³, 1 inch per second = 2.54 cm/s.

a. Control areas shall be separated from each other by not less than a 1-hour fire barrier.

b. The building shall be equipped throughout with an approved automatic sprinkler system with a minimum sprinkler design density of Ordinary Hazard Group 2 in the area where flammable gases are stored or displayed.

c. Where storage areas exceed 50,000 square feet in area, the maximum allowable quantities area is allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to not more than 100 percent of the table amounts. Separation of control areas is not required. The aggregate amount shall not exceed 80,000 pounds.

d. "Low BV" Category 1B flammable gas has a burning velocity of 3.9 in/s or less.

503.1.4.1 Enclosures over occupiable roof areas

Elements or structures enclosing the **occupiable** roof areas shall not extend more than 48 inches above the surface of the occupiable roof.

- New Exception:
- 2. Elements or structures enclosing the occupiable roof areas where the roof deck is located more than 75 feet above the lowest level of fire department vehicle access.



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506.3.3.1 Section 507 buildings

Where a building meets the requirements of Section 507, as applicable, except for compliance with the minimum 60-foot public way or yard requirement, the area factor increase based on frontage shall be determined in accordance with Table 506.3.3.1.

The frontage increase shall be based on the smallest public way or open space that is 30 feet or greater, and the percentage of building perimeter having a minimum 30 feet public way or open space.

PERCENTAGE OF BUILDING PERIMETER	OPEN SPACE (feet)					
	30 to less than 35	35 to less than 40	40 to less than 45	45 to less than 50	50 to less than 55	55 or greater
0 to less than 25	0	0	0	0	0	0
25 to less than 50	0.29	0.33	0.38	0.42	0.46	0.50
50 to less than 75	0.58	0.67	0.75	0.83	0.92	1.00
75 to 100	0.88	1.00	1.13	1.25	1.38	1.50

For SI: 1 foot = 304.8 mm.
a. Interpolation is permitted.

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508.5 Live/work units

Live/work units shall comply with one of the following:

1. For a live/work unit located in a building constructed in accordance with this code, both the residential and nonresidential portions of the live/work unit shall comply with Sections 508.5 through 508.5.11.
2. For a live/work unit located in a building constructed in accordance with the International Residential Code, the nonresidential portion of the live/work unit shall comply with Sections 508.5.1 through 508.5.11, and the residential portion of the live/work unit shall be constructed in accordance with the International Residential Code and Section 508.5.7.



55

508.5.7 Fire protection

Live/work units in buildings constructed in accordance with this code shall be provided with all of the following:

- 1. An automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
- 2. Smoke alarms in accordance with Section 907.2.11.
- 3. Where required by Section 907.2.9.2, a manual fire alarm system.

Live/work units in buildings constructed in accordance with the International Residential Code shall be provided with an automatic sprinkler system and smoke alarms.



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[F] TABLE 509.1—INCIDENTAL USES—continued	
ROOM OR AREA	SEPARATION AND/OR PROTECTION
Hydrogen fuel gas rooms, not classified as Group H	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.
Incinerator rooms	2 hours and provide automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic sprinkler system
In Group E occupancies, laboratories and vocational shops not classified as Group H	1 hour or provide automatic sprinkler system
In Group I-2 occupancies, laboratories not classified as Group H	1 hour and provide automatic sprinkler system
In ambulatory care facilities, laboratories not classified as Group H	1 hour or provide automatic sprinkler system
Laundry rooms over 100 square feet	1 hour or provide automatic sprinkler system
In Group I-2, laundry rooms over 100 square feet	1 hour and provide automatic sprinkler system
Group I-3 cells and Group I-2 patient rooms equipped with padded surfaces	1 hour and provide automatic sprinkler system
In Group I-2, physical plant maintenance shops	1 hour and provide automatic sprinkler system
In ambulatory care facilities or Group I-2 occupancies, waste and linen collection rooms with containers that have an aggregate volume of 8.67 cubic feet or greater	1 hour and provide automatic sprinkler system
In other than ambulatory care facilities and Group I-2 occupancies, waste and linen collection rooms over 100 square feet	1 hour or provide automatic sprinkler system
In ambulatory care facilities or Group I-2 occupancies, storage rooms greater than 50 square feet	1 hour and provide automatic sprinkler system
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.
For SI: 1 square foot = 0.0929 m ² , 1 pound per square inch (psi) = 6.9 kPa, 1 British thermal unit (Btu) per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L, 1 cubic foot = 0.0283 m ³ .	

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603.1 Allowable materials

Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:

28. Vapor retarders as required by Section 1404.3.



58

704.2 - Protection of the primary structural frame

Members of the primary structural frame that are required to have protection to achieve a fire-resistance rating shall be provided individual encasement protection by protecting them on all sides for the full length, including connections to other structural members, with materials having the required fire-resistance rating.

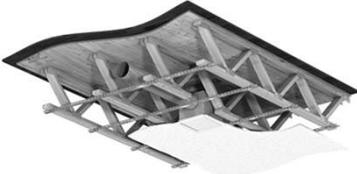
Where a column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.

Exceptions:

1. Individual encasement protection on all sides shall be permitted on all exposed sides provided that the extent of protection is in accordance with the required fire-resistance rating, as determined in Section 703.
2. Primary structural members other than columns that do not support more than two floors or one floor and roof, or a load-bearing wall or a nonload-bearing wall more than two stories high, are permitted to be protected by the membrane of a fire-resistance-rated wall or horizontal assembly where the membrane provides the required fire-resistance rating.
3. Columns that meet the limitations of Section 704.3.1.

59

704.3 - Protection of secondary structural members



Secondary structural members that are required to have protection to achieve a fire-resistance rating shall be protected by individual encasement protection, or by the membrane of a fire-resistance-rated wall or horizontal assembly where the membrane provides the required fire-resistance rating.

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705.6 Continuity

The fire-resistance rating of exterior walls shall extend from the top of the foundation or floor/ceiling assembly below to one of the following:

1. The underside of the floor sheathing, roof sheathing, deck or slab above.
2. The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating equal to or greater than the exterior wall and the fire separation distance is greater than 10 feet.

Parapets shall be provided as required by Section 705.12.

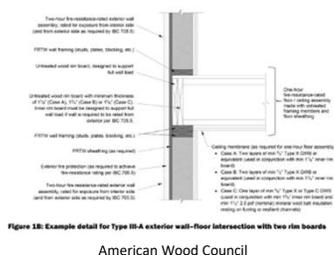


Figure 1B: Example detail for Type III-A exterior wall-floor intersection with two rim boards
American Wood Council

705.7.1 - Floor assemblies in Type III construction

In Type III construction where a floor assembly supports gravity loads from an exterior wall, the fire-resistance rating of the portion of the floor assembly that supports the exterior wall shall be not less than the fire-resistance rating required for the exterior wall in Table 601.

The fire-resistance rating provided by the portion of the floor assembly supporting and within the plane of the exterior wall shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside.

Where a floor assembly supports gravity loads from an exterior wall, the building elements of the floor construction within the plane of the exterior wall, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior building elements of Type III construction.

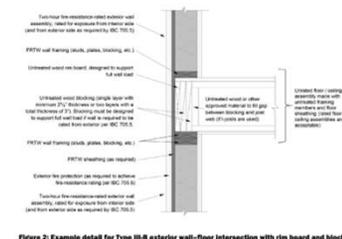


Figure 2: Example detail for Type III-B exterior wall-floor intersection with rim board and blocking
American Wood Council

707.6 Openings

Openings in a fire barrier shall be protected in accordance with Section 716.

Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet.

Openings in enclosures for shafts, interior exit stairways and ramps and exit passageways shall also comply with Sections 713.7, 1023.4 and 1024.5, respectively.

New Exceptions:

6. Openings providing entrance to an elevator car shall not be limited to 156 square feet or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door assembly in a fire barrier that is an elevator hoistway enclosure.

707.6 Openings



7. Openings shall not be limited to an aggregate width of 25 percent of the length of the wall where opening serves a shaft enclosure in accordance with Section 713.

8. Openings shall not be limited to an aggregate width of 25 percent of the length of the wall where opening serves a chute access room in accordance with Section 713.13.3 or a chute discharge room in accordance with Section 713.13.4.

708.4.1 - Fire partition walls enclosing elevator lobbies

Fire partition walls used to enclose elevator lobbies in accordance with Section 3006.3 shall form an enclosure that terminates at a fire barrier or fire partition having a fire-resistance rating of not less than 1 hour, or an outside wall.



65

710.4 Continuity



Smoke partitions shall extend from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

- Exception: In Group I-2, a lay-in ceiling system shall be considered capable of limiting the transfer of smoke where the ceiling tiles weigh not less than 1 pound per square foot and where the HVAC system is fully ducted in accordance with Section 603 of the International Mechanical Code.

