

CHAPTER 3

USE AND OCCUPANCY CLASSIFICATION

SECTION 301 GENERAL

301.1 Scope. The provisions of this chapter shall control the classification of all buildings and structures as to use and occupancy.

SECTION 302 CLASSIFICATION

302.1 General. Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed below. A room or space that is intended to be occupied at different times for different purposes shall comply with all of the requirements that are applicable to each of the purposes for which the room or space will be occupied. Structures with multiple occupancies or uses shall comply with Section 508. Where a structure is proposed for a purpose that is not specifically provided for in this code, such structure shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved.

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

SECTION 303 ASSEMBLY GROUP A

303.1 Assembly Group A. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption or awaiting transportation.

Exceptions:

1. A building or tenant space used for assembly purposes with an *occupant load* of less than 50 persons shall be classified as a Group B occupancy.

2. A room or space used for assembly purposes with an *occupant load* of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
3. A room or space used for assembly purposes that is less than 750 square feet (70 m²) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
4. Assembly areas that are accessory to Group E occupancies are not considered separate occupancies except when applying the assembly occupancy requirements of Chapter 11.
5. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 are not considered separate occupancies.

Assembly occupancies shall include the following:

A-1 Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures including, but not limited to:

- Motion picture theaters
- Symphony and concert halls
- Television and radio studios admitting an audience
- Theaters

A-2 Assembly uses intended for food and/or drink consumption including, but not limited to:

- Banquet halls
- Night clubs
- Restaurants
- Taverns and bars

A-3 Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

- Amusement arcades
- Art galleries
- Bowling alleys
- Community halls
- Courtrooms
- Dance halls (not including food or drink consumption)
- Exhibition halls
- Funeral parlors
- Gymnasiums (without spectator seating)
- Indoor swimming pools (without spectator seating)
- Indoor tennis courts (without spectator seating)
- Lecture halls
- Libraries
- Museums
- Places of religious worship
- Pool and billiard parlors
- Waiting areas in transportation terminals

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A-4 Assembly uses intended for viewing of indoor sporting events and activities with spectator seating including, but not limited to:

- Arenas
- Skating rinks
- Swimming pools
- Tennis courts

A-5 Assembly uses intended for participation in or viewing outdoor activities including, but not limited to:

- Amusement park structures
- Bleachers
- Grandstands
- Stadiums

SECTION 304 BUSINESS GROUP B

304.1 Business Group B. Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

- Airport traffic control towers
- Ambulatory health care facilities
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- Clinic—outpatient
- Dry cleaning and laundries: pick-up and delivery stations and self-service
- Educational occupancies for students above the 12th grade
- Electronic data processing
- Laboratories: testing and research
- Motor vehicle showrooms
- Post offices
- Print shops
- Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
- Radio and television stations
- Telephone exchanges
- Training and skill development not within a school or academic program

304.1.1 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

CLINIC, OUTPATIENT. Buildings or portions thereof used to provide medical care on less than a 24-hour basis to individuals who are not rendered incapable of self-preservation by the services provided.

SECTION 305 EDUCATIONAL GROUP E

305.1 Educational Group E. Educational Group E occupancy includes, among others, the use of a building or structure, or a

portion thereof, by six or more persons at any one time for educational purposes through the 12th grade. Religious educational rooms and religious auditoriums, which are accessory to *places of religious worship* in accordance with Section 303.1 and have *occupant loads* of less than 100, shall be classified as A-3 occupancies.

305.2 Day care. The use of a building or structure, or portion thereof, for educational, supervision or *personal care services* for more than five children older than 2½ years of age, shall be classified as a Group E occupancy.

SECTION 306 FACTORY GROUP F

306.1 Factory Industrial Group F. Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous or Group S storage occupancy.

306.2 Factory Industrial F-1 Moderate-hazard Occupancy. Factory industrial uses which are not classified as F-1 Moderate Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

- Aircraft (manufacturing, not to include repair)
- Appliances
- Athletic equipment
- Automobiles and other motor vehicles
- Bakeries
- Beverages: over 16-percent alcohol content
- Bicycles
- Boats
- Brooms or brushes
- Business machines
- Cameras and photo equipment
- Canvas or similar fabric
- Carpets and rugs (includes cleaning)
- Clothing
- Construction and agricultural machinery
- Disinfectants
- Dry cleaning and dyeing
- Electric generation plants
- Electronics
- Engines (including rebuilding)
- Food processing
- Furniture
- Hemp products
- Jute products
- Laundries
- Leather products
- Machinery
- Metals
- Millwork (sash and door)
- Motion pictures and television filming (without spectators)
- Musical instruments
- Optical goods
- Paper mills or products
- Photographic film

Plastic products
 Printing or publishing
 Recreational vehicles
 Refuse incineration
 Shoes
 Soaps and detergents
 Textiles
 Tobacco
 Trailers
 Upholstering
 Wood; distillation
 Woodworking (cabinet)

306.3 Factory Industrial F-2 Low-hazard Occupancy. Factory industrial uses that involve the fabrication or manufacturing of noncombustible materials which during finishing, packing or processing do not involve a significant fire hazard shall be classified as F-2 occupancies and shall include, but not be limited to, the following:

■ Beverages: up to and including 16-percent alcohol content
 Brick and masonry
 Ceramic products
 Foundries
 Glass products
 Gypsum
 Ice
 Metal products (fabrication and assembly)

**SECTION 307
 HIGH-HAZARD GROUP H**

■ [F] **307.1 High-hazard Group H.** High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in *control areas* complying with Section 414, based on the maximum allowable quantity limits for control areas set forth in Tables 307.1(1) and 307.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this section, the requirements of Section 415 and the *International Fire Code*. Hazardous materials stored, or used on top of roofs or canopies shall be classified as outdoor storage or use and shall comply with the *International Fire Code*.

Exceptions: The following shall not be classified as Group H, but shall be classified as the occupancy that they most nearly resemble.

- 1. Buildings and structures occupied for the application of flammable finishes, provided that such build-

ings or areas conform to the requirements of Section 416 and the *International Fire Code*.

2. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the *International Fire Code*.
3. Closed piping system containing flammable or combustible liquids or gases utilized for the operation of machinery or equipment.
4. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems employing equipment listed by an approved testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour *fire barriers* constructed in accordance with Section 707 or 1-hour *horizontal assemblies* constructed in accordance with Section 712, or both.
5. Cleaning establishments that utilize a liquid solvent having a flash point at or above 200°F (93°C).
6. Liquor stores and distributors without bulk storage.
7. Refrigeration systems.
8. The storage or utilization of materials for agricultural purposes on the premises.
9. Stationary batteries utilized for facility emergency power, uninterrupted power supply or telecommunication facilities, provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with the *International Mechanical Code*.
10. Corrosives shall not include personal or household products in their original packaging used in retail display or commonly used building materials.
11. Buildings and structures occupied for aerosol storage shall be classified as Group S-1, provided that such buildings conform to the requirements of the *International Fire Code*.
12. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per *control area* in Group M or S occupancies complying with Section 414.2.5.
13. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements prescribed in the *International Fire Code*.

Division 1.5

Division 1.6

Organic peroxides, unclassified detonable
 Oxidizers, Class 4
 Unstable (reactive) materials, Class 3 detonable and Class 4

[F] 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:

Class I, II or IIIA flammable or combustible liquids which are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103.4 kPa) gage.
 Combustible dusts
 Cryogenic fluids, flammable
 Flammable gases
 Organic peroxides, Class I
 Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103 kPa) gage
 Pyrophoric liquids, solids and gases, nondetonable
 Unstable (reactive) materials, Class 3, nondetonable
 Water-reactive materials, Class 3

[F] 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:

Class I, II or IIIA flammable or combustible liquids that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103.4 kPa) or less
 Combustible fibers, other than densely packed baled cotton
 Consumer fireworks, 1.4G (Class C, Common)
 Cryogenic fluids, oxidizing
 Flammable solids
 Organic peroxides, Class II and III
 Oxidizers, Class 2
 Oxidizers, Class 3, that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103 kPa) or less
 Oxidizing gases
 Unstable (reactive) materials, Class 2
 Water-reactive materials, Class 2

[F] 307.6 High-hazard Group H-4. Buildings and structures which contain materials that are health hazards shall be classified as Group H-4. Such materials shall include, but not be limited to, the following:

Corrosives
 Highly toxic materials
 Toxic materials

[F] 307.7 High-hazard Group H-5 structures. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those listed in Tables 307.1(1) and 307.1(2) shall be classified

as Group H-5. Such facilities and areas shall be designed and constructed in accordance with Section 415.8.

[F] 307.8 Multiple hazards. Buildings and structures containing a material or materials representing hazards that are classified in one or more of Groups H-1, H-2, H-3 and H-4 shall conform to the code requirements for each of the occupancies so classified.

SECTION 308 INSTITUTIONAL GROUP I

308.1 Institutional Group I. Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which people are cared for or live in a supervised environment, having physical limitations because of health or age are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

308.2 Group I-1. This occupancy shall include buildings, structures or parts thereof housing more than 16 persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides *personal care services*. The occupants are capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following:

Alcohol and drug centers
 Assisted living facilities
 Congregate care facilities
 Convalescent facilities
 Group homes
 Halfway houses
 Residential board and care facilities
 Social rehabilitation facilities

A facility such as the above with five or fewer persons shall be classified as a Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2. A facility such as above, housing at least six and not more than 16 persons, shall be classified as Group R-4.

308.3 Group I-2. This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or custodial care for persons who are not capable of self-preservation. This group shall include, but not be limited to, the following:

Child care facilities
 Detoxification facilities
 Hospitals
 Mental hospitals
 Nursing homes

308.3.1 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

CHILD CARE FACILITIES. Facilities that provide care on a 24-hour basis to more than five children, 2½ years of age or less.

DETOXIFICATION FACILITIES. Facilities that serve patients who are provided treatment for substance abuse on a 24-hour basis and who are incapable of self-preservation or who are harmful to themselves or others.

HOSPITALS AND MENTAL HOSPITALS. Buildings or portions thereof used on a 24-hour basis for the medical, psychiatric, obstetrical or surgical treatment of inpatients who are incapable of self-preservation.

NURSING HOMES. Nursing homes are long-term care facilities on a 24-hour basis, including both intermediate care facilities and skilled nursing facilities, serving more than five persons and any of the persons are incapable of self-preservation.

308.4 Group I-3. This occupancy shall include buildings and structures that are inhabited by more than five persons who are under restraint or security. An I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control. This group shall include, but not be limited to, the following:

- Correctional centers
- Detention centers
- Jails
- Prerelease centers
- Prisons
- Reformatories

Buildings of Group I-3 shall be classified as one of the occupancy conditions indicated in Sections 308.4.1 through 308.4.5 (see Section 408.1).

308.4.1 Condition 1. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via *means of egress* without restraint. A Condition 1 facility is permitted to be constructed as Group R.

308.4.2 Condition 2. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked *exits*.

308.4.3 Condition 3. This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual *sleeping units* and group activity spaces, where egress is impeded by remote-controlled release of *means of egress* from such a smoke compartment to another smoke compartment.

308.4.4 Condition 4. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from *sleeping units*, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

308.4.5 Condition 5. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Staff-controlled manual release is provided to permit movement from *sleeping units*, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

308.5 Group I-4, day care facilities. This group shall include buildings and structures occupied by persons of any age who receive custodial care for less than 24 hours by individuals other than parents or guardians, relatives by blood, marriage or adoption, and in a place other than the home of the person cared for. A facility such as the above with five or fewer persons shall be classified as a Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2. Places of worship during religious functions are not included.

308.5.1 Adult care facility. A facility that provides accommodations for less than 24 hours for more than five unrelated adults and provides supervision and *personal care services* shall be classified as Group I-4.

Exception: A facility where occupants are capable of responding to an emergency situation without physical assistance from the staff shall be classified as Group R-3.

308.5.2 Child care facility. A facility that provides supervision and personal care on less than a 24-hour basis for more than five children 2½ years of age or less shall be classified as Group I-4.

Exception: A child day care facility that provides care for more than five but no more than 100 children 2½ years or less of age, where the rooms in which the children are cared for are located on a *level of exit discharge* serving such rooms and each of these child care rooms has an *exit* door directly to the exterior, shall be classified as Group E.

SECTION 309 MERCANTILE GROUP M

309.1 Mercantile Group M. Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof, for the display and sale of merchandise and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

- Department stores
- Drug stores
- Markets
- Motor fuel-dispensing facilities
- Retail or wholesale stores
- Sales rooms

309.2 Quantity of hazardous materials. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored or displayed in a single *control area* of a Group M occupancy shall not exceed the quantities in Table 414.2.5(1).

SECTION 310 RESIDENTIAL GROUP R

310.1 Residential Group R. Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *International Residential Code* in accordance with Section 101.2. Residential occupancies shall include the following:

R-1 Residential occupancies containing *sleeping units* where the occupants are primarily transient in nature, including:

- Boarding houses* (transient)
- Hotels (transient)
- Motels (transient)

Congregate living facilities (transient) with 10 or fewer occupants are permitted to comply with the construction requirements for Group R-3.

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

- Apartment houses
- Boarding houses* (nontransient)
- Convents
- Dormitories
- Fraternities and sororities
- Hotels (nontransient)
- Live/work units
- Monasteries
- Motels (nontransient)
- Vacation timeshare properties

Congregate living facilities with 16 or fewer occupants are permitted to comply with the construction requirements for Group R-3.

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

- Buildings that do not contain more than two *dwelling units*.
- Adult care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.
- Child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.
- Congregate living facilities* with 16 or fewer persons.

Adult care and child care facilities that are within a single-family home are permitted to comply with the *International Residential Code*.

R-4 Residential occupancies shall include buildings arranged for occupancy as residential care/assisted living facilities including more than five but not more than 16 occupants, excluding staff.

Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code or shall comply with the *International Residential Code* provided the building is protected by an *automatic sprinkler system* installed in accordance with Section 903.2.8.

