



# Significant Changes to the 2013 California Building Code

Gary Dunger  
Chief Fire & Life Safety Officer  
Office of Statewide Health Planning & Development



# Topics

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



Chapters 1 and 2



# Administration



# Change Indicators



Symbols in the margins indicate the status of code changes as follows:

- || This symbol indicates that a change has been made to a California amendment.
- > This symbol indicates deletion of California amendment language.
- | This symbol indicates that a change has been made to ICC model code language.
- ➡ This symbol indicates deletion of ICC model code language.
- \* Text or table has been relocated to elsewhere in code. See pages v - vi.
- \*\* Text or table has been relocated from elsewhere in the code. See pages v - vi.

# Conflicting Provisions between Codes and Standards



- **102.4 Referenced Codes and Standards.** The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 *through* 102.4.4.
- **102.4.1 Conflicts.** Where ~~differences~~ conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.
- **102.4.2 Provisions in Referenced Codes and Standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code or the International Codes listed in Section 101.4, the provisions of this code or the International Codes listed in Section 101.4, as applicable, shall take precedence over the provisions in the referenced code or standard.



# Definitions



- For consistency and usability purposes, all definitions of terms specifically defined in the IBC have now been moved to a single location in Chapter 2.
- Numerous definitions adopted by DSA Access Compliance have been added.
- OSHPD enforces **DSA Access Compliance** and **SFM** provisions of the CBC.

# Definitions



- **AISLE.** An unenclosed exit access component that defines and provides a path of egress travel. *[DSA-AC] A circulation path between objects such as seats, tables, merchandise, equipment, displays, shelves, desks, etc., that provides clearances in compliance with this code.*
- **AUTOMATIC DOOR.** *[DSA-AC]A door equipped with a power-operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat or manual switch.*

# Definitions



- **CORRIDOR.** An enclosed exit access component that defines and provides a path of egress travel ~~to an exit~~.
- **DIRECT ACCESS. [SFM]** *A path of travel from a space to an immediately adjacent space through an opening in the common wall between the two spaces.*

# Definitions



- **EXIT.** That portion of a means of egress system ~~which is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives as required to provide a protected path of egress travel~~ between the exit access and the exit discharge or public way, Exits components include exterior exit doors at the level of exit discharge, ~~vertical exit enclosures~~ interior exit stairways, interior exit ramps, exit passageways, exterior exit stairways and exterior exit ramps and horizontal exits.

# Definitions



- **EXIT ACCESS DOORWAY.** A door or access point along the path of egress travel from an occupied room, area or space where the path of egress enters an intervening room, corridor, ~~unenclosed~~ exit access stair or ~~unenclosed~~ exit access ramp.
- **EXIT ACCESS RAMP.** An interior ramp that is not a required interior exit ramp.
- **EXIT ACCESS STAIRWAY.** An interior stairway that is not a required interior exit stairway.

# Definitions



- ~~**EXIT ENCLOSURE.** An exit component that is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives, and provides for a protected path of egress travel in a vertical or horizontal direction to the exit discharge or the public way.~~
- **INTERIOR EXIT RAMP.** An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and provides for a protected path of egress travel to the exit discharge or public way.
- **INTERIOR EXIT STAIRWAY.** An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and provides for a protected path of egress travel to the exit discharge or public way.

# Definitions



- **PENTHOUSE.** An enclosed, unoccupied rooftop structure ~~above the roof of a building, other than a tank, tower, spire, dome cupola or bulkhead.~~ used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, and vertical shaft openings.
- **ROOFTOP STRUCTURE.** An ~~enclosed~~ structure erected on ~~or above~~ top of the roof deck or on top of any part of a building.

# Definitions



- **RESTRAINT.** [SFM] ~~Restraint shall mean~~ The physical retention of a person within a room, cell or cell block, holding cells, temporary holding cell, rooms or area, holding facility, secure interview rooms, courthouse holding facilities, courtroom docks, or similar buildings or portions thereof by any means, or within the exterior walls of a building by means of locked doors inoperable by the person restrained. Restraint shall also mean the physical binding, strapping or similar restriction of any person in a chair, walker, bed or other contrivance for the purpose of deliberately restricting the free movement of ambulatory persons.

# Definitions



- **SPECIAL INSPECTION.** Inspection of construction requiring the expertise of an approved special inspector in order to ensure compliance with this code and the approved construction documents.
  - **Continuous special inspection.** Special inspection by the special inspector who is present when and where the work to be inspected is being performed.
  - **Periodic special inspection.** Special inspection by the special inspector who is intermittently present where the work to be inspected has been or is being performed.
- **SPECIAL INSPECTOR.** A qualified person employed or retained by an approved agency and approved by the building official as having the competence necessary to inspect a particular type of construction requiring special inspection.

Chapters 3 through 6



# Building Planning



# Use & Occupancy



- **303.3 Assembly Group A-2.** Assembly uses intended for food and/or drink consumption including, but not limited to:
  - Banquet halls
  - Casinos (gaming areas)
  - Night clubs
  - Restaurants, cafeterias, and similar dining facilities (including associated commercial kitchens)
  - Taverns and bars
- **306.2 Moderate-hazard Factory Industrial, Group F-1.** Factory industrial uses which are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:
  - Food processing and commercial kitchens not associated with restaurants, cafeterias, and similar dining facilities.

# Use & Occupancy



- **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 harbored for medical treatment or other care or supervision is provided to persons who are or are not capable of self-preservation without physical assistance or in which persons 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. *Restraint shall not be permitted in any building except in Group I-3 occupancies constructed for such use, see Section 408.1.1.*

*Where occupancies house both ambulatory and nonambulatory persons, the more restrictive requirements shall apply.*

# Use & Occupancy

- ~~308.3.1~~ 308.2 **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.~~ The following terms are defined in Chapter 2:
- 24-HOUR CARE
- CUSTODIAL CARE
- DETOXIFICATION FACILITIES
- CHILD FOSTER CARE FACILITIES
- HOSPITALS AND MENTAL PSYCHIATRIC HOSPITALS
- INCAPABLE OF SELF PRESERVATION
- MEDICAL CARE
- NURSING HOMES



## Definitions

- **24 HOUR CARE.** The actual time that a person is an occupant within a facility for the purpose of receiving care. It shall not include a facility that is open for 24 hours and is capable of providing care to someone visiting the facility during any segment of the 24 hours.
- **CUSTODIAL CARE.** Assistance with day-to-day living tasks; such assistance with cooking, taking medication, bathing, using toilet facilities, and other tasks of daily living. Custodial care include occupants who evacuate at a slower rate and/or who have mental and psychiatric complications.



## Definitions

- **DETOXIFICATION FACILITIES.** Facilities that ~~serve patients who are~~ provided treatment for substance abuse ~~on a 24-hour basis and~~ serving care recipients who are incapable of self-preservation or who are harmful to themselves or others.
- ~~CHILD~~ **FOSTER CARE FACILITIES.** Facilities that provide care ~~on a 24-hour basis~~ to more than five children, 2½ years of age or less.



## Definitions

- **HOSPITALS AND MENTAL PSYCHIATRIC 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 or classified as nonambulatory or bedridden. Facilities that provide care or treatment for the medical, psychiatric, obstetrical, or surgical treatment of care recipients that are incapable of self-preservation.~~
- **INCAPABLE OF SELF PRESERVATION**. Persons because of age; physical limitations; mental limitations; chemical dependency, or medical treatment cannot respond as an individual to an emergency situation.