66

710.4.1 - Smoke partition walls enclosing elevator lobbies

Smoke partition walls used to enclose elevator lobbies in accordance with Section 3006.3 shall form an enclosure that terminates at a fire barrier having a fire-resistance rating of not less than 1 hour, another smoke partition or an outside wall.

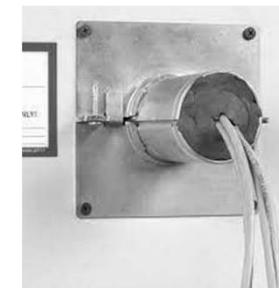


67

714.3 Sleeves

Where sleeves are used, they shall be securely fastened to the assembly penetrated and installed in accordance with the sleeve manufacturer's installation instructions.

Where listed systems are used, the sleeve shall be installed in accordance with the listing criteria for the system.



68

714.5.1 Through penetrations

Through penetrations of horizontal assemblies shall comply with Section 714.5.1.1 or 714.5.1.2.

- New Exception:
- 4. Penetrations of concrete floors or ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6 where the areas above and below the penetrations are parking areas.



69

714.5.1.2 - Through-penetration firestop system

Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water.

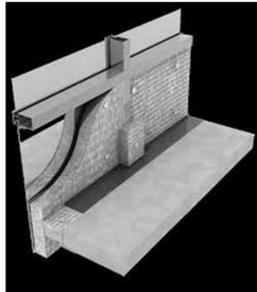
The system shall have an F rating/T rating of not less than 1 hour but not less than the required rating of the floor penetrated.

New Exception:

4. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch nominal diameter do not require a T rating. These penetrating items shall not be limited to the penetration of a single concrete floor, provided that the area of the opening through each floor does not exceed 144 square inches.

70

715.2.1 List system installation



Listed fire-resistant joint systems, perimeter fire containment systems and continuity head-of-wall systems shall be securely installed in accordance with the manufacturer's installation instructions and the listing criteria in or on the joint or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

71

715.2.2 Approved materials installation

Approved materials protecting voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.



72

715.4 - Exterior curtain wall/fire-resistance-rated floor intersections.

New Exceptions:

An approved perimeter fire containment system shall not be required for voids in the following locations:

1. Floors within a single dwelling unit.
2. Floors and ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6.
3. Mezzanine floors.



Same in Section 715.5 for non-fire-rated floor assemblies.

73

715.6 - Fire barrier/nonfire-resistance-rated roof assembly intersections



Voids created at the intersection of a fire barrier and the underside of a nonfire-resistance-rated roof sheathing, slab or deck above shall be filled by an approved material or system to retard the passage of fire and hot gases, or shall be protected by an approved continuity head-of-wall system tested in accordance with ASTM E2837 to provide an F rating/T rating for a time period not less than the required fire-resistance rating of the fire barrier in which it is installed.

74

717.2.4 - Mechanical, electrical and plumbing controls

Mechanical, electrical and plumbing controls shall not be installed in air duct systems.

- Exception: Controls where the wiring is directly associated with the air distribution system. The wiring shall comply with the requirements of Section 602 of the International Mechanical Code and be as short as practicable.



75

717.2.4.1 - Controls not permitted to be installed through dampers



Mechanical, electrical and plumbing controls shall not be installed through fire dampers, smoke dampers, combination fire/smoke dampers or ceiling radiation dampers unless otherwise permitted by the manufacturer and the listing.

76

718.2.1 Fireblocking materials

Fireblocking shall consist of the following materials:

10. One thickness of 19/32-inch fire-retardant-treated wood structural panel complying with Section 2303.2.



77

903.2.2.2 - Laboratories involving testing, research and development



An automatic sprinkler system shall be installed throughout the fire areas utilized for the research and development or testing of lithium-ion or lithium metal batteries.

78

903.2.4 Group F-1

An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

- 4. A Group F-1 occupancy is used to manufacture lithium-ion or lithium metal batteries.
- 5. A Group F-1 occupancy is used to manufacture vehicles, energy storage systems or equipment containing lithium-ion or lithium metal batteries where the batteries are installed as part of the manufacturing process.



79

903.2.7.3 - Lithium-ion or lithium metal battery storage



An automatic sprinkler system shall be provided in a room or space within a Group M occupancy where required for the storage of lithium-ion or lithium metal batteries by Section 320 of the International Fire Code or Chapter 32 of the International Fire Code.

80

903.2.9 Group S-1

An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

- 5. A Group S-1 fire area used for the storage of lithium-ion or lithium metal powered vehicles where the fire area exceeds 500 square feet.



81

903.2.9.1 Repair garages

An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with Section 406, as shown:

- 5. A Group S-1 fire area used for the storage of lithium-ion or lithium metal powered vehicles where the fire area exceeds 500 square feet



82

903.3.1.1.3 - Lithium-ion or lithium metal batteries

Where automatic sprinkler systems are required by this code for areas containing lithium-ion or lithium metal batteries, the design of the system shall be based on a series of fire tests.

Such tests shall be conducted or witnessed and reported by an approved testing laboratory involving test scenarios that address the range of variables associated with the intended arrangement of the hazards to be protected.



83

903.3.1.2 NFPA 13R sprinkler systems

Automatic sprinkler systems in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions:

- 1. Four stories or fewer above grade plane.
- 2. For other than Group R-2 occupancies, the floor level of the highest story is 30 feet or less above the lowest level of fire department vehicle access.



84

903.3.1.2 NFPA 13R sprinkler systems

For Group R-2 occupancies, the roof assembly is less than 45 feet above the lowest level of fire department vehicle access.

The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance.



907.2.1 Group A

New exceptions:

2. Manual fire alarm boxes and the associated occupant notification system or emergency voice/alarm communication system are not required for Group A-5 outdoor bleacher-type seating having an occupant load of greater than or equal to 300 and less than 15,000 occupants, provided that all of the following are met:

- 2.1. A public address system with standby power is provided.
- 2.2. Enclosed spaces attached to or within 5 feet of the outdoor bleacher-type seating compose, in the aggregate, a maximum of 10 percent of the overall area of the outdoor bleacher-type seating or 1,000 square feet, whichever is less.

- 2.3. Enclosed accessory spaces under or attached to the outdoor bleacher-type seating shall be separated from the bleacher-type seating in accordance with Section 1030.1.1.1.
- 2.4. All means of egress from the bleacher-type seating are open to the outside.

907.2.1 Group A

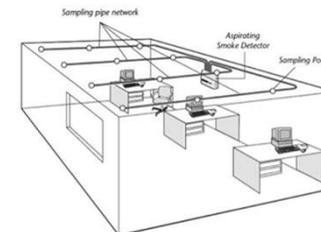
3. Manual fire alarm boxes and the associated occupant notification system or emergency voice/alarm communication system are not required for temporary Group A-5 outdoor bleacher-type seating, provided that all of the following are met:

- 3.1. There are no enclosed spaces under or attached to the outdoor bleacher-type seating.
- 3.2. The bleacher-type seating is erected for a period of less than 180 days.
- 3.3. Evacuation of the bleacher-type seating is included in an approved fire safety plan.



907.2.2.2 - Laboratories involving research and development or testing

A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed throughout the entire fire area utilized for the research and development or testing of lithium-ion or lithium metal batteries.



907.2.4.1 - Manufacturing involving lithium-ion or lithium metal batteries



A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed throughout the entire fire area where lithium-ion or lithium metal batteries are manufactured; and where the manufacturer of vehicles, energy storage systems or equipment containing lithium-ion or lithium metal batteries when the batteries are installed as part of the manufacturing process.

89

907.2.7.2 - Storage of lithium-ion or lithium metal batteries

A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed in a room or space within a Group M occupancy where required for the storage of lithium-ion or lithium metal batteries in accordance with Section 320 of the International Fire Code.



90

907.2.10.2 - Storage of lithium-ion or lithium metal batteries



A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed throughout the entire fire area where required for the storage of lithium-ion batteries or lithium metal batteries in accordance with Section 320 of the International Fire Code.

91

907.2.11 - Single- and multiple-station smoke alarms

Listed single- and multiple-station smoke alarms complying with UL 217 shall be installed in accordance with Sections 907.2.11.1 through 907.2.11.7, NFPA 72 and the manufacturer's instructions.



92

907.2.11.3 - Installation near cooking appliances



Smoke alarms shall be installed not less than 10 feet horizontally from a permanently installed cooking appliance.

- Exception: Smoke alarms shall be permitted to be installed not less than 6 feet horizontally from a permanently installed cooking appliance where necessary to comply with Section 907.2.11.1 or 907.2.11.2.