310.2 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

BOARDING HOUSE. A building arranged or used for lodging for compensation, with or without meals, and not occupied as a single-family unit.

CONGREGATE LIVING FACILITIES. A building or part thereof that contains sleeping units where residents share bathroom and/or kitchen facilities.

DORMITORY. A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not members of the same family group, under joint occupancy and single management, as in college dormitories or fraternity houses.

PERSONAL CARE SERVICE. The care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for the safety of the resident while inside the building.

RESIDENTIAL CARE/ASSISTED LIVING FACILITIES. A building or part thereof housing persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment which provides *personal care services*. The occupants are capable of responding to an emergency situation without physical assistance from staff. This classification shall include, but not be limited to, the following: residential board and care facilities, assisted living facilities, halfway houses, group homes, congregate care facilities, social rehabilitation facilities, alcohol and drug abuse centers and convalescent facilities.

TRANSIENT. Occupancy of a *dwelling unit* or *sleeping unit* for not more than 30 days.

SECTION 311 STORAGE GROUP S

311.1 Storage Group S. Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy.

311.2 Moderate-hazard storage, Group S-1. Buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

- Aerosols, Levels 2 and 3
- Aircraft hangar (storage and repair)
- Bags: cloth, burlap and paper
- Bamboos and rattan
- Baskets
- Belting: canvas and leather
- Books and paper in rolls or packs
- Boots and shoes
- Buttons, including cloth covered, pearl or bone
- Cardboard and cardboard boxes
- Clothing, woolen wearing apparel
- Cordage
- Dry boat storage (indoor)
- Furniture

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Furs
Glues, mucilage, pastes and size
Grains
Horns and combs, other than celluloid
Leather
Linoleum
Lumber
Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials listed in Table 307.1(1) (see Section 406.6)
Photo engravings
Resilient flooring
Silks
Soaps
Sugar
Tires, bulk storage of
Tobacco, cigars, cigarettes and snuff
Upholstery and mattresses
Wax candles

311.3 Low-hazard storage, Group S-2. Includes, 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. Such products are permitted to have a negligible amount of plastic *trim*, such as knobs, handles or film wrapping. Group S-2 storage uses shall include, but not be limited to, storage of the following:

Asbestos
Beverages up to and including 16-percent alcohol in metal, glass or ceramic containers
Cement in bags
Chalk and crayons
Dairy products in nonwaxed coated paper containers
Dry cell batteries
Electrical coils
Electrical motors
Empty cans
Food products
Foods in noncombustible containers
Fresh fruits and vegetables in nonplastic trays or containers
Frozen foods
Glass
Glass bottles, empty or filled with noncombustible liquids
Gypsum board
Inert pigments
Ivory
Meats
Metal cabinets
Metal desks with plastic tops and *trim*
Metal parts
Metals
Mirrors
Oil-filled and other types of distribution transformers
Parking garages, open or enclosed
Porcelain and pottery
Stoves
Talc and soapstones
Washers and dryers

SECTION 312 UTILITY AND MISCELLANEOUS GROUP U

312.1 General. Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

Agricultural buildings
Aircraft hangars, accessory to a one- or two-family residence (see Section 412.5)
Barns
Carports
Fences more than 6 feet (1829 mm) high
Grain silos, accessory to a residential occupancy
Greenhouses
Livestock shelters
Private garages
Retaining walls
Sheds
Stables
Tanks
Towers

GENERAL BUILDING HEIGHTS AND AREAS

TABLE 503
ALLOWABLE BUILDING HEIGHTS AND AREAS^a
 Building height limitations shown in feet above grade plane. Story limitations shown as stories above grade plane.
 Building area limitations shown in square feet, as determined by the definition of "Area, building," per story

GROUP	HEIGHT(feet)	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
		UL	160	65	55	65	55	65	50	40
		STORIES(S) AREA (A)								
A-1	S A	UL UL	5 UL	3 15,500	2 8,500	3 14,000	2 8,500	3 15,000	2 11,500	1 5,500
A-2	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-3	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-4	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-5	S A	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL
B	S A	UL UL	11 UL	5 37,500	3 23,000	5 28,500	3 19,000	5 36,000	3 18,000	2 9,000
E	S A	UL UL	5 UL	3 26,500	2 14,500	3 23,500	2 14,500	3 25,500	1 18,500	1 9,500
F-1	S A	UL UL	11 UL	4 25,000	2 15,500	3 19,000	2 12,000	4 33,500	2 14,000	1 8,500
F-2	S A	UL UL	11 UL	5 37,500	3 23,000	4 28,500	3 18,000	5 50,500	3 21,000	2 13,000
H-1	S A	1 21,000	1 16,500	1 11,000	1 7,000	1 9,500	1 7,000	1 10,500	1 7,500	NP NP
H-2 ^d	S A	UL 21,000	3 16,500	2 11,000	1 7,000	2 9,500	1 7,000	2 10,500	1 7,500	1 3,000
H-3 ^d	S A	UL UL	6 60,000	4 26,500	2 14,000	4 17,500	2 13,000	4 25,500	2 10,000	1 5,000
H-4	S A	UL UL	7 UL	5 37,500	3 17,500	5 28,500	3 17,500	5 36,000	3 18,000	2 6,500
H-5	S A	4 UL	4 UL	3 37,500	3 23,000	3 28,500	3 19,000	3 36,000	3 18,000	2 9,000
I-1	S A	UL UL	9 55,000	4 19,000	3 10,000	4 16,500	3 10,000	4 18,000	3 10,500	2 4,500
I-2	S A	UL UL	4 UL	2 15,000	1 11,000	1 12,000	NP NP	1 12,000	1 9,500	NP NP
I-3	S A	UL UL	4 UL	2 15,000	1 10,000	2 10,500	1 7,500	2 12,000	2 7,500	1 5,000
I-4	S A	UL UL	5 60,500	3 26,500	2 13,000	3 23,500	2 13,000	3 25,500	1 18,500	1 9,000
M	S A	UL UL	11 UL	4 21,500	2 12,500	4 18,500	2 12,500	4 20,500	3 14,000	1 9,000
R-1	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
R-2	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
R-3	S A	UL UL	11 UL	4 UL	4 UL	4 UL	4 UL	4 UL	3 UL	3 UL
R-4	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
S-1	S A	UL UL	11 48,000	4 26,000	2 17,500	3 26,000	2 17,500	4 25,500	3 14,000	1 9,000
S-2 ^{b,c}	S A	UL UL	11 79,000	5 39,000	3 26,000	4 39,000	3 26,000	5 38,500	4 21,000	2 13,500
U ^c	S A	UL UL	5 35,500	4 19,000	2 8,500	3 14,000	2 8,500	4 18,000	2 9,000	1 5,500

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

A = building area per story, S = stories above grade plane, UL = Unlimited, NP = Not permitted.

- a. See the following sections for general exceptions to Table 503:
 1. Section 504.2, Allowable building height and story increase due to automatic sprinkler system installation.
 2. Section 506.2, Allowable building area increase due to street frontage.
 3. Section 506.3, Allowable building area increase due to automatic sprinkler system installation.
 4. Section 507, Unlimited area buildings.
- b. For open parking structures, see Section 406.3.
- c. For private garages, see Section 406.1.
- d. See Section 415.5 for limitations.

dental accessory occupancies shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The walls shall extend from the top of the foundation or floor assembly below to the underside of the ceiling that is a component of a fire-resistance-rated floor assembly or roof assembly above or to the underside of the floor or roof sheathing, deck or slab above. Doors shall be self- or automatic-closing upon detection of smoke in accordance with Section 715.4.8.3. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80. Walls surrounding the incidental accessory occupancy shall not have air transfer openings unless provided with smoke dampers in accordance with Section 711.7.

508.2.5.3 Protection. Except as specified in Table 508.2.5 for certain incidental accessory occupancies, where an automatic fire-extinguishing system or an automatic sprinkler system is provided in accordance with Table 508.2.5, only the space occupied by the incidental accessory occupancy need be equipped with such a system.

508.3 Nonseparated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall be considered as nonseparated occupancies.

508.3.1 Occupancy classification. Nonseparated occupancies shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classifica-

tion of that space except that the most restrictive applicable provisions of Section 403 and Chapter 9 shall apply to the building or portion thereof in which the nonseparated occupancies are located.

508.3.2 Allowable building area and height. The allowable *building area and height* of the building or portion thereof shall be based on the most restrictive allowances for the occupancy groups under consideration for the type of construction of the building in accordance with Section 503.1.

508.3.3 Separation. No separation is required between nonseparated occupancies.

Exceptions:

1. Group H-2, H-3, H-4 and H-5 occupancies shall be separated from all other occupancies in accordance with Section 508.4.
2. Group I-1, R-1, R-2 and R-3 *dwelling units* and *sleeping units* shall be separated from other *dwelling* or *sleeping units* and from other occupancies contiguous to them in accordance with the requirements of Section 420.

508.4 Separated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall be considered as separated occupancies.

508.4.1 Occupancy classification. Separated occupancies shall be individually classified in accordance with Section 302.1. Each separated space shall comply with this code

TABLE 508.4
REQUIRED SEPARATION OF OCCUPANCIES (HOURS)

OCCUPANCY	A ^d , E		I-1, I-3, I-4		I-2		R		F-2, S-2 ^b , U		B, F-1, M, S-1		H-1		H-2		H-3, H-4, H-5		
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	
A ^d , E	N	N	1	2	2	NP	1	2	N	1	1	2	NP	NP	3	4	2	3 ^a	
I-1, I-3, I-4	—	—	N	N	2	NP	1	NP	1	2	1	2	NP	NP	3	NP	2	NP	
I-2	—	—	—	—	N	N	2	NP	2	NP	2	NP	NP	NP	3	NP	2	NP	
R	—	—	—	—	—	—	N	N	1 ^c	2 ^c	1	2	NP	NP	3	NP	2	NP	
F-2, S-2 ^b , U	—	—	—	—	—	—	—	—	N	N	1	2	NP	NP	3	4	2	3 ^a	
B, F-1, M, S-1	—	—	—	—	—	—	—	—	—	—	N	N	NP	NP	2	3	1	2 ^a	
H-1	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	NP	NP	NP	NP	
H-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	1	NP	
H-3, H-4, H-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 ^{e,f}	NP

For SI: 1 square foot = 0.0929 m².

S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

N = No separation requirement.

NP = Not permitted.

a. For Group H-5 occupancies, see Section 903.2.5.2.

b. The required separation from areas used only for private or pleasure vehicles shall be reduced by 1 hour but to not less than 1 hour.

c. See Section 406.1.4.

d. Commercial kitchens need not be separated from the restaurant seating areas that they serve.

e. Separation is not required between occupancies of the same classification.

f. For H-5 occupancies, see Section 415.8.2.2.

CHAPTER 6

TYPES OF CONSTRUCTION

SECTION 601 GENERAL

601.1 Scope. The provisions of this chapter shall control the classification of buildings as to type of construction.

SECTION 602 CONSTRUCTION CLASSIFICATION

602.1 General. Buildings and structures erected or to be erected, altered or extended in height or area shall be classified in one of the five construction types defined in Sections 602.2 through 602.5. The building elements shall have a *fire-resistance rating* not less than that specified in Table 601 and exterior walls shall have a *fire-resistance rating* not less than that specified in Table 602. Where required to have a *fire-resistance rating* by Table 601, building elements shall comply with the applicable provisions of Section 703.2. The protection of openings, ducts and air transfer openings in building elements shall not be required unless required by other provisions of this code.

602.1.1 Minimum requirements. A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type which meets the minimum requirements based on occupancy even though certain features of such a building actually conform to a higher type of construction.

602.2 Types I and II. Types I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code.

602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. *Fire-retardant-treated wood* framing complying with Section 2303.2 shall be permitted within *exterior wall* assemblies of a 2-hour rating or less.

602.4 Type IV. Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or laminated wood without concealed spaces. The

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

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B
Primary structural frame ^g (see Section 202)	3 ^a	2 ^a	1	0	1	0	HT	1	0
Bearing walls									
Exterior ^{f, g}	3	2	1	0	2	2	2	1	0
Interior	3 ^a	2 ^a	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions	See Table 602								
Exterior									
Nonbearing walls and partitions	0	0	0	0	0	0	See Section 602.4.6	0	0
Interior ^e									
Floor construction and secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and secondary members (see Section 202)	1½ ^b	1 ^{b, c}	1 ^{b, c}	0 ^c	1 ^{b, c}	0	HT	1 ^{b, c}	0

For SI: 1 foot = 304.8 mm.

- a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
- b. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
- c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.
- d. An approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided such system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.
- e. Not less than the fire-resistance rating required by other sections of this code.
- f. Not less than the fire-resistance rating based on fire separation distance (see Table 602).
- g. Not less than the fire-resistance rating as referenced in Section 704.10

CHAPTER 6

TYPES OF CONSTRUCTION

SECTION 601 GENERAL

601.1 Scope. The provisions of this chapter shall control the classification of buildings as to type of construction.

SECTION 602 CONSTRUCTION CLASSIFICATION

602.1 General. Buildings and structures erected or to be erected, altered or extended in height or area shall be classified in one of the five construction types defined in Sections 602.2 through 602.5. The building elements shall have a *fire-resistance rating* not less than that specified in Table 601 and exterior walls shall have a *fire-resistance rating* not less than that specified in Table 602. Where required to have a *fire-resistance rating* by Table 601, building elements shall comply with the applicable provisions of Section 703.2. The protection of openings, ducts and air transfer openings in building elements shall not be required unless required by other provisions of this code.

602.1.1 Minimum requirements. A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type which meets the minimum requirements based on occupancy even though certain features of such a building actually conform to a higher type of construction.

602.2 Types I and II. Types I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code.

602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. *Fire-retardant-treated wood* framing complying with Section 2303.2 shall be permitted within *exterior wall* assemblies of a 2-hour rating or less.