## Definitions

- **MEDICAL CARE.** Care involving medical or surgical procedures, nursing, or for psychiatric purposes.
- **NURSING HOMES.** ~~Nursing homes are long-term care facilities on a 24-hour basis,~~ Facilities that provide care, including both intermediate care facilities and skilled nursing facilities **servicing more than five persons and where** any of the persons are incapable of self-preservation or *classified as nonambulatory or bedridden.*



# Use & Occupancy



- **308.4 Institutional Group I-2.** This occupancy shall include buildings and structures used for medical, ~~surgical, psychiatric, nursing or custodial~~ care ~~for persons on a 24-hour basis for more than five persons who are not capable of~~ incapable of self-preservation *or classified as nonambulatory or bedridden*. This group shall include, but not be limited to, the following:
  - Foster care facilities
  - Detoxification facilities
  - Hospitals
  - Nursing homes
  - Psychiatric hospitals

## Use and occupancy

- **404.6 Enclosure of atriums.** Atrium spaces shall be separated from adjacent spaces by a 1-hour fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both.

**Exception:** A fire barrier is not required where a glass wall forming a smoke partition is provided. The glass wall shall comply with all of the following:

1. Automatic sprinklers are provided along both sides of the separation wall and doors, or on the room side...
2. A fire barrier is not required where a glass-block wall assembly...
3. ~~In other than Group I and R-2.1 occupancies~~ A fire barrier is not required between the atrium and the adjoining spaces of any three floors of the atrium provided such spaces are accounted for in the design of the smoke control system.



## Use & Occupancy



- **407.2.1 Waiting and similar areas.** Waiting areas and similar spaces constructed as required for corridors shall be permitted to be open to a corridor, only where all of the following criteria are met:
  1. The spaces are not occupied as care recipient's patient sleeping units rooms, treatment rooms, incidental uses *listed in Table 509 508.2.5* , or hazardous uses.
  2. The open space is protected by an automatic fire detection system installed in accordance with Section 907.
  3. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic fire detection system installed in accordance with Section 907, **or** the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with Section 903.3.2.
  4. The space is arranged so as not to obstruct access to the required exits.
  5. *Each space is located to permit direct visual supervision by the facility staff.*

# Use & Occupancy



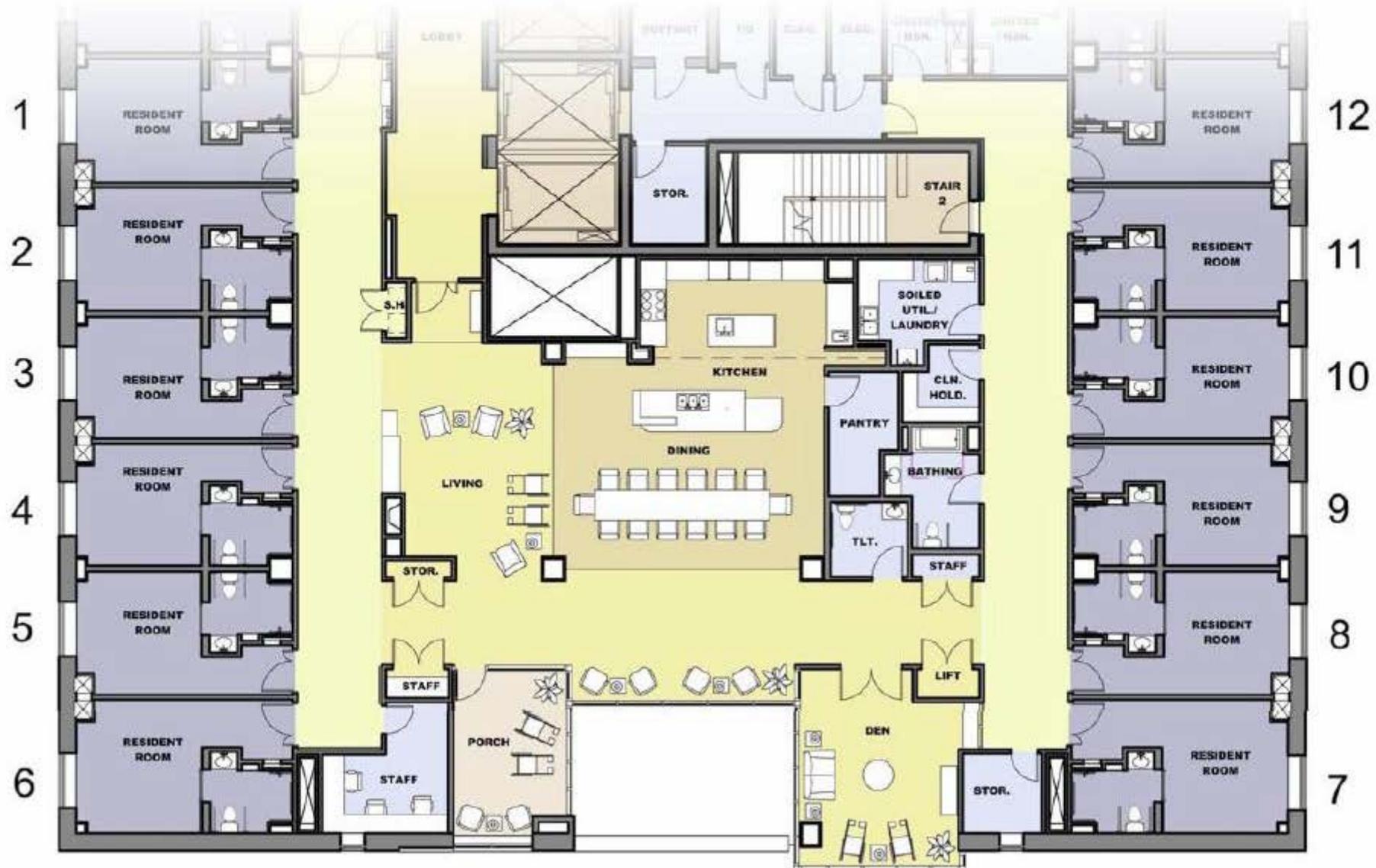
- *In the design of health care facilities, it is desirable to have small waiting areas and similar spaces open to the corridor. Such seating areas or gathering spaces provide residents and others a place to visit outside of the patient rooms. This provides physical and social benefits to the residents by encouraging them to leave their rooms and socialize with others.*
- *Patient rooms, as well as hazardous and incidental accessory occupancy areas, cannot be open to the corridors under this section. In addition, treatment areas, other than those for mental health treatment, cannot be open to corridors (see also the suite provisions in Section 407.4.3). Areas similar to waiting rooms could include common dining areas, reception or information stations and patient check-in stations.*

# Use & Occupancy



- *If a dining area is open to a corridor, any associated food preparation area should probably remain separated from the corridor. General hospital office areas beyond those associated with waiting or reception areas also remain separated from the corridor.*
- *To reduce the likelihood that a fire within such an open space could develop beyond the incipient stage, thereby jeopardizing the integrity of the corridor, the area is to be equipped with an automatic fire detection system (see Section 907). The detectors are to be located so as to provide the appropriate coverage to the space.*

# Typical Resident Floor





## Use & Occupancy



- **407.2.2 Nurses' stations.** Spaces for doctors' and nurses' charting, communications and related clerical areas shall be permitted to be open to, or located within the corridor, provided the required construction along the perimeter of the corridor is maintained. Construction of nurses' stations or portions of nurses' stations, within the envelope of the corridor is not required to be fire-resistive rated.

Nurses' stations in new and existing facilities see the California Code of Regulations, Title 19, Division 1, Chapter 1, Subchapter 1, Article 3, **Section 3.11(d)** for storage and equipment requirements.

In detention or secure mental health facilities, the provisions above applies to enclosed nurses' stations within the corridor.

## Use & Occupancy



- **407.2.4 Gift shops.** Gift shops ~~less than 500 square feet in area and associated storage that are less than 500 square feet in~~ area shall be permitted to be open to the corridor where such spaces are constructed as required for corridors.

# Use & Occupancy



- **407.3.1 Corridor doors.** Corridor doors ~~in fully sprinklered buildings~~, other than those in a wall required to be rated by Section ~~508.2.5~~ 509.4 or for the enclosure of a vertical opening or an exit, shall not have a required fire protection rating and shall not be required to be equipped with self-closing or automatic-closing devices, but shall provide an effective barrier to limit the transfer of smoke and shall be equipped with positive latching. Roller latches are not permitted. Other doors shall conform to Section ~~715.4~~ 716.5. *In Group I-2 Occupancies, self-closing or automatic-closing devices are not required on corridor doors to patient sleeping rooms, treatment rooms, and offices located in areas specified in Sections 1224 and 1225, excluding offices specified in Sections 1224.21 and 1225.8.*

# Use & Occupancy



- **407.3.1.1 Swing of corridor doors.** Corridor doors, other than those equipped with self-closing or automatic-closing devices shall not swing into the required width of corridors.