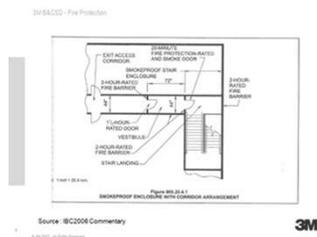
907.5.2.1.3.1 Fire alarm system audible signal

In sleeping rooms of Group R-1, R-2 and I-1 occupancies, the audible alarm signal activated by a fire alarm system shall be a 520-Hz low-frequency signal complying with NFPA 72.



909.20.4 Mechanical ventilation alternative

Mechanical ventilation alternative section deleted in its entirety.



Section 915 Carbon monoxide (co) detection

Carbon monoxide (CO) detection shall be installed in new buildings in accordance with Section 915.1.1. Carbon monoxide detection shall be installed in accordance with Chapter 11 of the International Fire Code.



- Exception: Carbon monoxide detection is not required in Group S, Group F and Group U occupancies that are not normally occupied.

Total reorganization of section

915.1.1 Where required



Carbon monoxide detection shall be installed in the locations specified in Section 915.2 where any of the following conditions exist.

1. In buildings that contain a CO source.
2. In buildings that contain or are supplied by a CO-producing forced-air furnace.
3. In buildings with attached private garages.
4. In buildings that have a CO-producing vehicle that is used within the building.

97

915.2.4 CO-producing forced-air furnace

Carbon monoxide detection complying with Item 2 of Section 915.1.1 shall be installed in all enclosed rooms and spaces served by a fuel-burning, forced-air furnace.

- Exceptions:
 1. Where a carbon monoxide detector is provided in the first room or space served by each main duct leaving the furnace, and the carbon monoxide alarm signals are automatically transmitted to an approved location.
 2. Dwelling units that comply with Section 915.2.1.



98

915.2.5 Private garages

Carbon monoxide detection complying with Item 3 of Section 915.1.1 shall be installed within enclosed occupiable rooms or spaces that are contiguous to the attached private garage.

- Exceptions:
 1. In buildings without communicating openings between the private garage and the building.
 2. In rooms or spaces located more than one story above or below a private garage.

3. Where the private garage connects to the building through an open-ended corridor.
4. An open parking garage complying with Section 406.5 or an enclosed parking garage complying with Section 406.6 shall not be considered a private garage.
5. Dwelling units that comply with Section 915.2.1.

99

915.2.6 All other occupancies

For locations other than those specified in Section 915.2.1 through 915.2.5, carbon monoxide detectors shall be installed on the ceiling of enclosed rooms or spaces containing CO producing devices or served by a CO source forced-air furnace.



- Exception: Where environmental conditions prohibit the installation of carbon monoxide detector in an enclosed room or space, carbon monoxide detectors shall be installed in an approved enclosed location contiguous with the room or space that contains a CO source.

100

915.3 Carbon monoxide detection

Carbon monoxide detection required by Sections 915.1 through 915.2.3 shall be provided by carbon monoxide alarms complying with Section 915.4 or carbon monoxide detection systems complying with Section 915.5.



101

915.3.1 Alarm limitations

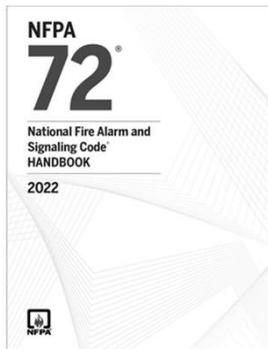
Carbon monoxide alarms shall only be installed in dwelling units and in sleeping units.

They shall not be installed in locations where the code requires carbon monoxide detectors to be used.



102

915.3.2 Fire alarm system required



New buildings that are required by Section 907.2 to have a fire alarm system and by Section 915.2 to have carbon monoxide detectors shall be connected to the fire alarm system in accordance with NFPA 72.

103

915.3.3 Fire alarm systems not required

In new buildings that are not required by Section 907.2 to have a fire alarm system, carbon monoxide detection shall be provided by one of the following:

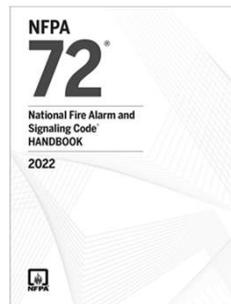
- 1. Carbon monoxide detectors connected to an approved carbon monoxide detection system in accordance with NFPA 72.
- 2. Carbon monoxide detectors connected to an approved combination system in accordance with NFPA 72.
- 3. Carbon monoxide detectors connected to an approved fire alarm system in accordance with NFPA 72.
- 4. Where approved by the fire code official, carbon monoxide alarms maintained in accordance with the manufacturer's instructions.



104

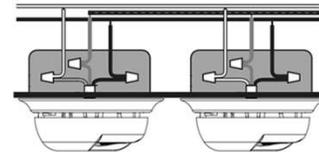
915.3.4 Installation

Carbon monoxide detection shall be installed in accordance with NFPA 72 and the manufacturer's instructions.



105

915.4.4 Interconnection



Where more than one carbon monoxide alarm is required to be installed, carbon monoxide alarms shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms.

Physical interconnection of carbon monoxide alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

106

915.5.4 Occupant notification

Activation of a carbon monoxide detector shall annunciate at the control unit and shall initiate audible and visible alarm notification throughout the building.

- Exception: Occupant notification is permitted to be limited to the area where the carbon monoxide alarm signal originated and other signaling zones in accordance with the fire safety plan, provided that the alarm signal from an activated carbon monoxide detector is automatically transmitted to an approved on-site location or off-premises location.



107

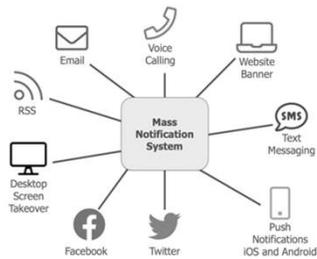
915.5.5 Duct detection

Carbon monoxide detectors placed in environmental air ducts or plenums shall not be used as a substitute for the required protection in Section 915.



108

917.2 Group E occupancies



Prior to construction of a new building containing a Group E occupancy requiring a fire alarm system and having an occupant load of 500 or more, a mass notification risk analysis shall be conducted in accordance with NFPA 72.

Where the risk analysis determines a need for mass notification, an approved mass notification system shall be provided in accordance with the findings of the risk analysis.

109

Table 1004.5 Occupant Load Factors

Information technology equipment facilities

- 300 gross SF/Occupant

Definitions:

- Information technology equipment facilities (ITEF):
- Data centers and computer rooms used primarily to house information technology equipment.
- Information technology equipment (ITE):
- Computers, data storage, servers and network communication equipment.



110

Table 1006.3.4(1) - Stories and occupiable roofs with one exit or access to one exit for R-2 occupancies

TABLE 1006.3.4(1)—STORIES AND OCCUPIABLE ROOFS WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES			
STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS	MAXIMUM EXIT ACCESS TRAVEL DISTANCE
Basement, first, second or third story above grade plane and occupiable roofs over the first or second story above grade plane	R-2 ^{a,b,c}	4 dwelling units	125 feet
Fourth story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.
 NP = Not Permitted.
 NA = Not Applicable.
 a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.
 b. This table is used for Group R-2 occupancies consisting of dwelling units. For Group R-2 occupancies consisting of sleeping units, use Table 1006.3.4(2).
 c. This table is for occupiable roofs accessed through and serving individual dwelling units in Group R-2 occupancies. For Group R-2 occupancies with occupiable roofs that are not accessed through and serving individual units, use Table 1006.3.4(2).

111

Table 1006.3.4(2) - Stories and occupiable roofs with one exit or access to one exit for other occupancies

TABLE 1006.3.4(2)—STORIES AND OCCUPIABLE ROOFS WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES			
STORY AND OCCUPIABLE ROOF	OCCUPANCY	MAXIMUM OCCUPANT LOAD PER STORY AND OCCUPIABLE ROOF	MAXIMUM EXIT ACCESS TRAVEL DISTANCE (feet)
First story above or below grade plane and occupiable roofs over the first story above grade plane	A, B ^a , E, F ^a , M, U	49	75
	H-2, H-3	3	25
	H-4, H-5, I, R-1, R-2 ^{b,c}	10	75
	S ^{b,d}	29	75
Second story above grade plane	B, F, M, S ^a	29	75
Third story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.
 NP = Not Permitted.
 NA = Not Applicable.
 a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.
 b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an occupiable roof of such buildings shall have a maximum exit access travel distance of 100 feet.
 c. This table is used for Group R-2 occupancies consisting of sleeping units. For Group R-2 occupancies consisting of dwelling units, use Table 1006.3.4(1).
 d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

112

1009.2.1 Elevators required

In buildings where a required accessible floor is four or more stories above or below a level of exit discharge or where an accessible occupiable roof is above a story that is three or more stories above the level of exit discharge, not less than one required accessible means of egress shall include an elevator complying with Section 1009.4.