602.4 Type IV. Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or laminated wood without concealed spaces. The

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

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B
Primary structural frame ^g (see Section 202)	3 ^a	2 ^a	1	0	1	0	HT	1	0
Bearing walls Exterior ^{f, g} Interior	3 3 ^a	2 2 ^a	1 1	0 0	2 1	2 0	2 1/HT	1 1	0 0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior ^e	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction and secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and secondary members (see Section 202)	1½ ^b	1 ^{b, c}	1 ^{b, c}	0 ^c	1 ^{b, c}	0	HT	1 ^{b, c}	0

For SI: 1 foot = 304.8 mm.

- a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
- b. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
- c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.
- d. An approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided such system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.
- e. Not less than the fire-resistance rating required by other sections of this code.
- f. Not less than the fire-resistance rating based on fire separation distance (see Table 602).
- g. Not less than the fire-resistance rating as referenced in Section 704.10

TYPES OF CONSTRUCTION

details of Type IV construction shall comply with the provisions of this section. *Fire-retardant-treated wood* framing complying with Section 2303.2 shall be permitted within exterior wall assemblies with a 2-hour rating or less. Minimum solid sawn nominal dimensions are required for structures built using Type IV construction (HT). For glued-laminated members the equivalent net finished width and depths corresponding to the minimum nominal width and depths of solid sawn lumber are required as specified in Table 602.4.

602.4.1 Columns. Wood columns shall be sawn or glued laminated and shall not be less than 8 inches (203 mm), nominal, in any dimension where supporting floor loads and not less than 6 inches (152 mm) nominal in width and not less than 8 inches (203 mm) nominal in depth where supporting roof and ceiling loads only. Columns shall be continuous or superimposed and connected in an *approved* manner.

602.4.2 Floor framing. Wood beams and girders shall be of sawn or glued-laminated timber and shall be not less than 6 inches (152 mm) nominal in width and not less than 10 inches (254 mm) nominal in depth. Framed sawn or glued-laminated timber arches, which spring from the floor line and support floor loads, shall be not less than 8 inches (203 mm) nominal in any dimension. Framed timber trusses

supporting floor loads shall have members of not less than 8 inches (203 mm) nominal in any dimension.

602.4.3 Roof framing. Wood-frame or glued-laminated arches for roof construction, which spring from the floor line or from grade and do not support floor loads, shall have members not less than 6 inches (152 mm) nominal in width and have not less than 8 inches (203 mm) nominal in depth for the lower half of the height and not less than 6 inches (152 mm) nominal in depth for the upper half. Framed or glued-laminated arches for roof construction that spring from the top of walls or wall abutments, framed timber trusses and other roof framing, which do not support floor loads, shall have members not less than 4 inches (102 mm) nominal in width and not less than 6 inches (152 mm) nominal in depth. Spaced members shall be permitted to be composed of two or more pieces not less than 3 inches (76 mm) nominal in thickness where blocked solidly throughout their intervening spaces or where spaces are tightly closed by a continuous wood cover plate of not less than 2 inches (51 mm) nominal in thickness secured to the underside of the members. Splice plates shall be not less than 3 inches (76 mm) nominal in thickness. Where protected by *approved* automatic sprinklers under the roof deck, framing members shall be not less than 3 inches (76 mm) nominal in width.

**TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE^{a, e}**

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H ^f	OCCUPANCY GROUP F-1, M, S-1 ^g	OCCUPANCY GROUP A, B, E, F-2, I, R, S-2 ^g , U ^b
X < 5 ^c	All	3	2	1
5 ≤ X < 10	IA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB	2	1	1 ^d
	IIB, VB	1	0	0
	Others	1	1	1 ^d
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

- a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.
- b. For special requirements for Group U occupancies, see Section 406.1.2.
- c. See Section 706.1.1 for party walls.
- d. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.
- e. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.
- f. For special requirements for Group H occupancies, see Section 415.3.
- g. For special requirements for Group S aircraft hangars, see Section 412.4.1.

**TABLE 602.4
WOOD MEMBER SIZE**

MINIMUM NOMINAL SOLID SAWN SIZE		MINIMUM GLUED-LAMINATED NET SIZE	
Width, inch	Depth, inch	Width, inch	Depth, inch
8	8	6 3/4	8 1/4
6	10	5	10 1/2
6	8	5	8 1/4
6	6	5	6
4	6	3	6 7/8

For SI: 1 inch = 25.4 mm.

**TABLE 705.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION**

FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA ^a
0 to less than 3 ^{b, c}	Unprotected, Nonsprinklered (UP, NS)	Not Permitted
	Unprotected, Sprinklered (UP, S) ⁱ	Not Permitted
	Protected (P)	Not Permitted
3 to less than 5 ^{d, e}	Unprotected, Nonsprinklered (UP, NS)	Not Permitted
	Unprotected, Sprinklered (UP, S) ⁱ	15%
	Protected (P)	15%
5 to less than 10 ^{e, f}	Unprotected, Nonsprinklered (UP, NS)	10% ^h
	Unprotected, Sprinklered (UP, S) ⁱ	25%
	Protected (P)	25%
10 to less than 15 ^{e, f, g}	Unprotected, Nonsprinklered (UP, NS)	15% ^h
	Unprotected, Sprinklered (UP, S) ⁱ	45%
	Protected (P)	45%
15 to less than 20 ^{f, g}	Unprotected, Nonsprinklered (UP, NS)	25%
	Unprotected, Sprinklered (UP, S) ⁱ	75%
	Protected (P)	75%
20 to less than 25 ^{f, g}	Unprotected, Nonsprinklered (UP, NS)	45%
	Unprotected, Sprinklered (UP, S) ⁱ	No Limit
	Protected (P)	No Limit
25 to less than 30 ^{f, g}	Unprotected, Nonsprinklered (UP, NS)	70%
	Unprotected, Sprinklered (UP, S) ⁱ	No Limit
	Protected (P)	No Limit
30 or greater	Unprotected, Nonsprinklered (UP, NS)	No Limit
	Unprotected, Sprinklered (UP, S) ⁱ	Not Required
	Protected (P)	Not Required

For SI: 1 foot = 304.8 mm.

UP, NS = Unprotected openings in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

UP, S = Unprotected openings in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

P = Openings protected with an opening protective assembly in accordance with Section 705.8.2.

a. Values indicated are the percentage of the area of the exterior wall, per story.

b. For the requirements for fire walls of buildings with differing heights, see Section 706.6.1.

c. For openings in a fire wall for buildings on the same lot, see Section 706.8.

d. The maximum percentage of unprotected and protected openings shall be 25 percent for Group R-3 occupancies.

e. Unprotected openings shall not be permitted for openings with a fire separation distance of less than 15 feet for Group H-2 and H-3 occupancies.

f. The area of unprotected and protected openings shall not be limited for Group R-3 occupancies, with a fire separation distance of 5 feet or greater.

g. The area of openings in an open parking structure with a fire separation distance of 10 feet or greater shall not be limited.

h. Includes buildings accessory to Group R-3.

i. Not applicable to Group H-1, H-2 and H-3 occupancies.

[F] **TROUBLE SIGNAL.** A signal initiated by the fire alarm system or device indicative of a fault in a monitored circuit or component.

[F] **VISIBLE ALARM NOTIFICATION APPLIANCE.** A notification appliance that alerts by the sense of sight.

[F] **WET-CHEMICAL EXTINGUISHING SYSTEM.** A solution of water and potassium-carbonate-based chemical, potassium-acetate-based chemical or a combination thereof, forming an extinguishing agent.

[F] **WIRELESS PROTECTION SYSTEM.** A system or a part of a system that can transmit and receive signals without the aid of wire.

[F] **ZONE.** A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent or an area in which a form of control can be executed.

[F] **ZONE, NOTIFICATION.** An area within a building or facility covered by notification appliances which are activated simultaneously.

SECTION 903 AUTOMATIC SPRINKLER SYSTEMS

[F] **903.1 General.** *Automatic sprinkler systems* shall comply with this section.

[F] **903.1.1 Alternative protection.** Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in lieu of automatic sprinkler protection where recognized by the applicable standard and *approved* by the fire code official.

[F] **903.2 Where required.** *Approved automatic sprinkler systems* in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12.

Exception: Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour *fire barriers* constructed in accordance with Section 707 or not less than 2-hour *horizontal assemblies* constructed in accordance with Section 712, or both.

[F] **903.2.1 Group A.** An *automatic sprinkler system* shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section. For Group A-1, A-2, A-3 and A-4 occupancies, the *automatic sprinkler system* shall be provided throughout the floor area where the Group A-1, A-2, A-3 or A-4 occupancy is located, and in all floors from the Group A occupancy to, and including, the nearest *level of exit discharge* serving the Group A occupancy. For Group A-5 occupancies, the *automatic sprinkler system* shall be provided in the spaces indicated in Section 903.2.1.5.

[F] **903.2.1.1 Group A-1.** An *automatic sprinkler system* shall be provided for Group A-1 occupancies where one of the following conditions exists:

1. The *fire area* exceeds 12,000 square feet (1115 m²);
2. The *fire area* has an *occupant load* of 300 or more;
3. The *fire area* is located on a floor other than a *level of exit discharge* serving such occupancies; or
4. The *fire area* contains a multitheater complex.

[F] **903.2.1.2 Group A-2.** An *automatic sprinkler system* shall be provided for Group A-2 occupancies where one of the following conditions exists:

1. The *fire area* exceeds 5,000 square feet (464.5 m²);
2. The *fire area* has an *occupant load* of 100 or more; or
3. The *fire area* is located on a floor other than a *level of exit discharge* serving such occupancies.

[F] **903.2.1.3 Group A-3.** An *automatic sprinkler system* shall be provided for Group A-3 occupancies where one of the following conditions exists:

1. The *fire area* exceeds 12,000 square feet (1115 m²);
2. The *fire area* has an *occupant load* of 300 or more; or
3. The *fire area* is located on a floor other than a *level of exit discharge* serving such occupancies.

[F] **903.2.1.4 Group A-4.** An *automatic sprinkler system* shall be provided for Group A-4 occupancies where one of the following conditions exists:

1. The *fire area* exceeds 12,000 square feet (1115 m²);
2. The *fire area* has an *occupant load* of 300 or more; or
3. The *fire area* is located on a floor other than a *level of exit discharge* serving such occupancies.

[F] **903.2.1.5 Group A-5.** An *automatic sprinkler system* shall be provided for Group A-5 occupancies in the following areas: concession stands, retail areas, press boxes and other accessory use areas in excess of 1,000 square feet (93 m²).

[F] **903.2.2 Group B ambulatory health care facilities.** An *automatic sprinkler system* shall be installed throughout all fire areas containing a Group B ambulatory health care facility occupancy when either of the following conditions exists at any time:

1. Four or more care recipients are incapable of self-preservation.
2. One or more care recipients who are incapable of self-preservation are located at other than the *level of exit discharge* serving such an occupancy.

[F] 903.2.3 Group E. An *automatic sprinkler system* shall be provided for Group E occupancies as follows:

1. Throughout all Group E *fire areas* greater than 12,000 square feet (1115 m²) in area.
2. Throughout every portion of educational buildings below the lowest *level of exit discharge* serving that portion of the building.

Exception: An *automatic sprinkler system* is not required in any area below the lowest *level of exit discharge* serving that area where every classroom throughout the building has at least one exterior *exit* door at ground level.

[F] 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:

1. A Group F-1 *fire area* exceeds 12,000 square feet (1115 m²).
2. A Group F-1 *fire area* is located more than three stories above *grade plane*.
3. The combined area of all Group F-1 *fire areas* on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).

[F] 903.2.4.1 Woodworking operations. An *automatic sprinkler system* shall be provided throughout all Group F-1 occupancy *fire areas* that contain woodworking operations in excess of 2,500 square feet (232 m²) in area which generate finely divided combustible waste or use finely divided combustible materials.

[F] 903.2.5 Group H. *Automatic sprinkler systems* shall be provided in high-hazard occupancies as required in Sections 903.2.5.1 through 903.2.5.3.

[F] 903.2.5.1 General. An *automatic sprinkler system* shall be installed in Group H occupancies.

[F] 903.2.5.2 Group H-5. An *automatic sprinkler system* shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall not be less than that required by this code for the occupancy hazard classifications in accordance with Table 903.2.5.2. Where the design area of the sprinkler system consists of a *corridor* protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13.

[F] TABLE 903.2.5.2
GROUP H-5 SPRINKLER DESIGN CRITERIA

LOCATION	OCCUPANCY HAZARD CLASSIFICATION
Fabrication areas	Ordinary Hazard Group 2
Service corridors	Ordinary Hazard Group 2
Storage rooms without dispensing	Ordinary Hazard Group 2
Storage rooms with dispensing	Extra Hazard Group 2
Corridors	Ordinary Hazard Group 2

[F] 903.2.5.3 Pyroxylin plastics. An *automatic sprinkler system* shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg).

[F] 903.2.6 Group I. An *automatic sprinkler system* shall be provided throughout buildings with a Group I *fire area*.

Exception: An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 or 903.3.1.3 shall be allowed in Group I-1 facilities.

[F] 903.2.7 Group M. An *automatic sprinkler system* shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M *fire area* exceeds 12,000 square feet (1115 m²).
2. A Group M *fire area* is located more than three stories above *grade plane*.
3. The combined area of all Group M *fire areas* on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group M occupancy is used for the display and sale of upholstered furniture.

[F] 903.2.7.1 High-piled storage. An *automatic sprinkler system* shall be provided in accordance with the *International Fire Code* in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

[F] 903.2.8 Group R. An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*.

[F] 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:

1. A Group S-1 *fire area* exceeds 12,000 square feet (1115 m²).
2. A Group S-1 *fire area* is located more than three stories above *grade plane*.
3. The combined area of all Group S-1 *fire areas* on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group S-1 *fire area* used for the storage of commercial trucks or buses where the *fire area* exceeds 5,000 square feet (464 m²).

[F] 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:

1. Buildings having two or more *stories above grade plane*, including basements, with a *fire area* containing a repair garage exceeding 10,000 square feet (929 m²).
2. Buildings no more than one *story above grade plane*, with a *fire area* containing a repair garage exceeding 12,000 square feet (1115 m²).