**Exception:** Doors may swing into required width of corridors in I-3 facilities as long as 44" clear is maintained with any one door open 90 degrees and clear corridor widths required in Chapter 12 can be maintained with doors open 180 degrees.

# Use & Occupancy



- \*\* • 407.4 Means of egress. Group I-2 occupancies shall be provided with means of egress complying with Chapter 10 and Sections 407.4.1 through 407.4.3.
- 407.4.1 Direct access to a corridor. Habitable rooms in Group I-2 occupancies shall have an exit access door leading directly to a corridor.

## Exceptions:

1. Rooms with exit doors opening directly to the outside at ground level.
2. Rooms arranged as care suites complying with Section 407.4.3

Relocated and reformatted from Section 1014.2

# Use & Occupancy



- *Direct access to the corridor system from a patient sleeping room or treatment room is a key component to staff access and patient movement. The term “habitable rooms” is not intended to include individual bathrooms, closets and similar spaces, as well as briefly occupied spaces, such as control rooms in radiology and small storage/supply rooms. Habitable areas would include staff areas within the patient treatment and sleeping areas (i.e., nutrition rooms, clean/dirty linen rooms, staff lounge, staff work areas).*
- *The exceptions would allow direct access to the outside rather than needing to go back into the corridor; or access through a portion of a care suite before accessing the corridor.*

# Use & Occupancy



- **407.4.1.1 Locking devices.** Locking devices that restrict access to ~~the patients~~ a care recipient's room from the corridor and that are operable only by staff from the corridor side shall not restrict the means of egress from the ~~patient~~ care recipient's room ~~except for patient rooms in mental health facilities~~.

## Exceptions:

1. This section shall not apply to rooms in psychiatric treatment and similar care areas.
2. Locking arrangements in accordance with Section **1008.1.9.6**.

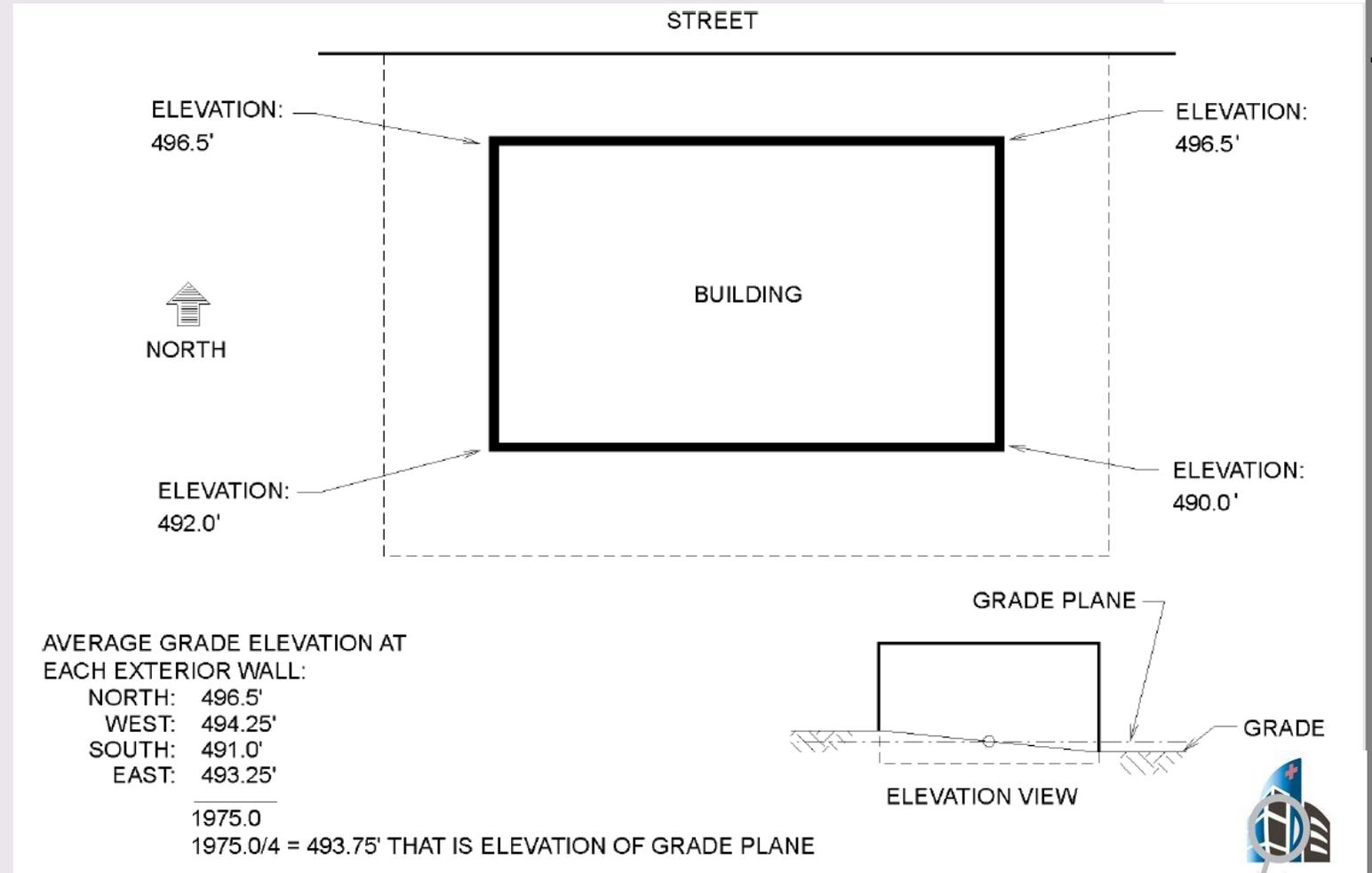
*IBC Section 1008.1.9.6 "Special locking arrangements in Group I-2" was deleted from the CBC in favor of using Section 1008.1.9.7 "Delayed egress locks". This section reference was apparently not corrected.*

# Use & Occupancy



- **407.4.1.2 Basement exits.** All rooms below grade shall have not less than one exit access that leads directly to an exterior exit door opening directly to an exit discharge at grade plane or the public way.

- **Relocated from 1014.2.2.1**



# Use & Occupancy



- 407.4.3 Group I-2 care suites.
  - Relocated from Section 1014.2 and reformatted.
- **CARE SUITE.** A group of treatment rooms, care recipient sleeping rooms and their associated support rooms or spaces and circulation space within Group I-2 occupancies where staff are in attendance for supervision of all care recipients within the suite, and the suite is in compliance with the requirements of Section 407.4.3.