113

1009.2.2 Doors

Where doors are part of an accessible route to provide access to an exit, area of refuge or exterior area of assisted rescue, maneuvering clearances shall be provided at such doors as required by ICC A117.1 in the direction of egress.



Where doors lead to an area of refuge or exterior area for assisted rescue and reentry to the floor is possible, door maneuvering clearances shall be provided on both sides of the door.

- Exception: Maneuvering clearances are not required at doors to exit stairways for levels above and below the level of exit discharge where the exit enclosure does not include an area of refuge.

114

1009.8.1 System requirements

Two-way communication systems shall provide communication between each required location and the fire command center or a central control point location approved by the fire department.

Where the central control point is not a constantly attended location, the two-way communication system shall have timed, automatic telephone dial-out capability that provides two-way communication with an approved supervising station or emergency services.

The two-way communication system shall include both audible and visible signals.

Systems shall be listed in accordance with UL 2525 and installed in accordance with NFPA 72.



115

Table 1010.2.4

TABLE 1010.2.4—MANUAL BOLTS, AUTOMATIC FLUSH BOLTS AND CONSTANT LATCHING BOLTS ON THE INACTIVE LEAF OF A PAIR OF DOORS				
APPLICATION WITH A PAIR OF DOORS WITH AN ACTIVE LEAF AND AN INACTIVE LEAF	THE PAIR OF DOORS IS REQUIRED TO COMPLY WITH SECTION 716	PERMITTED USES OF MANUAL BOLTS, AUTOMATIC FLUSH BOLTS AND CONSTANT LATCHING BOLTS ON THE INACTIVE LEAF OF A PAIR OF DOORS.		
		Surface- or flush-mounted manual bolts	Automatic flush bolts	Constant latching bolts
Group B, F or S occupancies with occupant load less than 50.	No	P	P	P
	Yes	NP	NP ^a	P
Group B, F or S occupancies where the building is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 and the inactive leaf is not needed to meet egress capacity requirements.	No	P	P	P
	Yes	NP	NP ^a	P
Group I-2 patient care and sleeping rooms where inactive leaf is not needed to meet egress capacity requirements.	No	NP	NP ^a	P
	Yes	NP	NP ^a	P
Any occupancy where panic hardware is not required, egress doors are used in pairs, and where both leaves are required to meet egress capacity requirements.	No	NP	P	NP
	Yes	NP	NP ^a	NP
Storage or equipment rooms where the inactive leaf is not needed to meet egress capacity requirements.	No	P ^a	P	P
	Yes	P ^a	P	P

P = Permitted, NP = Not permitted.
a. Not permitted on corridor doors in Group I-2 occupancies where corridor doors are required to be positive latching.
b. Permitted where both doors are self-closing or automatic closing, and are provided with a coordinator that causes the inactive leaf to be closed prior to the active leaf.

116

1010.2.6 Stairway doors

Interior stairway means of egress doors shall be openable from both sides without the use of a key or special knowledge or effort.

◦ Exceptions:

- 3. Stairway exit doors shall not be locked from the side opposite the egress side, unless they are openable from the egress side and capable of being unlocked simultaneously without unlatching by any of the following methods:

- 3.1. Shall be capable of being unlocked individually or simultaneously upon a signal from the fire command center, where present, or a signal by emergency personnel from a single location inside the main entrance to the building.
- 3.2. Shall unlock simultaneously upon activation of a fire alarm signal when a fire alarm system is present in an area served by the stairway.
- 3.3. Shall unlock upon failure of the power supply to the electric lock or the locking system.

117

1010.2.14 Elevator lobby exit access doors

Electrically locked exit access doors providing egress from elevator lobbies shall meet the following conditions:

1. For all occupants of the floor, the path of exit access travel to not less than two exits is not required to pass through the elevator lobby.
2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and a fire alarm system in accordance with Section 907. Elevator lobbies shall be provided with an automatic smoke detection system in accordance with Section 907.
3. Upon activation of the building fire alarm system by means other than a manual fire alarm box shall automatically unlock the electric locks providing exit access from the elevator lobbies, and the electric locks shall remain unlocked until the fire alarm system is reset.
4. The electric locks shall unlock on loss of power to the electric locks or electrical locking system.

5. The electric locks shall have the capability of being unlocked by a switch located at the fire command center, security station or other approved location.

6. A two-way communication system complying with Sections 1009.8.1 and 1009.8.2, shall be located in the elevator lobby adjacent to the electrically locked exit access door and connected to an approved constantly attended station. This constantly attended station shall have the capability of unlocking the electric locks of the elevator lobby exit access doors.

7. Emergency lighting shall be provided in the elevator lobby on both sides of the electrically locked door.

8. The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034.

118

1013.2 Low-level exit signs in Group R-1

Where exit signs are required in Group R-1 occupancies by Section 1013.1, additional low-level exit signs shall be provided in all areas serving guest rooms in Group R-1 occupancies and shall comply with Section 1013.5.

- New Exception: Low-level exit signs are not required in Group R-1 occupancies when the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.



119

1014.3 Lateral location



Handrails located outward from the edge of the walking surface of flights of stairways, ramps, stepped aisles and ramped aisles shall be located 6 inches or less measured horizontally from the edge of the walking surface.

Handrails projecting into the width of the walking surface shall comply with Section 1014.9.

120

1015.2 Where required

Guards shall be located along open-sided walking surfaces, such as mezzanines, equipment platforms, aisles, stairs, ramps and landings, that are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side and at the perimeter of occupiable roofs.

◦ New Exceptions:

- 9. Portions of an occupiable roof located less than 30 inches measured vertically to adjacent unoccupiable roof areas where approved guards are present at the perimeter of the roof.
- 10. At portions of an occupiable roof where an approved barrier is provided.



121

1015.3 Guard height

Revised exception:

2. For occupancies in Groups R-2 and R-3, within the interior conditioned space of individual dwelling units, where the open-sided walking surface is located not more than 25 feet measured vertically to the floor or walking surface below, required guards shall not be less than 36 inches in height measured vertically above the adjacent walking surface.



122

1015.8 Window openings

Windows in Group R-2 and R-3 buildings including dwelling units, where the bottom of the clear opening of an operable window is located less than 36 inches above the finished floor and more than 72 inches above the finished grade or other surface below on the exterior of the building, shall comply with one of the following:

1. Where the bottom of the clear opening of the window is located more than 72 inches and less than 75 feet above the finished grade or other surface below on the exterior of the building, the window shall comply with one of the following:

1.1. Operable windows where the openings will not allow a 4-inch-diameter sphere to pass through the opening when the window is in its largest opened position, provided that the opening is not required for emergency escape or rescue.

1.2. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.

1.3. Operable windows where the openings are provided with window opening control devices that comply with ASTM F2090. 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 1031.3.1 for emergency escape and rescue openings.

1015.8 Window openings

2. Where the bottom of the clear opening of the window is located 75 feet or more above the finished grade or other surface below on the exterior of the building, the window shall comply with one of the following:

2.1. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.

2.2. Operable windows where the openings will not allow a 4-inch-diameter sphere to pass through the opening when the window is in its largest opened position.

2.3. Window fall prevention devices that comply with ASTM F2006.



123

124

1019.3 - Occupancies other than Groups I-2 and I-3



In other than Group I-2 and I-3 occupancies, floor openings containing exit access stairways or ramps shall be enclosed with a shaft enclosure constructed in accordance with Section 713.

- Exceptions:
 - 1. Exit access stairways and ramps within a two-story opening complying with Section 712.1.9.

Must comply with 6 conditions

125

1023.5 Penetrations

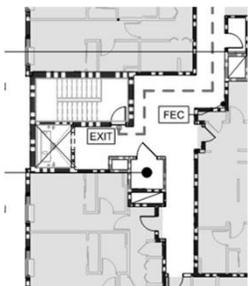
Penetrations into or through interior exit stairways and ramps are prohibited except for the following:

- 8. Structural elements, such as beams or joists, supporting a roof at the top of the interior exit stairway or ramp.



126

1023.7 - Interior exit stairway and ramp exterior walls

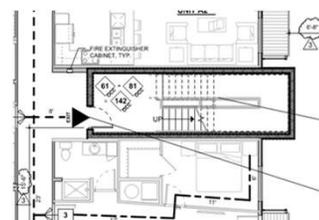


Exterior walls of the interior exit stairway or ramp shall comply with the requirements of Section 705 for exterior walls.

Where nonrated walls or unprotected openings enclose the exterior of the stairway or ramps and the walls or openings are exposed by other parts of the building at an angle of less than 180 degrees, building construction within 10 feet of the exterior walls of the interior exit stairway or ramp shall comply with Sections 1023.7.1 and 1023.7.2.