MEANS OF EGRESS

consideration by the occupant per unit of area factor assigned to the occupancy as set forth in Table 1004.1.1. Where an intended use is not listed in Table 1004.1.1, the *building official* shall establish a use based on a listed use that most nearly resembles the intended use.

Exception: Where *approved* by the *building official*, the actual number of occupants for whom each occupied space, floor or building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design *occupant load*.

1004.2 Increased occupant load. The *occupant load* permitted in any building, or portion thereof, is permitted to be increased from that number established for the occupancies in Table 1004.1.1, provided that all other requirements of the code are also met based on such modified number and the *occupant load* does not exceed one occupant per 7 square feet (0.65 m²) of occupiable floor space. Where required by the *building official*, an *approved aisle*, seating or fixed equipment diagram substantiating any increase in *occupant load* shall be submitted. Where required by the *building official*, such diagram shall be posted.

1004.3 Posting of occupant load. Every room or space that is an assembly occupancy shall have the *occupant load* of the room or space posted in a conspicuous place, near the main *exit* or *exit access doorway* from the room or space. Posted signs shall be of an *approved* legible permanent design and shall be maintained by the owner or authorized agent.

1004.4 Exiting from multiple levels. Where *exits* serve more than one floor, only the *occupant load* of each floor considered individually shall be used in computing the required capacity of the *exits* at that floor, provided that the *exit* capacity shall not decrease in the direction of egress travel.

1004.5 Egress convergence. Where *means of egress* from floors above and below converge at an intermediate level, the capacity of the *means of egress* from the point of convergence shall not be less than the sum of the two floors.

1004.6 Mezzanine levels. The *occupant load* of a *mezzanine* level with egress onto a room or area below shall be added to that room or area's *occupant load*, and the capacity of the exits shall be designed for the total *occupant load* thus established.

1004.7 Fixed seating. For areas having fixed seats and *aisles*, the *occupant load* shall be determined by the number of fixed seats installed therein. The *occupant load* for areas in which fixed seating is not installed, such as waiting spaces and *wheel-chair spaces*, shall be determined in accordance with Section 1004.1.1 and added to the number of fixed seats.

For areas having fixed seating without dividing arms, the *occupant load* shall not be less than the number of seats based on one person for each 18 inches (457 mm) of seating length.

The *occupant load* of seating booths shall be based on one person for each 24 inches (610 mm) of booth seat length measured at the backrest of the seating booth.

1004.8 Outdoor areas. Yards, patios, courts and similar outdoor areas accessible to and usable by the building occupants shall be provided with *means of egress* as required by this chapter. The *occupant load* of such outdoor areas shall be assigned by the *building official* in accordance with the anticipated use.

TABLE 1004.1.1
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTION OF SPACE	FLOOR AREA IN SQ. FT. PER OCCUPANT
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Assembly with fixed seats	See Section 1004.7
Assembly without fixed seats	
Concentrated (chairs only—not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	100 gross
Courtrooms—other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
H-5 Fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Library	
Reading rooms	50 net
Stack area	100 gross
Locker rooms	50 gross
Mercantile	
Areas on other floors	60 gross
Basement and grade floor areas	30 gross
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross

For SI: 1 square foot = 0.0929 m².

shall be the push-pad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

1008.2 Gates. Gates serving the means of egress system shall comply with the requirements of this section. Gates used as a component in a *means of egress* shall conform to the applicable requirements for doors.

Exception: Horizontal sliding or swinging gates exceeding the 4-foot (1219 mm) maximum leaf width limitation are permitted in fences and walls surrounding a stadium.

1008.2.1 Stadiums. Panic hardware is not required on gates surrounding stadiums where such gates are under constant immediate supervision while the public is present, and where safe dispersal areas based on 3 square feet (0.28 m²) per occupant are located between the fence and enclosed space. Such required safe dispersal areas shall not be located less than 50 feet (15 240 mm) from the enclosed space. See Section 1027.6 for *means of egress* from safe dispersal areas.

1008.3 Turnstiles. Turnstiles or similar devices that restrict travel to one direction shall not be placed so as to obstruct any required *means of egress*.

Exception: Each turnstile or similar device shall be credited with no more than a 50-person capacity where all of the following provisions are met:

1. Each device shall turn free in the direction of egress travel when primary power is lost, and upon the manual release by an employee in the area.
2. Such devices are not given credit for more than 50 percent of the required egress capacity.
3. Each device is not more than 39 inches (991 mm) high.
4. Each device has at least 16½ inches (419 mm) clear width at and below a height of 39 inches (991 mm) and at least 22 inches (559 mm) clear width at heights above 39 inches (991 mm).

Where located as part of an *accessible route*, turnstiles shall have at least 36 inches (914 mm) clear at and below a height of 34 inches (864 mm), at least 32 inches (813 mm) clear width between 34 inches (864 mm) and 80 inches (2032 mm) and shall consist of a mechanism other than a revolving device.

1008.3.1 High turnstile. Turnstiles more than 39 inches (991 mm) high shall meet the requirements for revolving doors.

1008.3.2 Additional door. Where serving an *occupant load* greater than 300, each turnstile that is not portable shall have a side-hinged swinging door which conforms to Section 1008.1 within 50 feet (15 240 mm).

**SECTION 1009
STAIRWAYS**

1009.1 Stairway width. The width of *stairways* shall be determined as specified in Section 1005.1, but such width shall not

be less than 44 inches (1118 mm). See Section 1007.3 for *accessible means of egress stairways*.

Exceptions:

1. *Stairways* serving an *occupant load* of less than 50 shall have a width of not less than 36 inches (914 mm).
2. *Spiral stairways* as provided for in Section 1009.9.
3. *Aisle stairs* complying with Section 1028.
4. Where an incline platform lift or stairway chairlift is installed on *stairways* serving occupancies in Group R-3, or within dwelling units in occupancies in Group R-2, a clear passage width not less than 20 inches (508 mm) shall be provided. If the seat and platform can be folded when not in use, the distance shall be measured from the folded position.

1009.2 Headroom. *Stairways* shall have a minimum headroom clearance of 80 inches (2032 mm) measured vertically from a line connecting the edge of the *nosings*. Such headroom shall be continuous above the *stairway* to the point where the line intersects the landing below, one tread depth beyond the bottom riser. The minimum clearance shall be maintained the full width of the *stairway* and landing.

Exceptions:

1. *Spiral stairways* complying with Section 1009.9 are permitted a 78-inch (1981 mm) headroom clearance.
2. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; where the *nosings* of treads at the side of a *flight* extend under the edge of a floor opening through which the *stair* passes, the floor opening shall be allowed to project horizontally into the required headroom a maximum of 4¾ inches (121 mm).

1009.3 Walkline. The walkline across *winder* treads shall be concentric to the direction of travel through the turn and located 12 inches (305 mm) from the side where the *winders* are narrower. The 12-inch (305 mm) dimension shall be measured from the widest point of the clear *stair* width at the walking surface of the *winder*. If *winders* are adjacent within the *flight*, the point of the widest clear *stair* width of the adjacent *winders* shall be used.

1009.4 Stair treads and risers. *Stair* treads and risers shall comply with Sections 1009.4.1 through 1009.4.5.

1009.4.1 Dimension reference surfaces. For the purpose of this section, all dimensions are exclusive of carpets, rugs or runners.

1009.4.2 Riser height and tread depth. *Stair* riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. Rectangular tread depths shall be 11 inches (279 mm) minimum measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. *Winder* treads shall have a mini-

imum tread depth of 11 inches (279 mm) measured between the vertical planes of the foremost projection of adjacent treads at the intersections with the walkline and a minimum tread depth of 10 inches (254 mm) within the clear width of the *stair*.

Exceptions:

1. *Alternating tread devices* in accordance with Section 1009.10.
2. Ship ladders in accordance with Section 1009.11.
3. *Spiral stairways* in accordance with Section 1009.9.
4. *Aisle stairs* in assembly seating areas where the *stair* pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1028.11.2.
5. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be $7\frac{3}{4}$ inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum *winder* tread depth at the walkline shall be 10 inches (254 mm); and the minimum *winder* tread depth shall be 6 inches (152 mm). A *nosing* not less than $\frac{3}{4}$ inch (19.1 mm) but not more than $1\frac{1}{4}$ inches (32 mm) shall be provided on *stairways* with solid risers where the tread depth is less than 11 inches (279 mm).
6. See Section 3404.1 for the replacement of existing *stairways*.
7. In Group I-3 facilities, *stairways* providing access to guard towers, observation stations and control rooms, not more than 250 square feet (23 m²) in area, shall be permitted to have a maximum riser height of 8 inches (203 mm) and a minimum tread depth of 9 inches (229 mm).

1009.4.3 Winder treads. *Winder* treads are not permitted in *means of egress stairways* except within a dwelling unit.

Exceptions:

1. Curved *stairways* in accordance with Section 1009.8.
2. *Spiral stairways* in accordance with Section 1009.9.

1009.4.4 Dimensional uniformity. *Stair* treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed $\frac{3}{8}$ inch (9.5 mm) in any *flight of stairs*. The greatest *winder* tread depth at the walkline within any *flight of stairs* shall not exceed the smallest by more than $\frac{3}{8}$ inch (9.5 mm).

Exceptions:

1. Nonuniform riser dimensions of *aisle stairs* complying with Section 1028.11.2.

2. Consistently shaped *winders*, complying with Section 1009.4.2, differing from rectangular treads in the same *stairway flight*.

Where the bottom or top riser adjoins a sloping *public way*, walkway or driveway having an established grade and serving as a landing, the bottom or top riser is permitted to be reduced along the slope to less than 4 inches (102 mm) in height, with the variation in height of the bottom or top riser not to exceed one unit vertical in 12 units horizontal (8-percent slope) of *stairway* width. The *nosings* or leading edges of treads at such nonuniform height risers shall have a distinctive marking stripe, different from any other *nosing* marking provided on the *stair flight*. The distinctive marking stripe shall be visible in descent of the *stair* and shall have a slip-resistant surface. Marking stripes shall have a width of at least 1 inch (25 mm) but not more than 2 inches (51 mm).

1009.4.5 Profile. The radius of curvature at the leading edge of the tread shall be not greater than $\frac{9}{16}$ inch (14.3 mm). Beveling of *nosings* shall not exceed $\frac{9}{16}$ inch (14.3 mm). Risers shall be solid and vertical or sloped under the tread above from the underside of the *nosing* above at an angle not more than 30 degrees (0.52 rad) from the vertical. The leading edge (*nosings*) of treads shall project not more than $1\frac{1}{4}$ inches (32 mm) beyond the tread below and all projections of the leading edges shall be of uniform size, including the leading edge of the floor at the top of a *flight*.

Exceptions:

1. Solid risers are not required for *stairways* that are not required to comply with Section 1007.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3 or in Group F, H and S occupancies other than areas accessible to the public. There are no restrictions on the size of the opening in the riser.
3. Solid risers are not required for *spiral stairways* constructed in accordance with Section 1009.9.
4. Solid risers are not required for *alternating tread devices* constructed in accordance with Section 1009.10.

1009.5 Stairway landings. There shall be a floor or landing at the top and bottom of each *stairway*. The width of landings shall not be less than the width of *stairways* they serve. Every landing shall have a minimum dimension measured in the direction of travel equal to the width of the *stairway*. Such dimension need not exceed 48 inches (1219 mm) where the *stairway* has a straight run. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing. When *wheelchair spaces* are required on the *stairway* landing in accordance with Section 1007.6.1, the *wheelchair space* shall not be located in the required width

of the landing and doors shall not swing over the *wheelchair spaces*.

Exception: *Aisle stairs* complying with Section 1028.

1009.6 Stairway construction. All *stairways* shall be built of materials consistent with the types permitted for the type of construction of the building, except that wood handrails shall be permitted for all types of construction.

1009.6.1 Stairway walking surface. The walking surface of treads and landings of a *stairway* shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. *Stairway* treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached.

Exceptions:

1. Openings in stair walking surfaces shall be a size that does not permit the passage of $\frac{1}{2}$ -inch-diameter (12.7 mm) sphere. Elongated openings shall be placed so that the long dimension is perpendicular to the direction of travel.
2. In Group F, H and S occupancies, other than areas of parking structures accessible to the public, openings in treads and landings shall not be prohibited provided a sphere with a diameter of $1\frac{1}{8}$ inches (29 mm) cannot pass through the opening.

1009.6.2 Outdoor conditions. Outdoor *stairways* and outdoor approaches to *stairways* shall be designed so that water will not accumulate on walking surfaces.

1009.6.3 Enclosures under stairways. The walls and soffits within enclosed usable spaces under enclosed and unenclosed *stairways* shall be protected by 1-hour fire-resistance-rated construction or the *fire-resistance rating* of the stairway enclosure, whichever is greater. Access to the enclosed space shall not be directly from within the stair enclosure.

Exception: Spaces under *stairways* serving and contained within a single residential dwelling unit in Group R-2 or R-3 shall be permitted to be protected on the enclosed side with $\frac{1}{2}$ -inch (12.7 mm) gypsum board.

There shall be no enclosed usable space under *exterior exit stairways* unless the space is completely enclosed in 1-hour fire-resistance-rated construction. The open space under *exterior stairways* shall not be used for any purpose.

1009.7 Vertical rise. A *flight of stairs* shall not have a vertical rise greater than 12 feet (3658 mm) between floor levels or landings.

Exceptions:

1. *Aisle stairs* complying with Section 1028.
2. *Alternating tread devices* used as a *means of egress* shall not have a rise greater than 20 feet (6096 mm) between floor levels or landings.

1009.8 Curved stairways. Curved *stairways* with *winder* treads shall have treads and risers in accordance with Section

1009.4 and the smallest radius shall not be less than twice the required width of the *stairway*.

Exception: The radius restriction shall not apply to curved *stairways* for occupancies in Group R-3 and within individual dwelling units in occupancies in Group R-2.