# Use & Occupancy

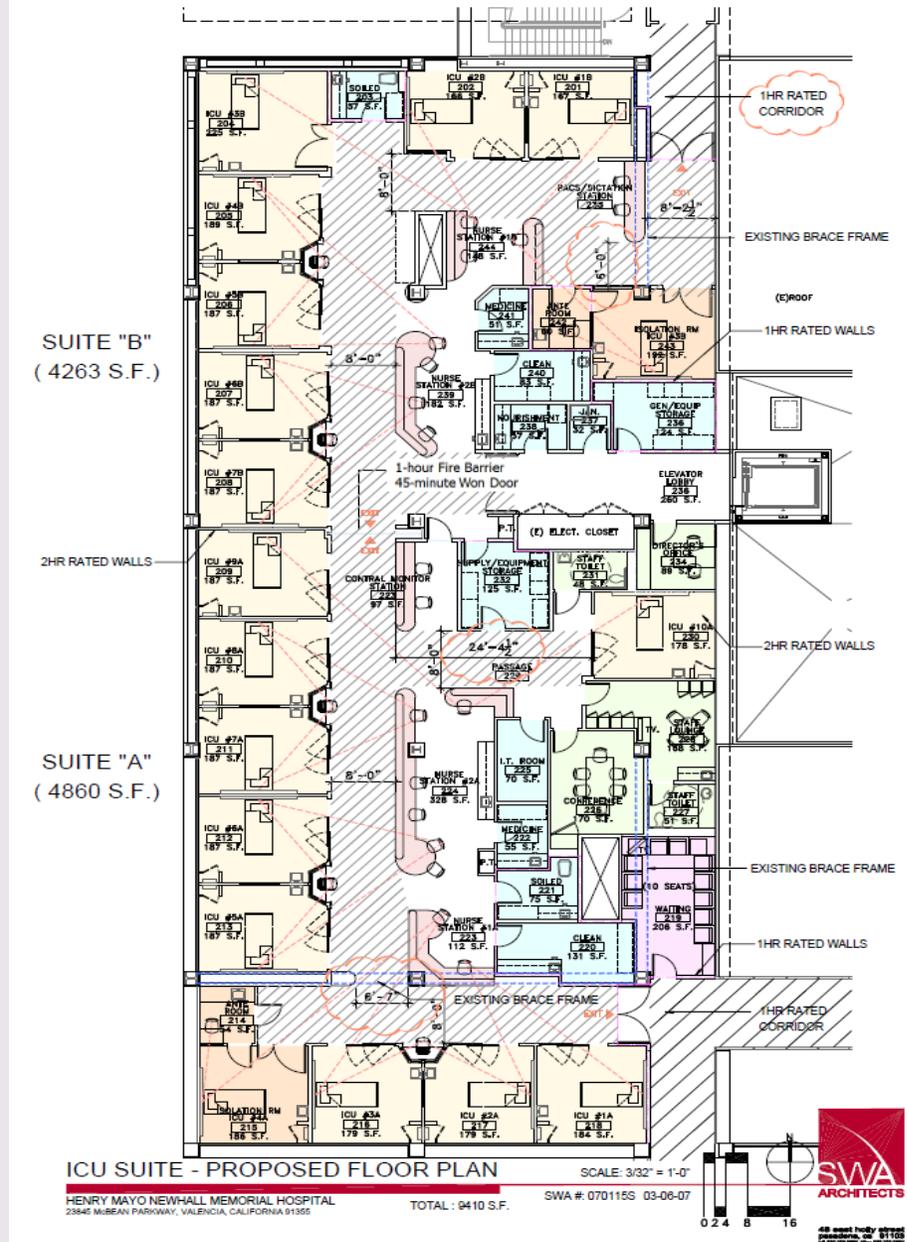


- 407.4.3 Group I-2 care suites. Care suites in Group I-2 shall comply with Sections 407.4.3.1 through 407.4.3.4 and either Section 407.4.3.5 or 407.4.3.6.



# Use & Occupancy

- 407.4.3.1 Exit access through care suites. Exit access from all other portions of a building not classified as a care suite shall not pass through a care suite. In a care suite required to have more than one exit, one exit access is permitted to pass through an adjacent care suite provided all of the other requirements of Sections 407.4 and 1014.2 are satisfied.
- ~~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.~~



## Use & Occupancy

- **407.4.3.2 Separation.** Care suites shall be separated from other portions of the building by *not less than a one-hour fire barrier* complying with Section 707. *Each suite of rooms shall be separated from the remainder of the building by not less than a one-hour fire barrier.*
- **407.4.3.3 One intervening room.** For rooms other than sleeping rooms located within a care suite, exit access travel from the care suite shall be permitted through one intervening room where the travel distance to the exit access door from the care suite is not greater than 100 feet.
- **407.4.3.4 Two intervening rooms.** For rooms other than sleeping rooms located within a care suite, exit access travel within the care suite shall be permitted through two intervening rooms where the travel distance to the exit access door from the care suite is not greater than 50 feet.



# Use & Occupancy



- **407.4.3.5 Care suites containing sleeping room areas.** Sleeping rooms shall be permitted to be grouped into care suites with one intervening room if one of the following conditions is met:
  1. The intervening room within the care suite is not used as an exit access for more than eight care recipient beds.
  2. The arrangement of the care suite allows for direct and constant visual supervision by care providers.

## Use & Occupancy

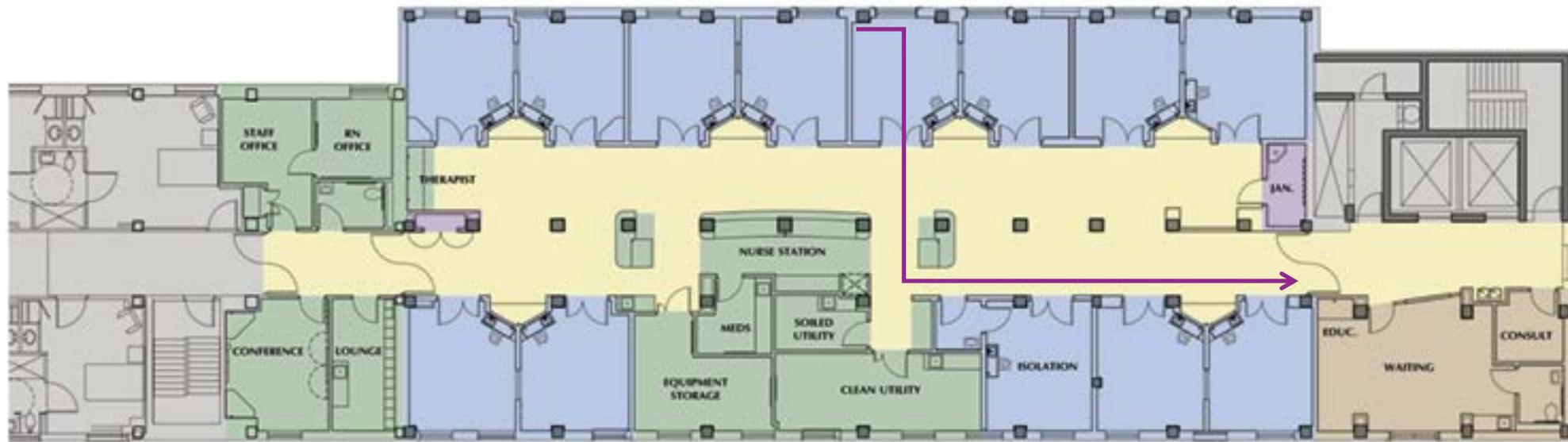


- **407.4.3.5.1 Area.** Care suites containing sleeping rooms shall be not greater than 5,000 square feet in area.
- **407.4.3.5.2 Exit access.** Any sleeping room, or any care suite that contains sleeping rooms, of more than 1,000 square feet shall have no fewer than two exit access doors from the care suite located in accordance with Section 1015.2.

# Use & Occupancy



- **407.4.3.5.3 Travel distance.** The travel distance between any point in a care suite that contains sleeping rooms and an exit access door from that care suite shall be not greater than 100 feet.



## Use & Occupancy



- **407.4.3.6 Care suites not containing sleeping rooms.** Areas not containing sleeping rooms, but only treatment areas and the associated rooms, spaces or circulation space shall be permitted to be grouped into care suites and shall conform to the limitations in Section 407.4.3.6.1 and 407.4.3.6.2.
- **407.4.3.6.1 Area.** Care suites of rooms, other than sleeping rooms, shall have an area not greater than 10,000 square feet.
- **407.4.3.6.2 Exit access.** Care suites, other than sleeping rooms, with an area of more than 2,500 square feet shall have no fewer than two exit access doors from the care suite located in accordance with Section 1015.2.