127

1023.7.1 Building exterior walls



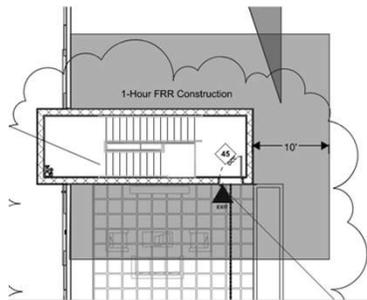
Building exterior walls within 10 feet horizontally of a nonrated wall or unprotected opening in an interior exit stairway or ramp shall have a fire-resistance rating of not less than 1 hour.

Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour.

This construction shall extend vertically from the ground to a point 10 feet above the topmost landing of the stairway or ramp, or to the roof line, whichever is lower.

128

1023.7.2 Roof assemblies



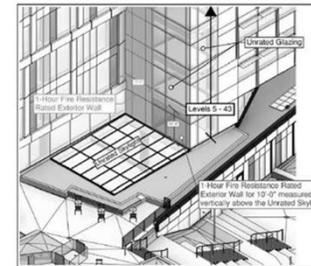
Where the interior exit stairway or ramp extends above an adjacent roof of the same building, the adjacent roof assembly shall have a fire-resistance rating of not less than 1 hour and openings shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour.

The fire-resistance rating and opening protection shall extend horizontally not less than 10 feet from the exterior wall of the stairway or ramp, or to the perimeter of the adjacent roof, whichever is less.

Exceptions:

129

1023.7.2 Roof assemblies



Exceptions:

1. The roof assembly need not be rated and openings in the roof need not be protected where they are adjacent to the penthouse of the stairway or ramp, unless otherwise required by this code.

2. The adjacent roof assembly need not be rated and adjacent openings in the roof need not be protected where the exterior wall of the stairway or ramp has a fire-resistance rating of 1 hour and openings are protected by opening protectives having a fire protection rating of not less than 3/4 hour, extending not less than 10 feet above the roof.

130

1024.6 Penetrations

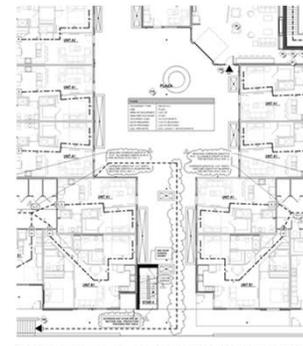
Penetrations into or through an exit passageway are prohibited except for the following:

- 7. Structural elements, such as beams or joists, supporting a floor or roof at the top of the exit passageway.



131

1029.3 Construction and openings



Where an egress court serving a building or portion thereof is less than 10 feet in width, the egress court walls shall have not less than 1-hour fire-resistance-rated construction for a distance of 10 feet above the floor of the egress court.

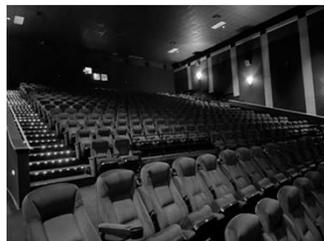
Openings within such walls shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour.

- New Exception:
- 3. Egress courts, located at grade, that provide direct and unobstructed access to a public way through two or more independent paths. The minimum width provided along each path shall be based on the required width or the required capacity, whichever is greater, and shall be maintained along each path.

132

1030.8 Common path of egress travel

The common path of egress travel for a room or space used for assembly purposes having fixed seating shall not exceed 30 feet from any seat to a point where an occupant has a choice of two paths of egress travel to two exits.



133

1103.2.11 Residential Group R-1 or R-3

Buildings of Group R-1 containing not more than five dwelling units and sleeping units in aggregate for rent or hire that are also occupied as the residence of the proprietor are not required to comply with this chapter.



Buildings of Group R-3 congregate living facilities (transient) or boarding houses (transient) containing not more than five sleeping units for rent or hire that are also occupied as the residence of the proprietor are not required to comply with this chapter.

134

1105.1.1 - Power-operated doors at public entrances

In facilities with the occupancies and building occupant loads greater than indicated in Table 1105.1.1, each public entrance required to be accessible shall have a minimum of one door be a power-operated door or a low-energy power-operated door. Where the accessible public entrance includes doors in series, such as a vestibule, a minimum of one set of two doors in series shall meet the requirements of this section.

New Exceptions:

1. For the purpose of determining power-operated door requirements, a tenant space with its own exterior public entrance shall be considered a separate facility and building.
2. The requirements of this section are not applicable to mixed-use facilities where the total building occupant load for the occupancies listed in Table 1105.1.1 is calculated as the sum of the ratios of the actual occupant load of each occupancy divided by the building occupant load threshold of each occupancy and the sum of the ratios is less than 1.

OCCUPANCY	BUILDING OCCUPANT LOAD GREATER THAN
A-1, A-2, A-3, A-4	300
B, M, R-1	500

135

1106.3 - Groups ~~I-1, R-1, R-2,~~ R-3 and R-4 accessible parking

Accessible parking spaces shall be provided in Group R-2, R-3 and R-4 occupancies in accordance with the greatest number of parking spaces of any of the following:

1. In Group R-2, R-3 and R-4 occupancies that are required to have Accessible, Type A or Type B dwelling units or sleeping units, at least 2 percent, but not less than one, of each type of parking space provided shall be accessible.
- ~~2. In Group I-1 and R-1 occupancies, accessible parking shall be provided in accordance with Table 1106.2.~~
2. Where at least one parking space is provided for each dwelling unit or sleeping unit, at least one accessible parking space shall be provided for each Accessible and Type A unit.
- ~~4. Where parking is provided within or beneath a building, accessible parking spaces shall be provided within or beneath the building.~~



136

1106.7.1 Parking located beneath a building



Where parking is provided beneath a building, accessible parking spaces shall be provided beneath the building.

137

1107.2 Electrical vehicle charging stations

Electrical vehicle charging stations shall comply with Sections 1107.2.1 and 1107.2.2.

Exceptions:

1. Electrical vehicle charging stations provided to serve Group R-3 and R-4 occupancies are not required to comply with this section.

2. Electric vehicle charging stations used exclusively by buses, trucks, other delivery vehicles, law enforcement vehicles and motor pools are not required to comply with this section.



138

1108.6.1.1 Accessible units

Accessible dwelling units and sleeping units shall be provided in accordance with Table 1108.6.1.1. On a multiple-building site, where structures contain more than 50 dwelling units or sleeping units, the number of Accessible units shall be determined per structure.

On a multiple-building site, where structures contain 50 or fewer dwelling units or sleeping units, all dwelling units and sleeping units on a site shall be considered to determine the total number of Accessible units.

Accessible units shall be dispersed among the various classes of units.

New Exceptions:

1. Where all dwelling units and sleeping units contain showers and none contain bath tubs, the total number of required Accessible units specified by Table 1108.6.1.1 shall be permitted to provide standard or alternate roll-in type showers with seats.

2. Where Exception 1 is applicable, transfer showers shall be permitted to be substituted for all but the minimum required number of roll-in showers.

139

1108.6.2.2.1 Type A units



In Group R-2 occupancies containing more than 20 dwelling units or sleeping units, at least 2 percent but not less than one of the units shall be a Type A unit.

All Group R-2 units on a site shall be considered to determine the total number of units and the required number of Type A units.

Type A units shall be dispersed among the various classes of units.

Where two or more Type A units are provided, at least 5 percent but not less than one Type A unit shall include a bathroom with a shower complying with ICC A117.1 for Type A units.

140

1108.6.3 Group R-3

Accessible units and Type B units shall be provided in Group R-3 occupancies in accordance with Sections 1108.6.3.1 and 1108.6.3.2.

Bedrooms within congregate living facilities, dormitories, sororities, fraternities and boarding houses shall be counted as sleeping units for the purpose of determining the number of units.



141

1108.6.3.1 Accessible units

In Group R-3 congregate living facilities (transient) or boarding houses (transient) Accessible sleeping units shall be provided in accordance with Table 1108.6.1.1.

- Exceptions:
 1. The residence of a proprietor is not required to be an Accessible unit or to be counted toward the total number of units.
 2. Facilities as described in Section 1103.2.11 are not required to provide Accessible units.



142

1108.6.3.2 Type B units

In structures with four or more sleeping units intended to be occupied as a residence, every sleeping unit intended to be occupied as a residence shall be a Type B unit.

- Exception: The number of Type B units is permitted to be reduced in accordance with Section 1108.7.



143

1110.2.1.2 - Family or assisted-use toilet rooms

Family or assisted-use toilet rooms shall include only one water closet and only one lavatory. A family or assisted-use bathing room in accordance with Section 1110.2.1.3 shall be considered to be a family or assisted-use toilet room.