1009.9 Spiral stairways. *Spiral stairways* are permitted to be used as a component in the *means of egress* only within dwelling units or from a space not more than 250 square feet (23 m²) in area and serving not more than five occupants, or from galleries, catwalks and *gridirons* in accordance with Section 1015.6.

A *spiral stairway* shall have a $7\frac{1}{2}$ -inch (191 mm) minimum clear tread depth at a point 12 inches (305 mm) from the narrow edge. The risers shall be sufficient to provide a headroom of 78 inches (1981 mm) minimum, but riser height shall not be more than $9\frac{1}{2}$ inches (241 mm). The minimum *stairway* clear width at and below the *handrail* shall be 26 inches (660 mm).

1009.10 Alternating tread devices. *Alternating tread devices* are limited to an element of a *means of egress* in buildings of Groups F, H and S from a mezzanine not more than 250 square feet (23 m²) in area and which serves not more than five occupants; in buildings of Group I-3 from a guard tower, observation station or control room not more than 250 square feet (23 m²) in area and for access to unoccupied roofs.

1009.10.1 Handrails of alternating tread devices. *Handrails* shall be provided on both sides of *alternating tread devices* and shall comply with Section 1012.

1009.10.2 Treads of alternating tread devices. *Alternating tread devices* shall have a minimum projected tread of 5 inches (127 mm), a minimum tread depth of $8\frac{1}{2}$ inches (216 mm), a minimum tread width of 7 inches (178 mm) and a maximum riser height of $9\frac{1}{2}$ inches (241 mm). The projected tread depth shall be measured horizontally between the vertical planes of the foremost projections of adjacent treads. The riser height shall be measured vertically between the leading edges of adjacent treads. The combination of riser height and projected tread depth provided shall result in an alternating tread device angle that complies with Section 1002. The initial tread of the device shall begin at the same elevation as the platform, landing or floor surface.

Exception: *Alternating tread devices* used as an element of a *means of egress* in buildings from a mezzanine area not more than 250 square feet (23 m²) in area which serves not more than five occupants shall have a minimum projected tread of $8\frac{1}{2}$ inches (216 mm) with a minimum tread depth of $10\frac{1}{2}$ inches (267 mm). The rise to the next alternating tread surface should not be more than 8 inches (203 mm).

1009.11 Ship ladders. Ship ladders are permitted to be used in Group I-3 as a component of a *means of egress* to and from control rooms or elevated facility observation stations not more than 250 square feet (23 m²) with not more than three occupants and for access to unoccupied roofs.

Ship ladders shall have a minimum tread depth of 5 inches (127 mm). The tread shall be projected such that the total of the

tread depth plus the *nosing* projection is no less than 8½ inches (216 mm). The maximum riser height shall be 9½ inches (241 mm).

Handrails shall be provided on both sides of ship ladders. The minimum clear width at and below the *handrails* shall be 20 inches (508 mm).

1009.12 Handrails. *Stairways* shall have *handrails* on each side and shall comply with Section 1012. Where glass is used to provide the *handrail*, the *handrail* shall also comply with Section 2407.

Exceptions:

1. *Handrails* for *aisle stairs* are not required where permitted by Section 1028.13.
2. *Stairways* within dwelling units, *spiral stairways* and *aisle stairs* serving seating only on one side are permitted to have a *handrail* on one side only.
3. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require *handrails*.
4. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require *handrails*.
5. Changes in room elevations of three or fewer risers within dwelling units and sleeping units in Group R-2 and R-3 do not require *handrails*.

1009.13 Stairway to roof. In buildings four or more stories above *grade plane*, one *stairway* shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope). In buildings without an occupied roof, access to the roof from the top story shall be permitted to be by an *alternating tread device*.

1009.13.1 Roof access. Where a *stairway* is provided to a roof, access to the roof shall be provided through a *penthouse* complying with Section 1509.2.

Exception: In buildings without an occupied roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 m²) in area and having a minimum dimension of 2 feet (610 mm).

1009.13.2 Protection at roof hatch openings. Where the roof hatch opening providing the required access is located within 10 feet (3049 mm) of the roof edge, such roof access or roof edge shall be protected by *guards* installed in accordance with the provisions of Section 1013.

1009.14 Stairway to elevator equipment. Roofs and *penthouses* containing elevator equipment that must be accessed for maintenance are required to be accessed by a *stairway*.

SECTION 1010 RAMPS

1010.1 Scope. The provisions of this section shall apply to *ramps* used as a component of a *means of egress*.

Exceptions:

1. Other than *ramps* that are part of the *accessible routes* providing access in accordance with Sections 1108.2 through 1108.2.4 and 1108.2.6, ramped *aisles* within assembly rooms or spaces shall conform with the provisions in Section 1028.11.
2. Curb *ramps* shall comply with ICC A117.1.
3. Vehicle ramps in parking garages for pedestrian *exit access* shall not be required to comply with Sections 1010.3 through 1010.9 when they are not an *accessible route* serving *accessible* parking spaces, other required accessible elements or part of an *accessible means of egress*.

1010.2 Slope. *Ramps* used as part of a *means of egress* shall have a running slope not steeper than one unit vertical in 12 units horizontal (8-percent slope). The slope of other pedestrian *ramps* shall not be steeper than one unit vertical in eight units horizontal (12.5-percent slope).

Exception: *Aisle ramp* slope in occupancies of Group A or assembly occupancies accessory to Group E occupancies shall comply with Section 1028.11.

1010.3 Cross slope. The slope measured perpendicular to the direction of travel of a *ramp* shall not be steeper than one unit vertical in 48 units horizontal (2-percent slope).

1010.4 Vertical rise. The rise for any *ramp* run shall be 30 inches (762 mm) maximum.

1010.5 Minimum dimensions. The minimum dimensions of *means of egress ramps* shall comply with Sections 1010.5.1 through 1010.5.3.

1010.5.1 Width. The minimum width of a *means of egress ramp* shall not be less than that required for *corridors* by Section 1018.2. The clear width of a *ramp* between *handrails*, if provided, or other permissible projections shall be 36 inches (914 mm) minimum.

1010.5.2 Headroom. The minimum headroom in all parts of the *means of egress ramp* shall not be less than 80 inches (2032 mm).

1010.5.3 Restrictions. *Means of egress ramps* shall not reduce in width in the direction of egress travel. Projections into the required *ramp* and landing width are prohibited. Doors opening onto a landing shall not reduce the clear width to less than 42 inches (1067 mm).

1010.6 Landings. *Ramps* shall have landings at the bottom and top of each *ramp*, points of turning, entrance, exits and at doors. Landings shall comply with Sections 1010.6.1 through 1010.6.5.

1013.3 Opening limitations. Required *guards* shall not have openings which allow passage of a sphere 4 inches (102 mm) in diameter from the walking surface to the required *guard* height.

Exceptions:

1. From a height of 36 inches (914 mm) to 42 inches (1067 mm), *guards* shall not have openings which allow passage of a sphere $4\frac{3}{8}$ inches (111 mm) in diameter.
2. The triangular openings at the open sides of a *stair*, formed by the riser, tread and bottom rail shall not allow passage of a sphere 6 inches (152 mm) in diameter.
3. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, *guards* shall not have openings which allow passage of a sphere 21 inches (533 mm) in diameter.
4. In areas that are not open to the public within occupancies in Group I-3, F, H or S, and for *alternating tread devices* and ship ladders, *guards* shall not have openings which allow passage of a sphere 21 inches (533 mm) in diameter.
5. In assembly seating areas, *guards* at the end of *aisles* where they terminate at a fascia of boxes, balconies and galleries shall not have openings which allow passage of a sphere 4 inches in diameter (102 mm) up to a height of 26 inches (660 mm). From a height of 26 inches (660 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, *guards* shall not have openings which allow passage of a sphere 8 inches (203 mm) in diameter.
6. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, *guards* on the open sides of *stairs* shall not have openings which allow passage of a sphere $4\frac{3}{8}$ (111 mm) inches in diameter.

1013.4 Screen porches. Porches and decks which are enclosed with insect screening shall be provided with *guards* where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.

1013.5 Mechanical equipment. *Guards* shall be provided where appliances, equipment, fans, roof hatch openings or other components that require service are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The *guard* shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter. The *guard* shall extend not less than 30 inches (762 mm) beyond each end of such appliance, equipment, fan or component.

1013.6 Roof access. *Guards* shall be provided where the roof hatch opening is located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The *guard* shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter.

SECTION 1014 EXIT ACCESS

1014.1 General. The *exit access* shall comply with the applicable provisions of Sections 1003 through 1013. *Exit access* arrangement shall comply with Sections 1014 through 1019.

1014.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section.

1. Egress from a room or space shall not pass through adjoining or intervening rooms or areas, except where such adjoining rooms or areas and the area served are accessory to one or the other, are not a Group H occupancy and provide a discernible path of egress travel to an *exit*.

Exception: *Means of egress* are not prohibited through adjoining or intervening rooms or spaces in a Group H, S or F occupancy when the adjoining or intervening rooms or spaces are the same or a lesser hazard occupancy group.

2. An *exit access* shall not pass through a room that can be locked to prevent egress.
3. *Means of egress* from dwelling units or sleeping areas shall not lead through other sleeping areas, toilet rooms or bathrooms.
4. Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes.

Exceptions:

1. *Means of egress* are not prohibited through a kitchen area serving adjoining rooms constituting part of the same dwelling unit or sleeping unit.
2. *Means of egress* are not prohibited through stockrooms in Group M occupancies when all of the following are met:
 - 2.1. The stock is of the same hazard classification as that found in the main retail area;
 - 2.2. Not more than 50 percent of the *exit access* is through the stockroom;
 - 2.3. The stockroom is not subject to locking from the egress side; and
 - 2.4. There is a demarcated, minimum 44-inch-wide (1118 mm) *aisle* defined by full- or partial-height fixed walls or similar construction that will maintain the required width and lead directly from the retail area to the *exit* without obstructions.

1014.2.1 Multiple tenants. Where more than one tenant occupies any one floor of a building or structure, each tenant space, dwelling unit and sleeping unit shall be provided with access to the required *exits* without passing through adjacent tenant spaces, dwelling units and sleeping units.

Exception: The *means of egress* from a smaller tenant space shall not be prohibited from passing through a larger adjoining tenant space where such rooms or spaces of the smaller tenant occupy less than 10 percent of the area of the larger tenant space through which they pass; are the same or similar occupancy group; a discernable path of egress travel to an *exit* is provided; and the *means of egress* into the adjoining space is not subject to locking from the egress side. A required *means of egress* serving the larger tenant space shall not pass through the smaller tenant space or spaces.

1014.2.2 Group I-2. Habitable rooms or *suites* in Group I-2 occupancies shall have an *exit access* door leading directly to a *corridor*:

Exception: Rooms with *exit* doors opening directly to the outside at ground level.

1014.2.3 Suites in patient sleeping areas. Patient sleeping areas in Group I-2 occupancies shall be permitted to be divided into *suites* with one intervening room if one of the following conditions is met:

1. The intervening room within the *suite* is not used as an *exit access* for more than eight patient beds.
2. The arrangement of the *suite* allows for direct and constant visual supervision by nursing personnel.

1014.2.3.1 Area. *Suites* of sleeping rooms shall not exceed 5,000 square feet (465 m²).

1014.2.3.2 Exit access. Any patient sleeping room, or any *suite* that includes patient sleeping rooms, of more than 1,000 square feet (93 m²) shall have at least two *exit access* doors remotely located from each other.

1014.2.3.3 Travel distance. The travel distance between any point in a *suite* of sleeping rooms and an *exit access* door of that *suite* shall not exceed 100 feet (30 480 mm).

1014.2.4 Suites in areas other than patient sleeping areas. Areas other than patient sleeping areas in Group I-2 occupancies shall be permitted to be divided into *suites*.

1014.2.4.1 Area. *Suites* of rooms, other than patient sleeping rooms, shall not exceed 10,000 square feet (929 m²).

1014.2.4.2 Exit access. Any room or *suite* of rooms, other than patient sleeping rooms, of more than 2,500 square feet (232 m²) shall have at least two *exit access* doors remotely located from each other.

1014.2.4.3 One intervening room. For rooms other than patient sleeping rooms, *suites* of rooms are permitted to have one intervening room if the travel distance within the *suite* to the *exit access* door is not greater than 100 feet (30 480 mm).

1014.2.4.4 Two intervening rooms. For rooms other than patient sleeping rooms located within a *suite*, *exit access* travel from within the *suite* shall be permitted through two intervening rooms where the travel distance to the *exit access* door is not greater than 50 feet (15 240 mm).

1014.2.5 Exit access through suites. *Exit access* from all other portions of a building not classified as a *suite* in a Group I-2 occupancy shall not pass through a *suite*.

1014.2.6 Travel distance. The travel distance between any point in a Group I-2 occupancy patient sleeping room and an *exit access* door in that room shall not exceed 50 feet (15 240 mm).

1014.2.7 Separation. *Suites* in Group I-2 occupancies shall be separated from other portions of the building by a *smoke partition* complying with Section 711.

1014.3 Common path of egress travel. In occupancies other than Groups H-1, H-2 and H-3, the *common path of egress travel* shall not exceed 75 feet (22 860 mm). In Group H-1, H-2 and H-3 occupancies, the *common path of egress travel* shall not exceed 25 feet (7 620 mm). For *common path of egress travel* in Group A occupancies and assembly occupancies accessory to Group E occupancies having fixed seating, see Section 1028.8.

Exceptions:

1. The length of a *common path of egress travel* in Group B, F and S occupancies shall not be more than 100 feet (30 480 mm), provided that the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1.
2. Where a tenant space in Group B, S and U occupancies has an *occupant load* of not more than 30, the length of a *common path of egress travel* shall not be more than 100 feet (30 480 mm).
3. The length of a *common path of egress travel* in a Group I-3 occupancy shall not be more than 100 feet (30 480 mm).
4. The length of a common path of egress travel in a Group R-2 occupancy shall not be more than 125 feet (38 100 mm), provided that the building is protected throughout with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.