## Use & Occupancy



- **407.5 Smoke barriers.** Smoke barriers shall be provided to subdivide every story used by persons receiving care, treatment or sleeping and to divide other stories with an occupant load of 50 or more persons, into no fewer than two smoke compartments. Such stories shall be divided into smoke compartments with an area of not more than 22,500 square feet and the travel distance from any point in a smoke compartment to a smoke barrier door shall be not greater than 200 feet. The smoke barrier shall be in accordance with Section 709.

## Use & Occupancy



- 407.5.1 Refuge area. Refuge areas shall be provided within each smoke compartment. The size of the refuge area shall accommodate the occupants and care recipients from the adjoining smoke compartment. Where a smoke compartment is adjoined by two or more smoke compartments, the minimum area of the refuge area shall accommodate the largest occupant load of the adjoining compartments. The size of the refuge area shall provide the following:

1. Not less than 30 net square feet for each care recipient confined to bed or litter.
2. Not less than 6 square feet for each ambulatory care recipient not confined to bed or litter and for other occupants.

Areas or spaces permitted to be included in the calculation of refuge area are corridors, sleeping areas, treatment rooms, lounge or dining areas and other low-hazard areas.

## Use & Occupancy

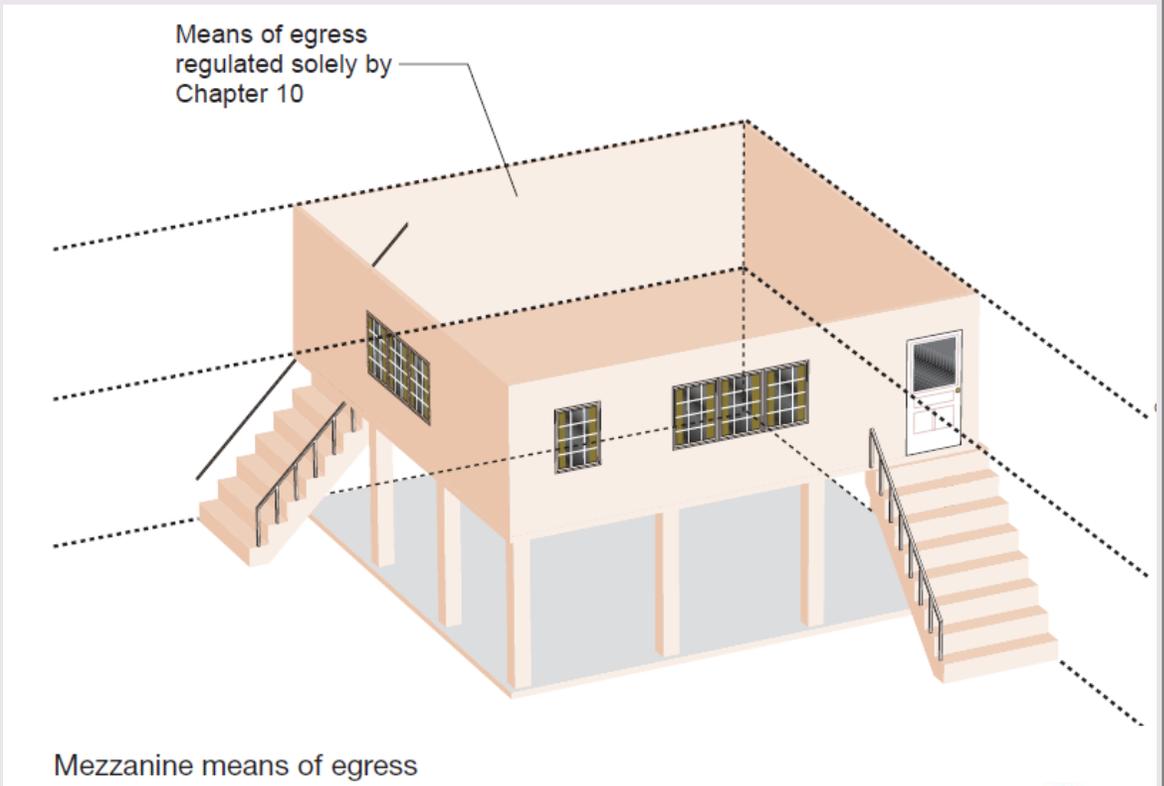
- **407.5.2 Independent egress.** *At least two means of egress shall be provided from each smoke compartment created by smoke barriers. Means of egress may pass through adjacent compartments provided it does not return through the smoke compartment from which means of egress originated.*
- **407.5.3 Horizontal assemblies.** Horizontal assemblies supporting smoke barriers required by this section shall be designed to resist the movement of smoke and shall comply with Section 711.9.



# General Building Heights and Areas Mezzanines



- ~~505.3 505.2.2. The means of egress for mezzanines shall comply with the applicable provisions of Chapter 10. Each occupant of a mezzanine shall have access to at least two independent means of egress where the common path of egress travel exceeds the limitations of Section 1014.3. Where an unenclosed stairway provides a means of exit access from a mezzanine, the maximum travel distance includes the distance traveled on the stairway measured in the plane of the tread nosing. Accessible means of egress shall be provided in accordance with Section 1007.~~



~~Exception: A single means of egress shall be permitted in accordance with Section 1015.1.~~

# General Building Heights and Areas



- ~~508.2.5~~ 509.1 Separation of Incidental Uses. General. The incidental accessory occupancies listed in Table 508.2.5 shall be separated from the remainder of the building or equipped with an automatic fire extinguishing system, or both, in accordance with Table 508.2.5. Incidental uses located within single occupancy or mixed occupancy buildings shall comply with the provisions of this section. Incidental uses are ancillary functions associated with a given occupancy that generally pose a greater level of risk to that occupancy and are limited to those uses listed in Table 509.
  - **Exception:** Incidental ~~accessory occupancies~~ uses within and serving a dwelling unit are not required to comply with this section.

# General Building Heights and Areas



- **509.2 Occupancy Classification.** Incidental uses shall not be individually classified in accordance with Section 302.1. Incidental uses shall be included in the building occupancies within which they are located.
- **509.3 Area Limitations.** Incidental uses shall not occupy more than 10 percent of the building area of the story in which they are located.
- **509.4 Separation and Protection.** The incidental uses listed in Table 509 shall be separated from the remainder of the building or equipped with an automatic sprinkler system, or both, in accordance with the provisions of that table.