- Exception: The following additional plumbing fixtures shall be permitted in a family or assisted-use toilet room:
 1. A urinal.
 2. A child-height water closet.
 3. A child-height lavatory.
 4. An adult changing station also used for bathing.



144

1110.3 Sinks



Where sinks are provided, at least 5 percent but not less than one provided in accessible spaces shall be accessible.

New exception:

2. For other than sinks in kitchens and kitchenettes, where a sink requires a deep basin to perform its intended purpose or requires a specialized drain that cannot be located outside of the knee space, a parallel approach shall be permitted to be located adjacent to the sink.

145

1110.4 Adult changing stations

Where provided, adult changing stations shall be accessible. Where required, adult changing stations shall be accessible and shall comply with Sections 1110.4.1 through 1110.4.4.

Technical Requirements found in ICC A117.1—2017 with supplement 1



146

1110.4.1 Where required

Not fewer than one adult changing station shall be provided in the following locations:

1. In assembly and mercantile occupancies, where family or assisted-use toilet or bathing rooms are required to comply with Section 1110.2.1.
2. In Group B occupancies providing educational facilities for students above the 12th grade, where an aggregate of 12 or more male and female water closets are required to serve the classrooms and lecture halls.
3. In Group E occupancies, where a room or space used for assembly purposes requires an aggregate of six or more male and female water closets for that room or space.
4. In highway rest stops and highway service plazas.



147

1110.4.2 Room

Adult changing stations shall be located in toilet rooms that include only one water closet and only one lavatory.

Fixtures located in such rooms shall be included in determining the number of fixtures provided in an occupancy.

The occupants shall have access to the required adult changing station at all times that the associated occupancy is occupied.

- Exception: Adult changing stations shall be permitted to be located in family or assisted toilet rooms required in Section 1110.2.1.



148

1110.4.3 Prohibited location

The accessible route from separate-sex toilet or bathing rooms to an accessible adult changing station shall not require travel through security checkpoints.



149

1110.4.4 Travel distance

The adult changing station shall be located on an accessible route such that a person is not more than two stories above or below the story with the adult changing station and the path of travel to such facility shall not exceed 2,000 feet.



150

1110.6 Laundry equipment



Where provided in spaces required to be accessible, washing machines and clothes dryers shall comply with this section.

Where three or fewer washing machines are provided, not fewer than one shall be accessible.

Where more than three washing machines are provided, not fewer than two shall be accessible.

Where three or fewer clothes dryers are provided, not fewer than one shall be accessible.

Where more than three clothes dryers are provided, not fewer than two shall be accessible.

151

1110.14 - Seating and standing spaces at dining surfaces and work surfaces

Where seating or standing space is provided at dining surfaces or work surfaces in accessible spaces, such seating and standing spaces shall be accessible and shall comply with Sections 1110.14.1 through 1110.14.3.



152

1110.14.1 Dining surfaces

Not less than 5 percent of the seating and standing space provided at fixed, built-in and movable dining surfaces shall be accessible.



153

1110.14.2 Work surfaces

Not less than 5 percent of the seating and standing spaces at fixed or built-in work surfaces shall be accessible.

- Exception: Check-writing surfaces at checkout aisles not required to comply with Section 1110.16.1 are not required to be accessible.



154

1110.14.3 Dispersion

Accessible seating and standing space at dining or work surfaces shall be distributed throughout the space or facility containing such elements and shall be located on a level accessed by an accessible route.



155

1112.6 Designations

Where provided, interior and exterior signs identifying permanent rooms and spaces shall be visual characters, raised characters and braille complying with ICC A117.1.



Where pictograms are provided as designations of interior rooms and spaces, the pictograms shall have visual characters, raised characters and braille complying with ICC A117.1.

- Exceptions:

156

1112.6 Designations



Exceptions:

1. Exterior signs that are not located at the door to the space they serve are not required to comply.
2. Building directories, menus, seat and row designations in assembly areas, occupant names, building addresses and company names and logos are not required to comply.
3. Signs in parking facilities are not required to comply.
4. Temporary (7 days or less) signs are not required to comply.
5. In detention and correctional facilities, signs not located in public areas are not required to comply.

157

1202.3 Unvented attic and unvented enclosed rafter assemblies

Unvented attics and unvented enclosed roof framing assemblies created by ceilings applied directly to the underside of the roof framing members/rafters and the structural roof sheathing at the top of the roof framing members shall be permitted where all of the following conditions are met:



158

1202.3 Unvented attic and unvented enclosed rafter assemblies

5.1.2. Where air-permeable insulation is provided inside the building thermal envelope, it shall be installed in accordance with Item 5.1.1. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing in accordance with the R-value percentages in Table 1202.3 for condensation control.

CLIMATE ZONE	MINIMUM R-VALUE OF AIR-IMPERMEABLE INSULATION ^a
2B and 3B tile roof only	0 (none required)
1, 2A, 2B, 3A, 3B, 3C	10%
4C	20%
4A, 4B	30%
5	40%
6	50%
7	60%
8	70%

a. Contributes to, but does not supersede, thermal resistance requirements for attic and roof assemblies in Section C402.2.1 of the International Energy Conservation Code.

159

1202.3 Unvented attic and unvented enclosed rafter assemblies

5.1.3. Where both air-impermeable and air-permeable insulation are provided, the air-impermeable insulation shall be applied in direct contact with the underside of the structural roof sheathing in accordance with Item 5.1.1 and shall be in accordance with the R-value percentages in Table 1202.3 for condensation control.

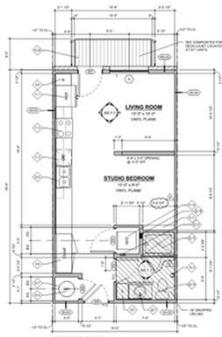
The air-permeable insulation shall be installed directly under the air-impermeable insulation.

Insulation for Condensation Control

Climate Zone	Air Impermeable Insulation Req'd	IECC Required Total R-Value	Percentage of Air Impermeable R-Value to Total Insulation R-Value
2B, 3B Tile Roof	0	38	0%
1, 2A, 2B, 3A, 3B, 3C	R-5	R-38	10%
4C	R-10	R-49	20%
4A, 4B	R-15	R-49	30%
5	R-20	R-49	40%
6	R-25	R-49	50%
7	R-30	R-49	60%
8	R-35	R-49	70%

160

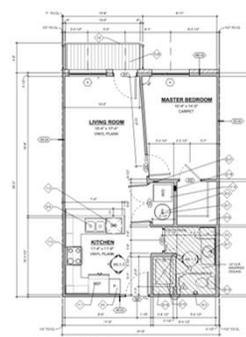
1208.3 Dwelling unit size



Dwelling units shall have a minimum of 190 square feet of habitable space.

161

1208.4 Room area



Every dwelling unit shall have not less than one room that shall have not less than 120 square feet of net floor area.

Sleeping units and other habitable rooms of a dwelling unit shall have a net floor area of not less than 70 square feet.

- Exception: Kitchens are not required to be of a minimum floor area.

162

1210.2.3 Adult changing table surround

Walls and partitions within 2 feet measured horizontally from each end of the adult changing table and to a height of not less than 72 inches above the floor shall have a smooth, hard, nonabsorbent surface, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture.



163

Section 1211 UV germicidal irradiation systems



Where ultraviolet (UV) germicidal irradiation systems are provided, they shall be listed and labeled in accordance with UL 8802 and installed in accordance with their listing and the manufacturer's instruction.

164

1402.7 - Exterior wall veneers manufactured using combustible adhesives

Exterior wall assemblies on buildings of Type I, II, III or IV construction that are greater than 40 feet in height above grade plane and contain an exterior wall veneer manufactured using a combustible adhesive to laminate a metal core with noncombustible facing materials shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285, with the adhesive level at the maximum application rate intended for use.



Combustibility shall be determined in accordance with Section 703.3.

165

1402.8 - Vertical and lateral flame propagation compliance methods

When exterior wall assemblies are required in this chapter to be tested for vertical and lateral flame propagation in accordance with and comply with the acceptance criteria of NFPA 285, compliance with the requirements shall be established by any of the following:

1. An exterior wall assembly tested in accordance with and meeting the acceptance criteria of NFPA 285.
2. An exterior wall assembly design listed by an approved agency for compliance with NFPA 285.
3. An approved analysis based on an assembly or condition tested in accordance with and meeting the acceptance criteria of NFPA 285.



166

1403.2 Water-resistive barrier

New language:

The intersection between the water-resistive barrier material and fenestration openings shall be flashed and assembled in accordance with the fenestration manufacturer's installation instructions, or other approved methods for applications not addressed by the fenestration manufacturer's instructions.