**SECTION 1015
EXIT AND EXIT ACCESS DOORWAYS**

1015.1 Exits or exit access doorways from spaces. Two *exits* or *exit access doorways* from any space shall be provided where one of the following conditions exists:

Exception: Group I-2 occupancies shall comply with Section 1014.2.2 through 1014.2.7.

1. The *occupant load* of the space exceeds one of the values in Table 1015.1.

Exception: In Group R-2 and R-3 occupancies, one *means of egress* is permitted within and from individual dwelling units with a maximum *occupant load* of 20 where the dwelling unit is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.

2. The *common path of egress travel* exceeds one of the limitations of Section 1014.3.
3. Where required by Section 1015.3, 1015.4, 1015.5, 1015.6 or 1015.6.1.

Where a building contains mixed occupancies, each individual occupancy shall comply with the applicable requirements for that occupancy. Where applicable, cumulative *occupant loads* from adjacent occupancies shall be considered in accordance with the provisions of Section 1004.1.

**TABLE 1015.1
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY**

OCCUPANCY	MAXIMUM OCCUPANT LOAD
A, B, E ^a , F, M, U	49
H-1, H-2, H-3	3
H-4, H-5, I-1, I-3, I-4, R	10
S	29

a. Day care maximum occupant load is 10.

1015.1.1 Three or more exits or exit access doorways. Three *exits* or *exit access doorways* shall be provided from any space with an *occupant load* of 501 to 1,000. Four *exits* or *exit access doorways* shall be provided from any space with an *occupant load* greater than 1,000.

1015.2 Exit or exit access doorway arrangement. Required *exits* shall be located in a manner that makes their availability obvious. *Exits* shall be unobstructed at all times. *Exit* and *exit access doorways* shall be arranged in accordance with Sections 1015.2.1 and 1015.2.2.

1015.2.1 Two exits or exit access doorways. Where two *exits* or *exit access doorways* are required from any portion of the *exit access*, the *exit doors* or *exit access doorways* shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between *exit doors* or *exit access doorways*. Interlocking or *scissor stairs* shall be counted as one *exit stairway*.

Exceptions:

1. Where *exit enclosures* are provided as a portion of the required *exit* and are interconnected by a 1-hour fire-resistance-rated *corridor* conforming to the requirements of Section 1018, the required *exit separation* shall be measured along the shortest direct line of travel within the *corridor*.
2. Where a building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance

of the *exit doors* or *exit access doorways* shall not be less than one-third of the length of the maximum overall diagonal dimension of the area served.

1015.2.2 Three or more exits or exit access doorways. Where access to three or more *exits* is required, at least two *exit doors* or *exit access doorways* shall be arranged in accordance with the provisions of Section 1015.2.1.

1015.3 Boiler, incinerator and furnace rooms. Two *exit access doorways* are required in boiler, incinerator and furnace rooms where the area is over 500 square feet (46 m²) and any fuel-fired equipment exceeds 400,000 British thermal units (Btu) (422 000 KJ) input capacity. Where two *exit access doorways* are required, one is permitted to be a fixed ladder or an *alternating tread device*. *Exit access doorways* shall be separated by a horizontal distance equal to one-half the length of the maximum overall diagonal dimension of the room.

1015.4 Refrigeration machinery rooms. Machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two *exits* or *exit access doors*. Where two *exit access doorways* are required, one such doorway is permitted to be served by a fixed ladder or an *alternating tread device*. *Exit access doorways* shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of room.

All portions of machinery rooms shall be within 150 feet (45 720 mm) of an *exit* or *exit access doorway*. An increase in travel distance is permitted in accordance with Section 1016.1.

Doors shall swing in the direction of egress travel, regardless of the *occupant load* served. Doors shall be tight fitting and self-closing.

1015.5 Refrigerated rooms or spaces. Rooms or spaces having a floor area larger than 1,000 square feet (93 m²), containing a refrigerant evaporator and maintained at a temperature below 68°F (20°C), shall have access to not less than two *exits* or *exit access doors*.

Travel distance shall be determined as specified in Section 1016.1, but all portions of a refrigerated room or space shall be within 150 feet (45 720 mm) of an *exit* or *exit access door* where such rooms are not protected by an *approved automatic sprinkler system*. Egress is allowed through adjoining refrigerated rooms or spaces.

Exception: Where using refrigerants in quantities limited to the amounts based on the volume set forth in the *International Mechanical Code*.

1015.6 Stage means of egress. Where two *means of egress* are required, based on the stage size or *occupant load*, one *means of egress* shall be provided on each side of the stage.

1015.6.1 Gallery, gridiron and catwalk means of egress. The *means of egress* from lighting and access catwalks, galleries and *gridirons* shall meet the requirements for occupancies in Group F-2.

Exceptions:

1. A minimum width of 22 inches (559 mm) is permitted for lighting and access catwalks.
2. *Spiral stairs* are permitted in the *means of egress*.

3. *Stairways* required by this subsection need not be enclosed.
4. *Stairways* with a minimum width of 22 inches (559 mm), ladders or *spiral stairs* are permitted in the *means of egress*.
5. A second *means of egress* is not required from these areas where a means of escape to a floor or to a roof is provided. Ladders, *alternating tread devices* or *spiral stairs* are permitted in the means of escape.
6. Ladders are permitted in the *means of egress*.

**SECTION 1016
EXIT ACCESS TRAVEL DISTANCE**

1016.1 Travel distance limitations. *Exits* shall be so located on each *story* such that the maximum length of *exit access* travel, measured from the most remote point within a *story* along the natural and unobstructed path of egress travel to an *exterior exit* door at the *level of exit discharge*, an entrance to a vertical *exit enclosure*, an *exit passageway*, a *horizontal exit*, an *exterior exit stairway* or an *exterior exit ramp*, shall not exceed the distances given in Table 1016.1.

Exceptions:

1. Travel distance in *open parking garages* is permitted to be measured to the closest riser of open *exit stairways*.
2. In outdoor facilities with open *exit access* components and open *exterior exit stairways* or *exit ramps*, travel distance is permitted to be measured to the closest riser of an *exit stairway* or the closest slope of the *exit ramp*.
3. In other than occupancy Groups H and I, the *exit access* travel distance to a maximum of 50 percent of the *exits* is permitted to be measured from the most remote point within a building to an *exit* using unenclosed *exit access stairways* or *ramps* when connecting a maximum of two stories. The two connected stories shall be provided with at least two *means of egress*. Such interconnected stories shall not be open to other stories.
4. In other than occupancy Groups H and I, *exit access* travel distance is permitted to be measured from the most remote point within a building to an *exit* using unenclosed *exit access stairways* or *ramps* in the first and second stories above *grade plane* in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1. The first and second stories above *grade plane* shall be provided with at least two *means of egress*. Such interconnected stories shall not be open to other stories.

Where applicable, travel distance on unenclosed *exit access stairways* or *ramps* and on connecting stories shall also be included in the travel distance measurement. The measurement along *stairways* shall be made on a plane parallel and tangent to the *stair tread nosings* in the center of the *stairway*.

**TABLE 1016.1
EXIT ACCESS TRAVEL DISTANCE^a**

OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200	250 ^b
I-1	Not Permitted	250 ^c
B	200	300 ^c
F-2, S-2, U	300	400 ^c
H-1	Not Permitted	75 ^c
H-2	Not Permitted	100 ^c
H-3	Not Permitted	150 ^c
H-4	Not Permitted	175 ^c
H-5	Not Permitted	200 ^c
I-2, I-3, I-4	Not Permitted	200 ^c

For SI: 1 foot = 304.8 mm.

- a. See the following sections for modifications to exit access travel distance requirements:
 - Section 402.4: For the distance limitation in malls.
 - Section 404.9: For the distance limitation through an atrium space.
 - Section 407.4: For the distance limitation in Group I-2.
 - Sections 408.6.1 and 408.8.1: For the distance limitations in Group I-3.
 - Section 411.4: For the distance limitation in special amusement buildings.
 - Section 1014.2.2: For the distance limitation in Group I-2 hospital suites.
 - Section 1015.4: For the distance limitation in refrigeration machinery rooms.
 - Section 1015.5: For the distance limitation in refrigerated rooms and spaces.
 - Section 1021.2: For buildings with one exit.
 - Section 1028.7: For increased limitation in assembly seating.
 - Section 1028.7: For increased limitation for assembly open-air seating.
 - Section 3103.4: For temporary structures.
 - Section 3104.9: For pedestrian walkways.
- b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.
- c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

1016.2 Exterior egress balcony increase. Travel distances specified in Section 1016.1 shall be increased up to an additional 100 feet (30 480 mm) provided the last portion of the *exit access* leading to the *exit* occurs on an exterior egress balcony constructed in accordance with Section 1019. The length of such balcony shall not be less than the amount of the increase taken.

**SECTION 1017
AISLES**

1017.1 General. *Aisles* serving as a portion of the *exit access* in the *means of egress* system shall comply with the requirements of this section. *Aisles* shall be provided from all occupied portions of the *exit access* which contain seats, tables, furnishings, displays and similar fixtures or equipment. *Aisles* serving assembly areas shall comply with Section 1028. *Aisles* serving reviewing stands, *grandstands* and *bleachers* shall also comply with Section 1028. The required width of *aisles* shall be unobstructed.

Exception: Doors complying with Section 1005.2.

1017.2 Aisles in Groups B and M. In Group B and M occupancies, the minimum clear *aisle* width shall be determined by Section 1005.1 for the *occupant load* served, but shall not be less than 36 inches (914 mm).

Exception: Nonpublic *aisles* serving less than 50 people and not required to be *accessible* by Chapter 11 need not exceed 28 inches (711 mm) in width.

1017.3 Aisle accessways in Group M. An *aisle accessway* shall be provided on at least one side of each element within the *merchandise pad*. The minimum clear width for an *aisle accessway* not required to be *accessible* shall be 30 inches (762 mm). The required clear width of the *aisle accessway* shall be measured perpendicular to the elements and merchandise within the *merchandise pad*. The 30-inch (762 mm) minimum clear width shall be maintained to provide a path to an adjacent *aisle* or *aisle accessway*. The common path of travel shall not exceed 30 feet (9144 mm) from any point in the *merchandise pad*.

Exception: For areas serving not more than 50 occupants, the common path of travel shall not exceed 75 feet (22 880 mm).

1017.4 Seating at tables. Where seating is located at a table or counter and is adjacent to an *aisle* or *aisle accessway*, the measurement of required clear width of the *aisle* or *aisle accessway* shall be made to a line 19 inches (483 mm) away from and parallel to the edge of the table or counter. The 19-inch (483 mm) distance shall be measured perpendicular to the side of the table or counter. In the case of other side boundaries for *aisle* or *aisle accessways*, the clear width shall be measured to walls, edges of seating and tread edges, except that *handrail* projections are permitted.

Exception: Where tables or counters are served by fixed seats, the width of the *aisle accessway* shall be measured from the back of the seat.

1017.4.1 Aisle accessway for tables and seating. *Aisle accessways* serving arrangements of seating at tables or counters shall have sufficient clear width to conform to the capacity requirements of Section 1005.1 but shall not have less than the appropriate minimum clear width specified in Section 1017.4.2.

1017.4.2 Table and seating accessway width. *Aisle accessways* shall provide a minimum of 12 inches (305 mm) of width plus 1/2 inch (12.7 mm) of width for each additional 1 foot (305 mm), or fraction thereof, beyond 12 feet (3658 mm) of *aisle accessway* length measured from the center of the seat farthest from an *aisle*.

Exception: Portions of an *aisle accessway* having a length not exceeding 6 feet (1829 mm) and used by a total of not more than four persons.

1017.4.3 Table and seating aisle accessway length. The length of travel along the *aisle accessway* shall not exceed 30 feet (9144 mm) from any seat to the point where a person has a choice of two or more paths of egress travel to separate *exits*.

**SECTION 1018
CORRIDORS**

1018.1 Construction. *Corridors* shall be fire-resistance rated in accordance with Table 1018.1. The *corridor* walls required to be fire-resistance rated shall comply with Section 709 for *fire partitions*.

Exceptions:

1. A *fire-resistance rating* is not required for *corridors* in an occupancy in Group E where each room that is used for instruction has at least one door opening directly to the exterior and rooms for assembly purposes have at least one-half of the required *means of egress* doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
2. A *fire-resistance rating* is not required for *corridors* contained within a dwelling or sleeping unit in an occupancy in Group R.
3. A *fire-resistance rating* is not required for *corridors* in *open parking garages*.
4. A *fire-resistance rating* is not required for *corridors* in an occupancy in Group B which is a space requiring only a single *means of egress* complying with Section 1015.1.

**TABLE 1018.1
CORRIDOR FIRE-RESISTANCE RATING**

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

a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.

b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8.

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

1018.2 Corridor width. The minimum *corridor* width shall be as determined in Section 1005.1, but not less than 44 inches (1118 mm).

Exceptions:

1. Twenty-four inches (610 mm)—For access to and utilization of electrical, mechanical or plumbing systems or equipment.
2. Thirty-six inches (914 mm)—With a required occupant capacity of less than 50.
3. Thirty-six inches (914 mm)—Within a dwelling unit.
4. Seventy-two inches (1829 mm)—In Group E with a *corridor* having a required capacity of 100 or more.
5. Seventy-two inches (1829 mm)—In *corridors* and areas serving gurney traffic in occupancies where patients receive outpatient medical care, which causes the patient to be not capable of self-preservation.
6. Ninety-six inches (2438 mm)—In Group I-2 in areas where required for bed movement.

1018.3 Corridor obstruction. The required width of *corridors* shall be unobstructed.

Exception: Doors complying with Section 1005.2.

1018.4 Dead ends. Where more than one *exit* or *exit access doorway* is required, the *exit access* shall be arranged such that there are no dead ends in *corridors* more than 20 feet (6096 mm) in length.