# General Building Heights and Areas



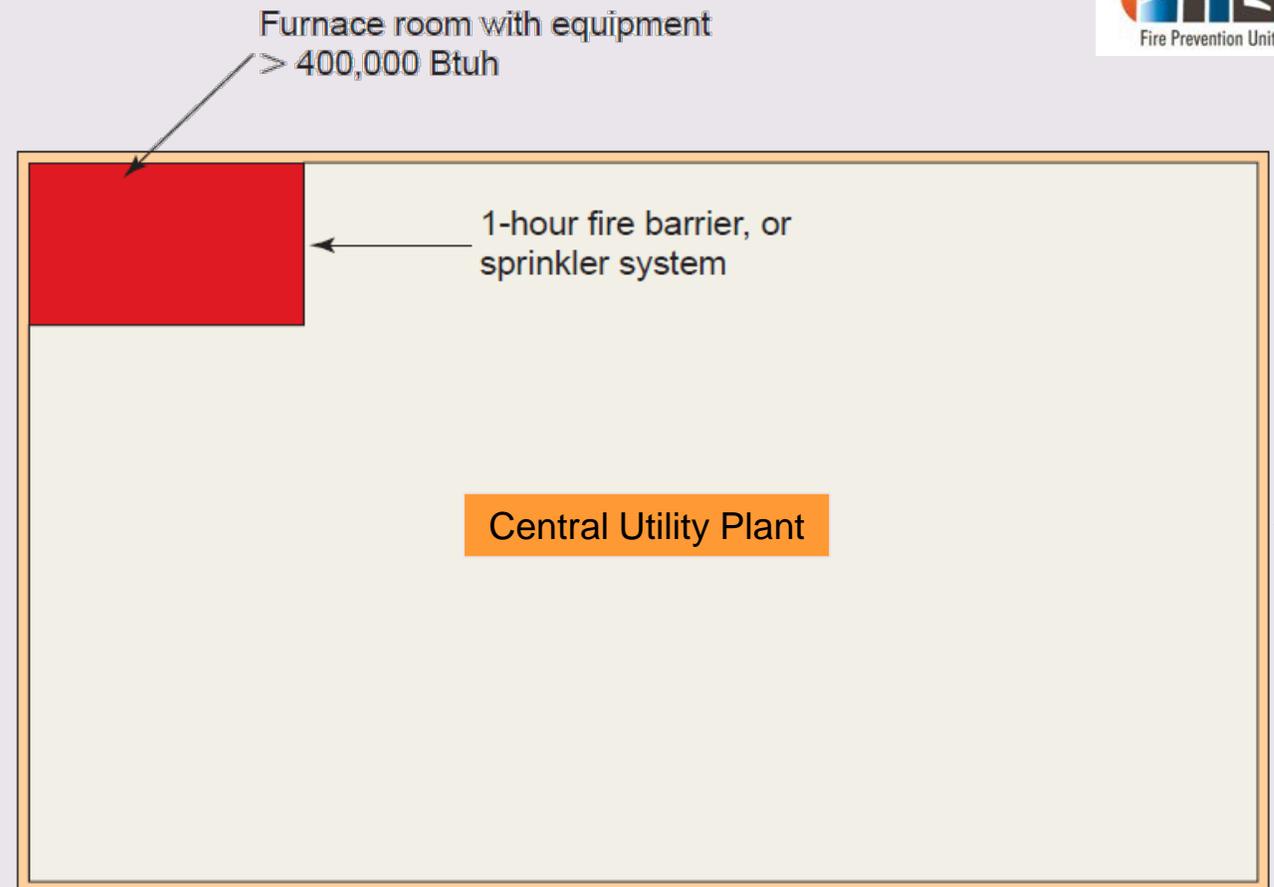
- ~~508.2.5.2~~ 509.4.2 ~~Nonfire-resistance-rated Separation and~~ Protection.

Where Table ~~508.2.5~~ 509 permits an automatic ~~fire-extinguishing sprinkler~~ system without a fire barrier, the incidental ~~accessory occupancies~~ uses 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 716.5.9.3. 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 use shall not have air transfer openings unless provided with smoke dampers in accordance with Section 710.7.

# General Building Heights and Areas



- **508.2.5.3 509.4.2.1 Protection Limitation.** Except as specified in Table ~~508.2.5 509~~ for certain incidental ~~accessory occupancies uses~~, where an ~~automatic fire-extinguishing system or an~~ automatic sprinkler system is provided in accordance with Table ~~508.2.5 509~~, only the space occupied by the incidental ~~accessory occupancy use~~ need be equipped with such a system.



Use

**TABLE 508.2.5 509** Incidental Accessory Occupancies Uses

Room or Area	Separation and/or Protection
Furnace room where any piece of equipment is over 400,000 Btu per hour input	1 hour or provide automatic <del>fire-extinguishing</del> <u>sprinkler</u> system
Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower	1 hour or provide automatic <del>fire-extinguishing</del> <u>sprinkler</u> system
Refrigerant machinery room	1 hour or provide automatic sprinkler system
Hydrogen cutoff rooms, not classified as Group H	1 hour in Group B, F, M, S, and U occupancies; 2 hours in Group A, E, I, and R occupancies.
Incinerator rooms	2 hours and automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours or 1 hour and provide automatic <del>fire-extinguishing</del> <u>sprinkler</u> system
Laboratories and vocational shops, not classified as Group H, located in a Group E or I-2 occupancy	1 hour or provide automatic <del>fire-extinguishing</del> <u>sprinkler</u> system
Laundry rooms over 100 square feet	1 hour or provide automatic <del>fire-extinguishing</del> <u>sprinkler</u> system
Group I-3 cells equipped with padded surfaces	1 hour
<del>Group I-2</del> Waste and linen collection rooms <u>located in either Group I-2 occupancies or ambulatory care facilities</u>	1 hour
Waste and linen collection rooms over 100 square feet	1 hour or provide automatic <del>fire-extinguishing</del> <u>sprinkler</u> system
Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons <u>for flooded lead-acid, nickel cadmium or VRLA, or a lithium-ion capacity of more than 1000 pounds for lithium-ion and lithium metal polymer</u> used for facility standby power, emergency power, or <del>uninterrupted</del> <u>uninterruptable</u> power supplies	1 hour in Group B, F, M, S, and U occupancies; 2 hours in Group A, E, I, and R occupancies.
Rooms containing fire pumps in nonhigh-rise buildings	2 hours; or 1 hour and provide automatic sprinkler system throughout the building
Rooms containing fire pumps in high-rise buildings	2 hours



Fire Prevention Unit



Inspection  
Services Unit

**TABLE 509  
INCIDENTAL USES**

ROOM OR AREA	SEPARATION AND/OR PROTECTION
Furnace room where any piece of equipment is over 400,000 Btu per hour input	1 hour or provide automatic sprinkler system <sup>a</sup>
Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower	1 hour or provide automatic sprinkler system <sup>a</sup>
Refrigerant machinery room	1 hour or provide automatic sprinkler system <sup>a</sup>
Hydrogen cutoff rooms, not classified as Group H	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.
Incinerator rooms	2 hours and automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic sprinkler system
Laboratories and vocational shops, not classified as Group H, located in Group I-2 and I-2.1 occupancies	1 hour or provide automatic fire-extinguishing system <sup>a</sup>
<i>[SFM] Rooms or areas with special hazards such as laboratories, vocational shops and other such areas not classified as Group H, located in Group E occupancies where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.</i>	<i>1 hour</i>
Laundry rooms over 100 square feet	1 hour or provide automatic sprinkler system <sup>a</sup>
Storage rooms over 100 square feet	1 hour or provide automatic fire-extinguishing system <sup>a</sup>
Waste and linen collection rooms located in either Group I-2 occupancies or ambulatory care facilities	1 hour
Waste and linen collection rooms over 100 square feet	1 hour or provide automatic sprinkler system <sup>a</sup>
Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons for flooded lead-acid, nickel cadmium or VRLA, or more than 1,000 pounds for lithium-ion and lithium metal polymer used for facility standby power, emergency power or uninterruptable power supplies	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies <sup>a</sup>

For SI: 1 square foot = 0.0929 m<sup>2</sup>, 1 pound per square inch (psi) = 6.9 kPa, 1 British thermal unit (Btu) per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L.

a. *[SFM] Fire barrier protection and automatic sprinkler protection required throughout the fire area in I-2 and I-2.1 occupancies as indicated.*

# Types of Construction



**TABLE 602** Fire-Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance<sup>a,e,h</sup>

Fire Separation Distance = X (feet)	Type of Construction	Occupancy Group H <sup>f</sup>	Occupancy Group F-1, M, S-1 <sup>g</sup>	Occupancy Group A, B, E, F-2, I, R, S-2 <sup>g</sup> , U <sup>b</sup>
$X < 5^c$	All	3	2	1
$5 \leq X < 10$	IA	3	2	1
	Others	2	1	1
$10 \leq X < 30$	IA, IB	2	1	1 <sup>d</sup>
	IIB, VB	1	0	0
	Others	1	1	1 <sup>d</sup>
$X \geq 30$	All	0	0	0

For SI: 1 foot = 304.8 mm

a. - g. (no changes to text)

h. Where Table 705.8 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire resistance rating for the exterior walls is 0 hours.