The water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section 1402.2.

167

1403.2 Water-resistive barrier

Water-resistive barriers shall comply with one of the following:

1. No. 15 felt complying with ASTM D226, Type 1.
2. ASTM E2556, Type I or II.
3. Foam plastic insulating sheathing water-resistive barrier systems complying with Section 1402.2 and installed in accordance with manufacturer's installation instructions.
4. ASTM E331 in accordance with Section 1402.2.
5. Other approved materials installed in accordance with the manufacturer's installation instructions.



168

1403.2 Water-resistive barrier

No. 15 asphalt felt and water-resistive barriers complying with ASTM E2556 shall be applied horizontally with the upper layer lapped over the lower layer not less than 2 inches. Where joints occur, the upper and lower layer shall be lapped not less than 6 inches.



169

1404.3 Vapor retarders

New exceptions:

- 4. A vapor retarder shall not be required in Climate Zones 1, 2, and 3.
- 5. In Climate Zones 4 through 8, a vapor retarder on the interior side of frame walls shall not be required where the assembly complies with Table 1404.3(5).

CLIMATE ZONE	PERMITTED CONDITIONS**
4	Continuous insulation with R-value ≥ 4.5
5	Continuous insulation with R-value ≥ 6.5
6	Continuous insulation with R-value ≥ 8.5
7	Continuous insulation with R-value ≥ 11.5
8	Continuous insulation with R-value ≥ 14

a. The total insulating value of materials to the interior side of the exterior continuous insulation, including any cavity insulation, shall not exceed R-5. Where the R-value of materials to the interior side of the exterior continuous insulation exceeds R-5, an approved design shall be required.

b. A water vapor control material layer having a permeance of not greater than 1 perm in accordance with ASTM E96, Procedure A (dry cup) shall be placed on the exterior side of the wall and to the interior side of the exterior continuous insulation. The exterior continuous insulation shall be permitted to serve as the vapor control layer where, at its installed thickness or with a facer on its interior face, the exterior continuous insulation is a Class I or II vapor retarder.

c. The requirements of this table apply only to continuous insulation used to control moisture in order to allow walls without a Class I, II or III interior vapor retarder. The insulation materials used to satisfy this option also contribute to but do not supersede the building thermal envelope requirements of the International Energy Conservation Code.

170

1404.3.1 - Spray foam plastic insulation for moisture control with Class II and III vapor retarders



For purposes of compliance with Tables 1404.3(3) and 1404.3(4), spray foam with a maximum permeance of 1.5 perms at the installed thickness applied to the interior side of wood structural panels, fiberboard, insulating sheathing or gypsum shall be deemed to meet the continuous insulation moisture control requirement in accordance with one of the following conditions:

1. The spray foam R-value meets or exceeds the specified continuous insulation R-value.
2. The combined R-value of the spray foam and continuous insulation is equal to or greater than the specified continuous insulation R-value.

171

1404.3.2 Vapor retarder installation

Vapor retarders shall be installed in accordance with the manufacturer's instructions or an approved design.

Where a vapor retarder also functions as a component of a continuous air barrier, the vapor retarder shall be installed as an air barrier in accordance with the International Energy Conservation Code.



172

1404.4.1 Fenestration flashing



Flashing of the fenestration to the wall assembly shall comply with the fenestration manufacturer's instructions or, for conditions not addressed by the fenestration manufacturer's instructions, shall comply with one of the following:

1. The water-resistive barrier manufacturer's flashing instructions.
2. The flashing manufacturer's flashing instructions.
3. A flashing design or method of a registered design professional.
4. Other approved methods.

173

Section 1409 Insulated metal panel (IMP)

The provisions of this section, in addition to the other applicable requirements of this chapter and Chapter 16, shall govern the materials, construction and quality of insulated metal panels (IMP) for use as exterior walls and exterior wall coverings.



174

SECTION 1412 - SOFFITS AND FASCIAS AT ROOF OVERHANGS



Soffits and fascias at roof overhangs shall be designed and constructed in accordance with the applicable provisions of this section.

Similar to IRC requirements

175

1511.2.4 Type of construction

Penthouses shall be constructed of building element materials as required for the type of construction of the building. Penthouse exterior walls and roof construction shall have a fire-resistance rating as required for the type of construction of the building.

Supporting construction of such exterior walls and roof construction shall have a fire-resistance rating not less than required for the exterior wall or roof supported.



176

1511.7.6 Lightning protection systems



Lightning protection system components shall be installed in accordance with Sections 1511.7.6.1, 1511.7.6.2 and 2703.

- Installation on metal edge systems or gutters
- Installation on roof coverings.
- Lightning protection systems
 - Installation
 - Surge Protection
 - Interconnection of systems

177

1511.9 - Raised-deck systems installed over a roof assembly

Raised-deck systems installed above a roof assembly shall comply with Sections 1511.9.1 through 1511.9.6.

- Installation
- Fire classification
- Fire testing of the raised deck system installed over a classified roof assembly
- Fire testing of the raised deck system together with the roof assembly
- Pedestals or supports
- Structural requirements
- Roof drainage
- Accessibility and egress



178

1705.2.2 Structural stainless steel



Special inspections and nondestructive testing of structural stainless steel elements in buildings and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 370.

179

1705.2.6 Metal building systems

Special inspections of metal building systems shall be performed in accordance with Sections 1705.2.1, 1705.2.3, 1705.2.4 and 1705.2.5 and Table 1705.2.6. The approved agency shall perform inspections of the erected metal building system to verify compliance with the approved construction documents.

TABLE 1705.2.6—SPECIAL INSPECTIONS OF METAL BUILDING SYSTEMS		
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Installation of rafter/beam flange braces and column flange braces.	—	X
2. Installation of purlins and girts, including specified lapping.	—	X
3. Purlin and girt restraint/bridging/bracing.	—	X
4. Installation of X-bracing, tightened to remove any sag.	—	X

180

1807.2.5 Guards

Guards shall be provided at retaining walls in accordance with Sections 1807.2.5.1 through 1807.2.5.3.

- Exception: Guards are not required at retaining walls not accessible to the public.



181

1807.2.5.1 Where required

At retaining walls located within 36 inches of walking surfaces, a guard shall be required between the walking surface and the open side of the retaining wall where the walking surface is located more than 30 inches measured vertically to the surface or grade below at any point within 36 inches horizontally to the edge of the open side.

Guards shall comply with Section 1607.9.



182

1807.2.5.2 Height

Required guards at retaining walls shall comply with the height requirements of Section 1015.3.



183

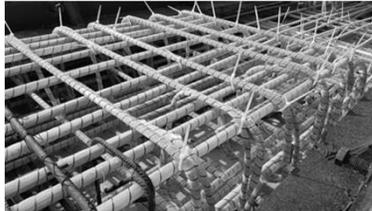
1807.2.5.3 Opening limitations

Required guards shall comply with the opening limitations of Section 1015.4.



184

1901.2.1 - Structural concrete with GFRP reinforcement



Cast-in-place structural concrete internally reinforced with glass fiber reinforced polymer (GFRP) reinforcement conforming to ASTM D7957 and designed in accordance with ACI CODE 440.11 shall be permitted where fire-resistance ratings are not required and only for structures assigned to Seismic Design Category A.

185

1907.1 Structural slabs-on-ground

Structural concrete slabs-on-ground shall comply with all applicable provisions of this chapter. Slabs-on-ground shall be considered structural concrete where required by ACI 318 or where designed to transmit either of the following:

- 1. Vertical loads or lateral forces from other parts of the structure to the soil.
- 2. Vertical loads or lateral forces from other parts of the structure to foundations.



186

1907.2 Nonstructural slabs-on-ground

Nonstructural slabs-on-ground shall be required to comply with Sections 1904.2, 1907.3 and 1907.4.

Portions of the nonstructural slabs-on-ground used to resist uplift forces or overturning shall be designed in accordance with accepted engineering practice throughout the entire portion designated as dead load to resist uplift forces or overturning.



187

1907.3 Thickness

The thickness of concrete floor slabs supported directly on the ground shall be not less than 3 ½ inches.



188

202 Definitions



METAL BUILDING SYSTEM

An integrated set of fabricated components and assemblies that form a complete or partial building shell that is designed by the manufacturer. This system typically includes but is not limited to primary framing composed of built-up structural steel members, secondary members that are cold-formed steel or open-web steel joists, a metal panel roof system and exterior wall cladding. The system is manufactured in a manner that permits plant or field inspection prior to assembly or erection.

189

2210 Metal building systems



The design, fabrication and erection of a metal building system shall be in accordance with the provisions of this section.