Exceptions:

1. In occupancies in Group I-3 of Occupancy Condition 2, 3 or 4 (see Section 308.4), the dead end in a *corridor* shall not exceed 50 feet (15 240 mm).
2. In occupancies in Groups B, E, F, I-1, M, R-1, R-2, R-4, S and U, where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, the length of the dead-end *corridors* shall not exceed 50 feet (15 240 mm).
3. A dead-end *corridor* shall not be limited in length where the length of the dead-end *corridor* is less than 2.5 times the least width of the dead-end *corridor*.

1018.5 Air movement in corridors. *Corridors* shall not serve as supply, return, exhaust, relief or ventilation air ducts.

Exceptions:

1. Use of a *corridor* as a source of makeup air for exhaust systems in rooms that open directly onto such *corridors*, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such *corridor* is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the *corridor*.
2. Where located within a dwelling unit, the use of *corridors* for conveying return air shall not be prohibited.

3. Where located within tenant spaces of 1,000 square feet (93 m²) or less in area, utilization of *corridors* for conveying return air is permitted.

4. Incidental air movement from pressurized rooms within health care facilities, provided that the *corridor* is not the primary source of supply or return to the room.

1018.5.1 Corridor ceiling. Use of the space between the *corridor* ceiling and the floor or roof structure above as a return air plenum is permitted for one or more of the following conditions:

1. The *corridor* is not required to be of fire-resistance-rated construction;
2. The *corridor* is separated from the plenum by fire-resistance-rated construction;
3. The air-handling system serving the *corridor* is shut down upon activation of the air-handling unit *smoke detectors* required by the *International Mechanical Code*;
4. The air-handling system serving the *corridor* is shut down upon detection of sprinkler waterflow where the building is equipped throughout with an *automatic sprinkler system*; or
5. The space between the *corridor* ceiling and the floor or roof structure above the *corridor* is used as a component of an *approved* engineered smoke control system.

1018.6 Corridor continuity. Fire-resistance-rated corridors shall be continuous from the point of entry to an *exit*, and shall not be interrupted by intervening rooms.

Exception: Foyers, lobbies or reception rooms constructed as required for *corridors* shall not be construed as intervening rooms.

SECTION 1019 EGRESS BALCONIES

1019.1 General. Balconies used for egress purposes shall conform to the same requirements as *corridors* for width, headroom, dead ends and projections.

1019.2 Wall separation. Exterior egress balconies shall be separated from the interior of the building by walls and opening protectives as required for *corridors*.

Exception: Separation is not required where the exterior egress balcony is served by at least two *stairs* and a dead-end travel condition does not require travel past an unprotected opening to reach a *stair*.

1019.3 Openness. The long side of an egress balcony shall be at least 50 percent open, and the open area above the guards shall be so distributed as to minimize the accumulation of smoke or toxic gases.

**SECTION 1020
EXITS**

1020.1 General. Exits shall comply with Sections 1020 through 1026 and the applicable requirements of Sections 1003 through 1013. An exit shall not be used for any purpose that interferes with its function as a means of egress. Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge.

1020.2 Exterior exit doors. Buildings or structures used for human occupancy shall have at least one exterior door that meets the requirements of Section 1008.1.1.

1020.2.1 Detailed requirements. Exterior exit doors shall comply with the applicable requirements of Section 1008.1.

1020.2.2 Arrangement. Exterior exit doors shall lead directly to the exit discharge or the public way.

**SECTION 1021
NUMBER OF EXITS AND CONTINUITY**

1021.1 Exits from stories. All spaces within each story shall have access to the minimum number of approved independent exits as specified in Table 1021.1 based on the occupant load of the story. For the purposes of this chapter, occupied roofs shall be provided with exits as required for stories.

Exceptions:

1. As modified by Section 403.5.2.
2. As modified by Section 1021.2.
3. Exit access stairways and ramps that comply with Exception 3 or 4 of Section 1016.1 shall be permitted to provide the minimum number of approved independent exits required by Table 1021.1 on each story.
4. In Group R-2 and R-3 occupancies, one means of egress is permitted within and from individual dwelling units with a maximum occupant load of 20 where

the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

5. Within a story, rooms and spaces complying with Section 1015.1 with exits that discharge directly to the exterior at the level of exit discharge, are permitted to have one exit.

**TABLE 1021.1
MINIMUM NUMBER OF EXITS FOR OCCUPANT LOAD**

OCCUPANT LOAD (persons per story)	MINIMUM NUMBER OF EXITS (per story)
1-500	2
501-1,000	3
More than 1,000	4

1021.1.1 Exits maintained. The required number of exits from any story shall be maintained until arrival at grade or the public way.

1021.1.2 Parking structures. Parking structures shall not have less than two exits from each parking tier, except that only one exit is required where vehicles are mechanically parked. Vehicle ramps shall not be considered as required exits unless pedestrian facilities are provided.

1021.1.3 Helistops. The means of egress from helistops shall comply with the provisions of this chapter, provided that landing areas located on buildings or structures shall have two or more exits. For landing platforms or roof areas less than 60 feet (18 288 mm) long, or less than 2,000 square feet (186 m²) in area, the second means of egress is permitted to be a fire escape, alternating tread device or ladder leading to the floor below.

1021.2 Single exits. Only one exit shall be required from Group R-3 occupancy buildings or from stories of other buildings as indicated in Table 1021.2. Occupancies shall be permitted to have a single exit in buildings otherwise required to have more than one exit if the areas served by the single exit do not

**TABLE 1021.2
STORIES WITH ONE EXIT**

STORY	OCCUPANCY	MAXIMUM OCCUPANTS (OR DWELLING UNITS) PER FLOOR AND TRAVEL DISTANCE
First story or basement	A, B ^d , E ^e , F ^d , M, U, S ^d	49 occupants and 75 feet travel distance
	H-2, H-3	3 occupants and 25 feet travel distance
	H-4, H-5, I, R	10 occupants and 75 feet travel distance
	S ^a	29 occupants and 100 feet travel distance
Second story	B ^b , F, M, S ^a	29 occupants and 75 feet travel distance
	R-2	4 dwelling units and 50 feet travel distance
Third story	R-2 ^c	4 dwelling units and 50 feet travel distance

For SI: 1 foot = 304.8 mm.

- a. For the required number of exits for parking structures, see Section 1021.1.2.
- b. For the required number of exits for air traffic control towers, see Section 412.3.
- c. 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 1029.
- d. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall have a maximum travel distance of 100 feet.
- e. Day care occupancies shall have a maximum occupant load of 10.

exceed the limitations of Table 1021.2. Mixed occupancies shall be permitted to be served by single *exits* provided each individual occupancy complies with the applicable requirements of Table 1021.2 for that occupancy. Where applicable, cumulative *occupant loads* from adjacent occupancies shall be considered in accordance with the provisions of Section 1004.1. Basements with a single *exit* shall not be located more than one *story* below *grade plane*.

1021.3 Exit continuity. *Exits* shall be continuous from the point of entry into the *exit* to the *exit discharge*.

1021.4 Exit door arrangement. *Exit* door arrangement shall meet the requirements of Sections 1015.2 through 1015.2.2.

SECTION 1022 EXIT ENCLOSURES

1022.1 Enclosures required. *Interior exit stairways* and *interior exit ramps* shall be enclosed with *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 712, or both. *Exit enclosures* shall have a *fire-resistance rating* of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the *exit enclosure* shall include any basements but not any *mezzanines*. *Exit enclosures* shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours. *Exit enclosures* shall lead directly to the exterior of the building or shall be extended to the exterior of the building with an *exit passageway* conforming to the requirements of Section 1023, except as permitted in Section 1027.1. An *exit enclosure* shall not be used for any purpose other than *means of egress*.

Exceptions:

1. In all occupancies, other than Group H and I occupancies, a *stairway* is not required to be enclosed when the *stairway* serves an *occupant load* of less than 10 and the *stairway* complies with either Item 1.1 or 1.2. In all cases, the maximum number of connecting open stories shall not exceed two.
 - 1.1. The *stairway* is open to not more than one *story* above its *level of exit discharge*; or
 - 1.2. The *stairway* is open to not more than one *story* below its *level of exit discharge*.
2. *Exits* in buildings of Group A-5 where all portions of the *means of egress* are essentially open to the outside need not be enclosed.
3. *Stairways* serving and contained within a single residential dwelling unit or sleeping unit in Group R-1, R-2 or R-3 occupancies are not required to be enclosed.
4. *Stairways* in open parking structures that serve only the parking structure are not required to be enclosed.
5. *Stairways* in Group I-3 occupancies, as provided for in Section 408.3.8, are not required to be enclosed.
6. *Means of egress stairways* as required by Sections 410.5.3 and 1015.6.1 are not required to be enclosed.

7. *Means of egress stairways* from balconies, galleries or press boxes as provided for in Section 1028.5.1 are not required to be enclosed.

1022.2 Termination. *Exit enclosures* shall terminate at an *exit discharge* or a *public way*.

Exception: An *exit enclosure* shall be permitted to terminate at an *exit passageway* complying with Section 1023, provided the *exit passageway* terminates at an *exit discharge* or a *public way*.

1022.2.1 Extension. Where an *exit enclosure* is extended to an *exit discharge* or a *public way* by an *exit passageway*, the *exit enclosure* shall be separated from the *exit passageway* by a *fire barrier* constructed in accordance with Section 707 or a *horizontal assembly* constructed in accordance with Section 712, or both. The *fire-resistance rating* shall be at least equal to that required for the *exit enclosure*. A *fire door assembly* complying with Section 715.4 shall be installed in the *fire barrier* to provide a *means of egress* from the *exit enclosure* to the *exit passageway*. Openings in the *fire barrier* other than the *fire door assembly* are prohibited. Penetrations of the *fire barrier* are prohibited.

Exception: Penetrations of the *fire barrier* in accordance with Section 1022.4 shall be permitted.

1022.3 Openings and penetrations. *Exit enclosure* opening protectives shall be in accordance with the requirements of Section 715.

Openings in *exit enclosures* other than unprotected exterior openings shall be limited to those necessary for *exit access* to the enclosure from normally occupied spaces and for egress from the enclosure.

Elevators shall not open into an *exit enclosure*.

1022.4 Penetrations. Penetrations into and openings through an *exit enclosure* are prohibited except for required *exit* doors, equipment and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication systems and electrical raceway serving the *exit enclosure* and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 713. There shall be no penetrations or communication openings, whether protected or not, between adjacent *exit enclosures*.

1022.5 Ventilation. Equipment and ductwork for *exit enclosure* ventilation as permitted by Section 1022.4 shall comply with one of the following items:

1. Such equipment and ductwork shall be located exterior to the building and shall be directly connected to the *exit enclosure* by ductwork enclosed in construction as required for shafts.
2. Where such equipment and ductwork is located within the *exit enclosure*, the intake air shall be taken directly from the outdoors and the exhaust air shall be discharged directly to the outdoors, or such air shall be conveyed through ducts enclosed in construction as required for shafts.
3. Where located within the building, such equipment and ductwork shall be separated from the remainder of the

or portions of work areas, other than raised courtroom stations, that are less than 300 square feet (30 m²) in area and elevated 7 inches (178 mm) or more above the ground or finish floor where the elevation is essential to the function of the space shall be exempt from all requirements.

1103.2.4 Detached dwellings. Detached one- and two-family dwellings and accessory structures, and their associated sites and facilities, are not required to be *accessible*.

1103.2.5 Utility buildings. Occupancies in Group U are exempt from the requirements of this chapter other than the following:

1. In agricultural buildings, access is required to paved work areas and areas open to the general public.
2. Private garages or carports that contain required *accessible* parking.

1103.2.6 Construction sites. Structures, sites and equipment directly associated with the actual processes of construction including, but not limited to, scaffolding, bridging, materials hoists, materials storage or construction trailers are not required to be *accessible*.

1103.2.7 Raised areas. Raised areas used primarily for purposes of security, life safety or fire safety including, but not limited to, observation galleries, prison guard towers, fire towers or lifeguard stands, are not required to be *accessible* or to be served by an *accessible route*.

1103.2.8 Limited access spaces. Nonoccupiable spaces accessed only by ladders, catwalks, crawl spaces, freight elevators or very narrow passageways are not required to be *accessible*.

1103.2.9 Equipment spaces. Spaces frequented only by personnel for maintenance, repair or monitoring of equipment are not required to be *accessible*. Such spaces include, but are not limited to, elevator pits, elevator penthouses, mechanical, electrical or communications equipment rooms, piping or equipment catwalks, water or sewage treatment pump rooms and stations, electric substations and transformer vaults, and highway and tunnel utility facilities.

1103.2.10 Single-occupant structures. Single-occupant structures accessed only by passageways below grade or elevated above grade including, but not limited to, toll booths that are accessed only by underground tunnels, are not required to be *accessible*.

1103.2.11 Residential Group R-1. Buildings of Group R-1 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 be *accessible*.

1103.2.12 Day care facilities. Where a day care facility (Groups A-3, E, I-4 and R-3) is part of a *dwelling unit*, only the portion of the structure utilized for the day care facility is required to be *accessible*.

1103.2.13 Live/work units. In live/work units constructed in accordance with Section 419, the portion of the unit utilized for nonresidential use is required to be *accessible*. The residential portion of the live/work unit is required to be evaluated separately in accordance with Sections 1107.6.2 and 1107.7.

1103.2.14 Detention and correctional facilities. In detention and correctional facilities, *common use* areas that are used only by inmates or detainees and security personnel, and that do not serve holding cells or housing cells required to be *accessible*, are not required to be *accessible* or to be served by an *accessible route*.

1103.2.15 Walk-in coolers and freezers. Walk-in coolers and freezers intended for employee use only are not required to be *accessible*.

SECTION 1104 ACCESSIBLE ROUTE

1104.1 Site arrival points. *Accessible routes* within the site shall be provided from public transportation stops; *accessible* parking; *accessible* passenger loading zones; and public streets or sidewalks to the *accessible* building entrance served.