**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 <sup>a</sup>
0 to less than 3 <sup>b, c</sup>	Unprotected, Nonsprinklered (UP, NS)	Not Permitted
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	Not Permitted
	Protected (P)	Not Permitted
3 to less than 5 <sup>d, e</sup>	Unprotected, Nonsprinklered (UP, NS)	Not Permitted
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	15%
	Protected (P)	15%
5 to less than 10 <sup>e, f, j</sup>	Unprotected, Nonsprinklered (UP, NS)	10% <sup>h</sup>
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	25%
	Protected (P)	25%
10 to less than 15 <sup>e, f, g</sup>	Unprotected, Nonsprinklered (UP, NS)	15% <sup>h</sup>
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	45%
	Protected (P)	45%
15 to less than 20 <sup>f, g</sup>	Unprotected, Nonsprinklered (UP, NS)	25%
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	75%
	Protected (P)	75%
20 to less than 25 <sup>f, g</sup>	Unprotected, Nonsprinklered (UP, NS)	45%
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	No Limit
	Protected (P)	No Limit
25 to less than 30 <sup>f, g</sup>	Unprotected, Nonsprinklered (UP, NS)	70%
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	No Limit
	Protected (P)	No Limit
30 or greater	Unprotected, Nonsprinklered (UP, NS)	No Limit
	Unprotected, Sprinklered (UP, S) <sup>i</sup>	Not Required
	Protected (P)	Not Required

Chapters 7 through 9



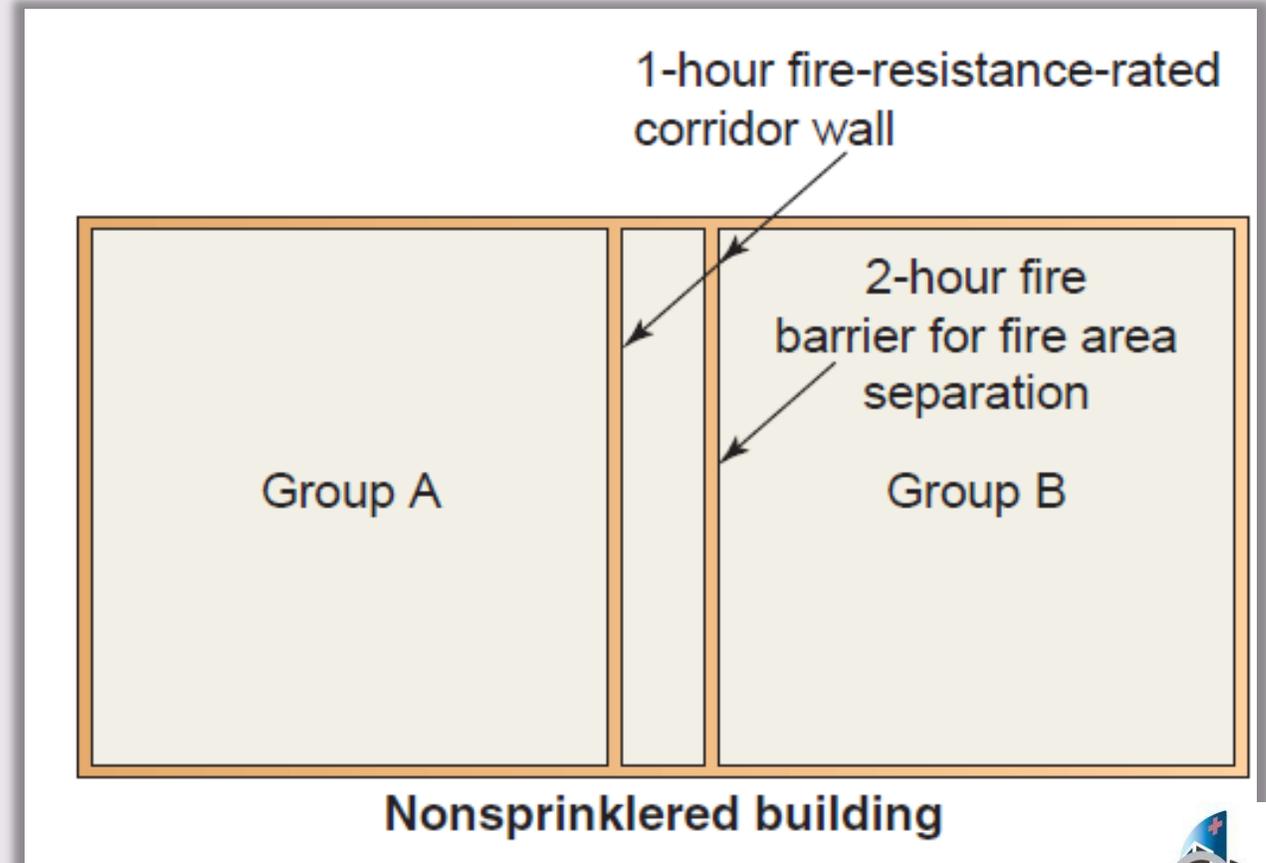
# Fire Protection



# Fire Protection

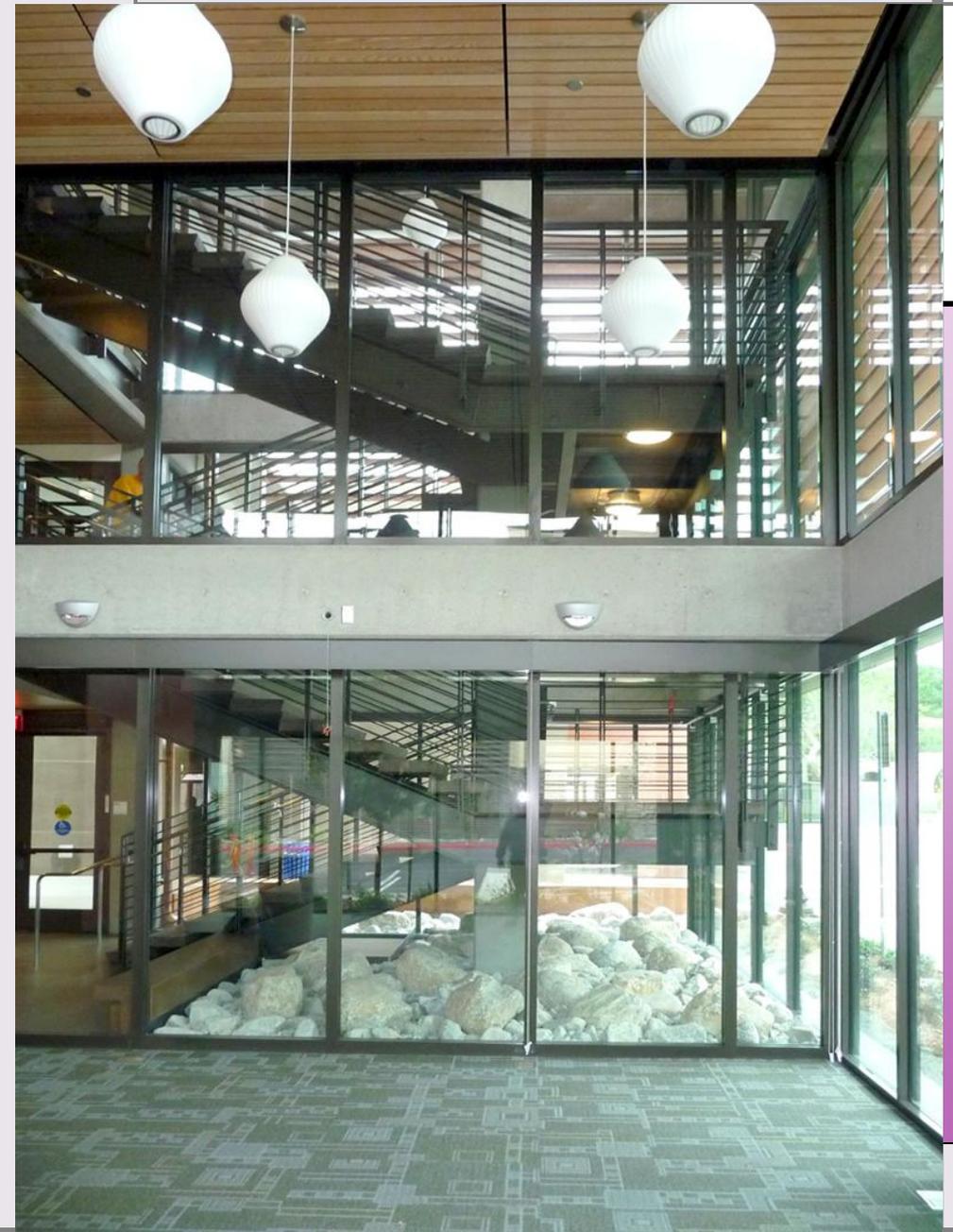


- **701.2 Multiple-Use Fire Assemblies.** Fire assemblies that serve multiple purposes in a building shall comply with all of the requirements that are applicable for each of the individual fire assemblies.