- Design
- Structural steel
- Cold-formed steel
- Steel joists
- Steel cable
- Seismic design

190

2211 Industrial boltless steel shelving

The design, testing and utilization of industrial boltless steel shelving shall be in accordance with MHI ANSI/MH 28.2.

Where required by ASCE 7, the seismic design of industrial boltless steel shelving shall be in accordance with Chapter 15 of ASCE 7.



191

2212 Industrial steel work platforms



The design, testing and utilization of industrial steel work platforms shall be in accordance with MHI ANSI/MH 28.3.

Where required by ASCE 7, the seismic design of industrial steel work platforms shall be in accordance with Chapter 15 of ASCE 7.

192

2213 - Stairs, ladders and guarding for steel storage racks and industrial steel work platforms

The design and installation of stairs, ladders and guarding serving steel storage racks and industrial steel work platforms shall be in accordance with MHI ANSI/MH 32.1.



193

2301.2 Wood dimensions



For the purposes of this chapter, where dimensions of lumber are specified, they shall be deemed to be nominal dimensions unless specifically designated as actual dimensions (see Section 2304.2).

Where dimensions of cross-laminated timber thickness are specified, they shall be deemed to be actual dimensions.

194

2603.4.1.15 - Separately controlled climate structures

In nonsprinklered buildings of Group U, foam plastic having a thickness that does not exceed 4 inches and a maximum flame spread index of 75 is permitted in separately controlled climate structures where the aggregate floor area does not exceed 400 square feet and the foam plastic is covered by a metal facing not less than 0.032-inch-thick aluminum or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch.



A thickness of up to 10 inches is permitted where protected by a thermal barrier.

195

2902.1.2 - Fixtures in single-user toilet facilities and bathing rooms



The plumbing fixtures located in single-user toilet facilities and single-user rooms, including family or assisted-use toilet facilities and bathing rooms, shall contribute toward the total number of required plumbing fixtures for a building or tenant space.

The number of fixtures in single-user toilet facilities, single-user bathing rooms and family or assisted-use toilet facilities shall be deducted proportionately from the required gender ratios of Table 2902.1.

Single-user toilet facilities and bathing rooms, and family or assisted-use toilet facilities and bathing rooms shall be identified as being available for use by all persons regardless of their sex.

196

2902.3.6 Door locking

Where a toilet facility is provided for the use of multiple occupants, the egress door for the room shall not be lockable from the inside of the room. This section does not apply to family or assisted-use toilet facilities.



- New exception: The egress door of a multiple occupant toilet room shall be permitted to be lockable from inside the room where all the following criteria are met:
- 1. The egress door shall be lockable from the inside of the room only by authorized personnel by the use of a key or other approved means.
- 2. The egress door shall be readily openable from the toilet room in accordance with Section 1010.2.
- 3. The egress door shall be capable of being unlocked from outside the room with a key or other approved means.

197

3001.2 - Elevator emergency communication systems



An elevator emergency two-way communication system that includes both visual and audible communication modes complying with the requirements in ASME A17.1/CSA B44 shall be provided in each elevator car. The system shall provide a means to enable authorized personnel to verify:

- 1. The presence of someone in the car.
- 2. That the person(s) is trapped.

Once an entrapment is verified, the system shall enable authorized personnel to:

- 1. Determine if assistance is needed.
- 2. Communicate when help is on the way.
- 3. Communicate when help arrives on site.

198

3002.3 Emergency signs

A pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire.

Where elevators are not a component of the accessible means of egress, the sign shall read: IN CASE OF FIRE, ELEVATORS ARE OUT OF SERVICE. USE EXIT. Where the elevator is a component of the accessible means of egress, a sign complying with Section 1009.11 shall be provided.



199

3002.6 Prohibited doors or other devices

Doors or other devices, other than the elevator car door and the associated elevator hoistway doors, shall be prohibited at the point of access to an elevator car unless such doors or other devices are readily openable from inside the car without a key, tool, special knowledge or effort.



200

3006.2 - Elevator hoistway door protection required

Elevator hoistway doors shall be protected in accordance with Section 3006.3 where an elevator hoistway connects more than three stories, is required to be enclosed within a shaft enclosure in accordance with Section 712.1.1 and any of the following conditions apply:

- 6. The elevator hoistway door is located in the wall of a corridor required to be fire-resistance rated in accordance with Section 1020.1.



201

3006.3 Elevator hoistway door protection



Where Section 3006.2 requires protection of the elevator hoistway doors, the protection shall be provided by one of the following:

- A smoke-protective curtain assembly for hoistways shall be provided at each elevator hoistway door opening in accordance with Section 3002.6. Such curtain assemblies shall comply with the smoke and draft control requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784 without an artificial bottom seal. Such curtain assemblies shall be equipped with a control unit listed to UL 864. Such curtain assemblies shall comply with Section 2.11.6.3 of ASME A17.1/CSA B44. Installation and maintenance shall be in accordance with NFPA 105.

202

3007.6 Fire service access elevator lobby

The fire service access elevator shall open into an enclosed fire service access elevator lobby in accordance with Sections 3007.6.1 through 3007.6.5.

Egress is permitted through the enclosed elevator lobby in accordance with Item 1 of Section 1016.2.

- New exception
- 2. A fire service access elevator lobby is not required to be provided at an occupiable roof.



203

3009 Private residence elevators



The design, construction and installation of elevators installed within a residential dwelling unit or installed to provide access to one individual residential dwelling unit shall conform to ASME 17.1/CSA B44, Section 5.3.

Hoistway enclosures shall comply with ASME A17.1/CSA B44, Requirement 5.3.1.1.

Hoistway landing doors for private residence elevators shall comply with ASME A17.1/CSA B44, Requirements 5.3.1.8.1 through 5.3.1.8.3.

204

202

Definitions

Public-occupancy temporary structure.

Any building or structure erected for a period of 1 year or less that serves an assembly occupancy or other public use.



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3103

Temporary structures

The provisions of Sections 3103.1 through 3103.8 shall apply to structures erected for a period of less than 180 days. Temporary special event structures, tents, umbrella structures and other membrane structures erected for a period of less than 180 days shall also comply with the International Fire Code. Temporary structures erected for a longer period of time and public-occupancy temporary structures shall comply with applicable sections of this code.



- New exceptions:
 - 1. Public-occupancy temporary structures complying with Section 3103.1.1 shall be permitted to remain in service for 180 days or more but not more than 1 year where approved by the building official.
 - 2. Public-occupancy temporary structures within the confines of an existing structure are not required to comply with Section 3103.6.

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3103.1.1

Extended period of service time

Public-occupancy temporary structures shall be permitted to remain in service for 180 days or more without complying with requirements in this code for new building or structures where extensions for up to 1 year are granted by the Building Official in accordance with Section 108.1 and where the following conditions are satisfied:

- 1. Additional inspections as determined by the building official shall be performed by a qualified person to verify that site conditions and the approved installation comply with the conditions of approval at the time of final inspection.
- 2. A qualified person shall perform follow-up inspections after initial occupancy at intervals not exceeding 180 days to verify the site conditions and the installation conform to the approved site conditions and installation requirements. Inspection records shall be kept and shall be made available for verification by the building official.
- 3. An examination shall be performed by a registered design professional to determine the adequacy of the temporary structure to resist the structural loads required in Section 3103.6.
- 4. Relocation of the public-occupancy temporary structure shall require a new permit application.
- 5. The use or occupancy approved at the time of final inspection shall remain unchanged.
- 6. A request for an extension is submitted to the building official. The request shall include records of the inspections and examination in Items 1 and 3.

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3103.6

Structural requirements

Temporary structures shall comply with the structural requirements of this code. Public-occupancy temporary structures shall be designed and erected to comply with the structural requirements of this code and Sections 3103.6.1 through 3103.6.4.

- Exception: Where approved, live loads less than those prescribed by Table 1607.1 shall be permitted provided that a registered design professional demonstrates that a rational approach has been used and that such reductions are warranted.

- Structural loads
- Snow loads
- Wind loads
- Flood loads
- Seismic loads
- Ice loads
- Tsunami loads
- Foundations
- Installation and maintenance inspections
- Durability
- Serviceability
- Controlled occupancy procedures

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Appendix P Sleeping lofts

Where provided in Group R occupancies, sleeping lofts shall comply with the provisions of this code, except as modified by this appendix.

Sleeping lofts constructed in compliance with this appendix shall be considered a portion of the story below.

Such sleeping lofts shall not contribute to either the building area or number of stories as regulated by Section 503.1.

The sleeping loft floor area shall be included in determining the fire area.

- The following sleeping lofts are exempt from compliance with this appendix:
 - 1. Sleeping lofts with a maximum depth of less than 3 feet.
 - 2. Sleeping lofts with a floor area of less than 35 square feet.
 - 3. Sleeping lofts not provided with a permanent means of egress.

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