Exception: Other than in buildings or facilities containing or serving *Type B units*, an *accessible route* shall not be required between site arrival points and the building or facility entrance if the only means of access between them is a vehicular way not providing for pedestrian access.

1104.2 Within a site. At least one *accessible route* shall connect *accessible* buildings, *accessible* facilities, *accessible* elements and *accessible* spaces that are on the same site.

Exception: An *accessible route* is not required between *accessible* buildings, *accessible* facilities, *accessible* elements and *accessible* spaces that have, as the only means of access between them, a vehicular way not providing for pedestrian access.

1104.3 Connected spaces. When a building or portion of a building is required to be *accessible*, an *accessible route* shall be provided to each portion of the building, to *accessible* building entrances connecting *accessible pedestrian walkways* and the public way.

Exceptions:

1. In assembly areas with fixed seating, an *accessible route* shall not be required to serve levels where *wheelchair spaces* are not provided.
2. In Group I-2 facilities, doors to *sleeping units* shall be exempted from the requirements for maneuvering clearance at the room side provided the door is a minimum of 44 inches (1118 mm) in width.

1104.3.1 Employee work areas. *Common use circulation paths* within *employee work areas* shall be *accessible routes*.

Exceptions:

1. *Common use circulation paths*, located within *employee work areas* that are less than 300 square feet (27.9 m²) in size and defined by permanently installed partitions, counters, casework or furnishings, shall not be required to be *accessible routes*.
2. *Common use circulation paths*, located within *employee work areas*, that are an integral compo-

ment of equipment, shall not be required to be *accessible routes*.

3. *Common use circulation paths*, located within exterior *employee work areas* that are fully exposed to the weather, shall not be required to be *accessible routes*.

1104.3.2 Press boxes. Press boxes in assembly areas shall be on an *accessible route*.

Exceptions:

1. An *accessible route* shall not be required to press boxes in *bleachers* that have points of entry at only one level, provided that the aggregate area of all press boxes is 500 square feet (46 m²) maximum.
2. An *accessible route* shall not be required to free-standing press boxes that are elevated above grade 12 feet (3660 mm) minimum provided that the aggregate area of all press boxes is 500 square feet (46 m²) maximum.

1104.4 Multilevel buildings and facilities. At least one *accessible route* shall connect each *accessible level*, including *mezzanines*, in multilevel buildings and facilities.

Exceptions:

1. An *accessible route* is not required to stories and *mezzanines* that have an aggregate area of not more than 3,000 square feet (278.7 m²) and are located above and below *accessible levels*. This exception shall not apply to:
 - 1.1. Multiple tenant facilities of Group M occupancies containing five or more tenant spaces;
 - 1.2. Levels containing offices of health care providers (Group B or I); or
 - 1.3. Passenger transportation facilities and airports (Group A-3 or B).
2. Levels that do not contain *accessible elements* or other spaces as determined by Section 1107 or 1108 are not required to be served by an *accessible route* from an *accessible level*.
3. In air traffic control towers, an *accessible route* is not required to serve the cab and the floor immediately below the cab.
4. Where a two-story building or facility has one *story* with an *occupant load* of five or fewer persons that does not contain *public use space*, that *story* shall not be required to be connected by an *accessible route* to the *story* above or below.
5. Vertical access to elevated employee work stations within a courtroom is not required at the time of initial construction, provided a *ramp*, lift or elevator complying with ICC A117.1 can be installed without requiring reconfiguration or extension of the courtroom or extension of the electrical system.

1104.5 Location. *Accessible routes* shall coincide with or be located in the same area as a general *circulation path*. Where the *circulation path* is interior, the *accessible route* shall also be

interior. Where only one *accessible route* is provided, the *accessible route* shall not pass through kitchens, storage rooms, restrooms, closets or similar spaces.

Exceptions:

1. *Accessible routes* from parking garages contained within and serving *Type B units* are not required to be interior.
2. A single *accessible route* is permitted to pass through a kitchen or storage room in an *Accessible unit*, *Type A unit* or *Type B unit*.

1104.6 Security barriers. Security barriers including, but not limited to, security bollards and security check points shall not obstruct a required *accessible route* or *accessible means of egress*.

Exception: Where security barriers incorporate elements that cannot comply with these requirements, such as certain metal detectors, fluoroscopes or other similar devices, the *accessible route* shall be permitted to be provided adjacent to security screening devices. The *accessible route* shall permit persons with disabilities passing around security barriers to maintain visual contact with their personal items to the same extent provided others passing through the security barrier.

SECTION 1105 ACCESSIBLE ENTRANCES

1105.1 Public entrances. In addition to *accessible entrances* required by Sections 1105.1.1 through 1105.1.6, at least 60 percent of all *public entrances* shall be *accessible*.

Exceptions:

1. An *accessible entrance* is not required to areas not required to be *accessible*.
2. Loading and *service entrances* that are not the only entrance to a tenant space.

1105.1.1 Parking garage entrances. Where provided, direct access for pedestrians from parking structures to buildings or facility entrances shall be *accessible*.

1105.1.2 Entrances from tunnels or elevated walkways. Where direct access is provided for pedestrians from a pedestrian tunnel or elevated walkway to a building or facility, at least one entrance to the building or facility from each tunnel or walkway shall be *accessible*.

1105.1.3 Restricted entrances. Where *restricted entrances* are provided to a building or facility, at least one *restricted entrance* to the building or facility shall be *accessible*.

1105.1.4 Entrances for inmates or detainees. Where entrances used only by inmates or detainees and security personnel are provided at judicial facilities, detention facilities or correctional facilities, at least one such entrance shall be *accessible*.

1105.1.5 Service entrances. If a *service entrance* is the only entrance to a building or a tenant space in a facility, that entrance shall be *accessible*.

CHAPTER 29 PLUMBING SYSTEMS

SECTION 2901 GENERAL

[P] 2901.1 **Scope.** The provisions of this chapter and the *International Plumbing Code* shall govern the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing equipment and systems. Plumbing systems and equipment shall be constructed, installed and maintained in accordance with the *International Plumbing Code*. Private sewage disposal systems shall conform to the *International Private Sewage Disposal Code*.

SECTION 2902 MINIMUM PLUMBING FACILITIES

[P] 2902.1 **Minimum number of fixtures.** Plumbing fixtures shall be provided for the type of occupancy and in the minimum number shown in Table 2902.1. Types of occupancies not shown in Table 2902.1 shall be considered individually by the *building official*. The number of occupants shall be determined by this code. Occupancy classification shall be determined in accordance with Chapter 3.

[P] TABLE 2902.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a
(See Sections 2902.2 and 2902.3)

No.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS SEE SECTION 419.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAINS ^{e, f} (SEE SECTION 410.1 OF THE INTERNATIONAL PLUMBING CODE)	OTHER
				MALE	FEMALE	MALE	FEMALE			
1	Assembly	A-1 ^d	Theaters and other buildings for the performing arts and motion pictures	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		A-2 ^d	Nightclubs, bars, taverns, dance halls and buildings for similar purposes	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
			Restaurants, banquet halls and food courts	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		A-3 ^d	Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
			Passenger terminals and transportation facilities	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
			Places of worship and other religious services	1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink
		A-4	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
		A-5	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink

(continued)

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[P] TABLE 2902.1—continued
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a

No.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS SEE SECTION 419.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS OR SHOWERS	DRINKING FOUNTAINS ^{b, f} (SEE SECTION 410.1 OF THE INTERNATIONAL PLUMBING CODE)	OTHER
				MALE	FEMALE	MALE	FEMALE			
2	Business	B	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink
3	Educational	E	Educational facilities	1 per 50		1 per 50		—	1 per 100	1 service sink
4	Factory and Industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100		1 per 100		See Section 411 of the <i>International Plumbing Code</i>	1 per 400	1 service sink
5	Institutional	I-1	Residential care	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		I-2	Hospitals, ambulatory nursing home patients ^b	1 per per room ^c		1 per per room ^c		1 per 15	1 per 100	1 service sink
			Employees, other than residential care ^b	1 per 25		1 per 35		—	1 per 100	—
			Visitors, other than residential care	1 per 75		1 per 100		—	1 per 500	—
		I-3	Prisons ^b	1 per cell		1 per cell		1 per 15	1 per 100	1 service sink
		I-3	Reformatories, detention centers and correctional centers ^b	1 per 15		1 per 15		1 per 15	1 per 100	1 service sink
			Employees ^b	1 per 25		1 per 35		—	1 per 100	—
	I-4	Adult day care and child care	1 per 15		1 per 15		1	1 per 100	1 service sink	
6	Mercantile	M	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500		1 per 750		—	1 per 1,000	1 service sink
7	Residential	R-1	Hotels, motels, boarding houses (transient)	1 per sleeping unit		1 per sleeping unit		1 per sleeping unit	—	1 service sink
		R-2	Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		R-2	Apartment house	1 per dwelling unit		1 per dwelling unit		1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units

(continued)

[P] TABLE 2902.1—continued
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a

No.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	WATER CLOSETS (URINALS SEE SECTION 419.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAINS ^{e, f} (SEE SECTION 410.1 OF THE INTERNATIONAL PLUMBING CODE)	OTHER
				MALE	FEMALE	MALE	FEMALE			
7	Residential	R-3	Congregate living facilities with 16 or fewer persons	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		R-4	Residential care/assisted living facilities	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
8	Storage	S-1 S-2	Structures for the storage of goods, warehouses, storehouses and freight depots, low and moderate hazard	1 per 100		1 per 100		See Section 411 of the <i>International Plumbing Code</i>	1 per 1,000	1 service sink

- a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.
- b. Toilet facilities for employees shall be separate from facilities for inmates or patients.
- c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted where such room is provided with direct access from each patient sleeping unit and with provisions for privacy.
- d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.
- e. The minimum number of required drinking fountains shall comply with Table 2902.1 and Chapter 11.
- f. Drinking fountains are not required for an occupant load of 15 or fewer.

[P] 2902.1.1 **Fixture calculations.** To determine the *occupant load* of each sex, the total *occupant load* shall be divided in half. To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the *occupant load* of each sex in accordance with Table 2902.1. Fractional numbers resulting from applying the fixture ratios of Table 2902.1 shall be rounded up to the next whole number. For calculations involving multiple occupancies, such fractional numbers for each occupancy shall first be summed and then rounded up to the next whole number.

Exception: The total *occupant load* shall not be required to be divided in half where *approved* statistical data indicate a distribution of the sexes of other than 50 percent of each sex.

2902.1.2 **Family or assisted use toilet and bath fixtures.** Fixtures located within family or assisted use toilet and bathing rooms required by Section 1109.2.1 are permitted to be included in the number of required fixtures for either the male or female occupants in assembly and mercantile occupancies.

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

Exceptions:

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

[P] 2902.3 **Required public toilet facilities.** Customers, patrons and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public utilization. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 2902.1 for all users. Employees shall be provided with toilet facilities in all occupancies. Employee toilet facilities shall either be separate or combined employee and public toilet facilities.

[P] 2902.3.1 **Access.** The route to the public toilet facilities required by Section 2902.3 shall not pass through kitchens, storage rooms or closets. Access to the required facilities shall be from within the building or from the exterior of the building. All routes shall comply with the accessibility requirements of this code. The public shall have access to the required toilet facilities at all times that the building is occupied.

[P] 2902.3.2 **Location of toilet facilities in occupancies other than covered mall buildings.** In occupancies other than *covered mall buildings*, the required public and employee toilet facilities shall be located not more than one *story* above or below the space required to be provided with toilet facilities and the path of travel to such facilities shall not exceed a distance of 500 feet (152 400 mm).

Exception: The location and maximum travel distances to required employee facilities in factory and industrial occupancies are permitted to exceed that required by this section, provided that the location and maximum travel distance are *approved*.

[P] 2902.3.3 **Location of toilet facilities in covered mall buildings.** In *covered mall buildings*, the required public and employee toilet facilities shall be located not more than one *story* above or below the space required to be provided with toilet facilities, and the path of travel to such facilities

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shall not exceed a distance of 300 feet (91 440 mm). In *covered mall buildings*, the required facilities shall be based on total square footage, and facilities shall be installed in each individual store or in a central toilet area located in accordance with this section. The maximum travel distance to the central toilet facilities in *covered mall buildings* shall be measured from the main entrance of any store or tenant space. In *covered mall buildings*, where employees' toilet facilities are not provided in the individual store, the maximum travel distance shall be measured from the employees' work area of the store or tenant space.

[P] 2902.3.4 Pay facilities. Where pay facilities are installed, such facilities shall be in excess of the required minimum facilities. Required facilities shall be free of charge.

[P] 2902.4 Signage. A legible sign designating the sex shall be provided in a readily visible location near the entrance to each toilet facility. Signs for *accessible* toilet facilities shall comply with ICC A117.1.

2902.4.1 Directional signage. Directional signage indicating the route to the public facilities shall be posted in accordance with Section 3107. Such signage shall be located in a *corridor* or aisle, at the entrance to the facilities for customers and visitors.

2. Toilet rooms located in day care and child care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.

[P] 2903.3 Interior Finish. Interior finish surfaces of toilet rooms shall comply with Section 1210.

SECTION 2903 TOILET ROOM REQUIREMENTS

[P] 2903.1 Water closet compartment. Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

Exceptions:

1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.
2. Toilet rooms located in day care and child care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.
3. This provision is not applicable to toilet areas located within Group I-3 housing areas.

[P] 2903.2 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The walls or partitions shall begin at a height not more than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal a minimum of 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished back wall surface, whichever is greater.

Exceptions:

1. Urinal partitions shall not be required in a single occupant or family or assisted use toilet room with a lockable door.

Table PM 405.6
Minimum Habitable Space (Square Feet)

Space	Number of Occupants						
	1	2	3	4	5	6	Or More
Living room, dining room and kitchen combined	100	150	250	250	300	300	300
Bedroom	100	150	200	250	300	350	350 +(a)
Total:	200	300	450	500	600	650	650 +(a)

(a) = plus 50 additional square feet per occupant over 6