## Fire Protection

- 703.4 Automatic Sprinklers. Under the prescriptive fire resistance requirements of the California Building Code, the fire resistance rating of a building element, component, or assembly shall be established without the use of automatic sprinklers or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures, and acceptance criteria specified in ASTM E 119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the building official allowed by Sections 104.10 and 104.11.



# Fire Protection



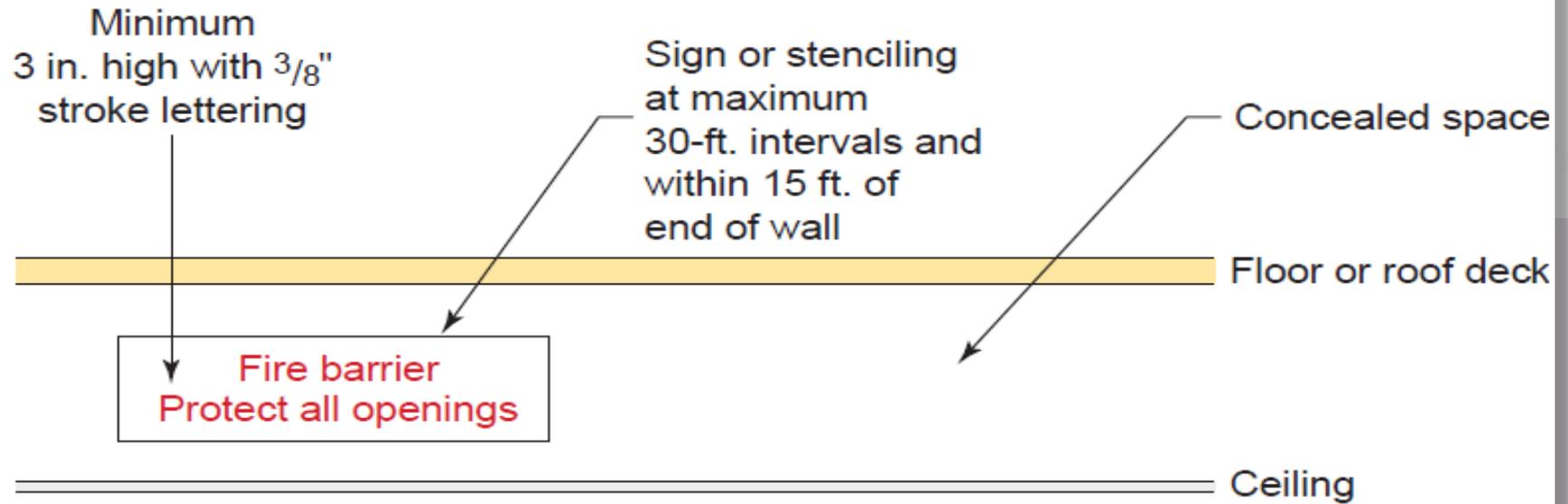
- **703.7 Marking and Identification.** Fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:

1. Be located in accessible concealed floor, floor/ceiling, or attic spaces
2. Be located within 15 feet of the end of each wall and ~~repeated~~ at intervals not exceeding 30 feet measured horizontally along the wall or partition
3. Include lettering not less than ~~0.5 inch~~ 3 inches in height with a minimum 3/8-inch stroke in a contrasting color incorporating the suggested wording:

**“FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS”**

or other wording.

# Fire



Floor



# Fire Protection



- **705.2 Projections.** Cornices, eave overhangs, exterior balconies, and similar projections extending beyond the exterior wall shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways shall also comply with Sections 1019 and 1026, respectively. Projections shall not extend ~~beyond the distance determined by the following three methods, whichever results in the lesser projection: any closer to the line used to determine the fire separation distance than shown in Table 705.2.~~

- ~~1. A point one third the distance from the exterior face of the wall to the lot line where protected openings or a combination of protected and unprotected openings are required in the exterior walls.~~
- ~~2. A point one half the distance from the exterior face of the wall to the lot line where all openings in the exterior wall are permitted to be unprotected or the building is equipped throughout with an automatic sprinkler system installed under the provisions of Section 705.8.2.~~
- ~~3. More than 12 inches (305 mm) into areas where openings are prohibited.~~

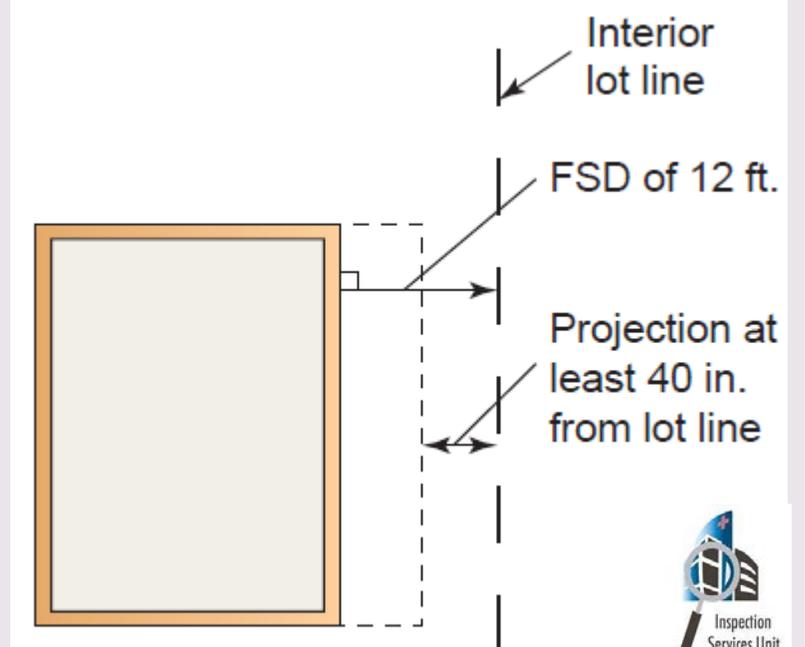
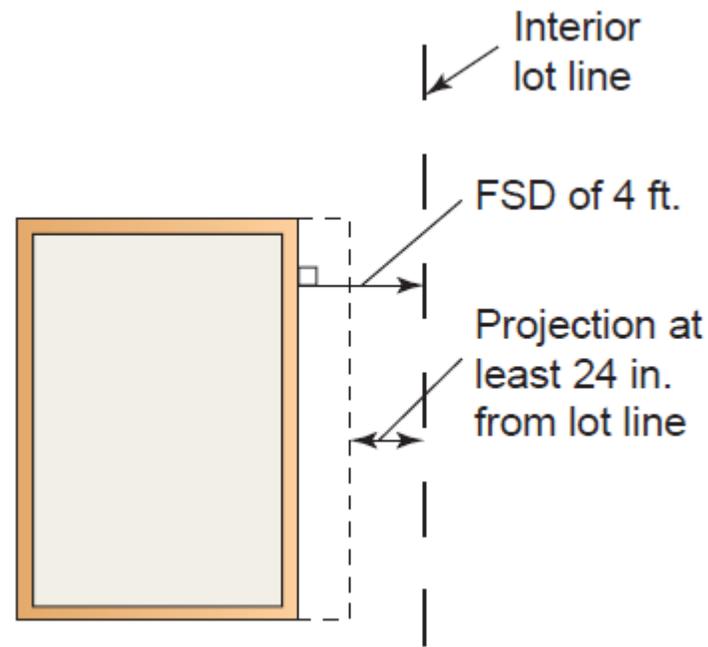
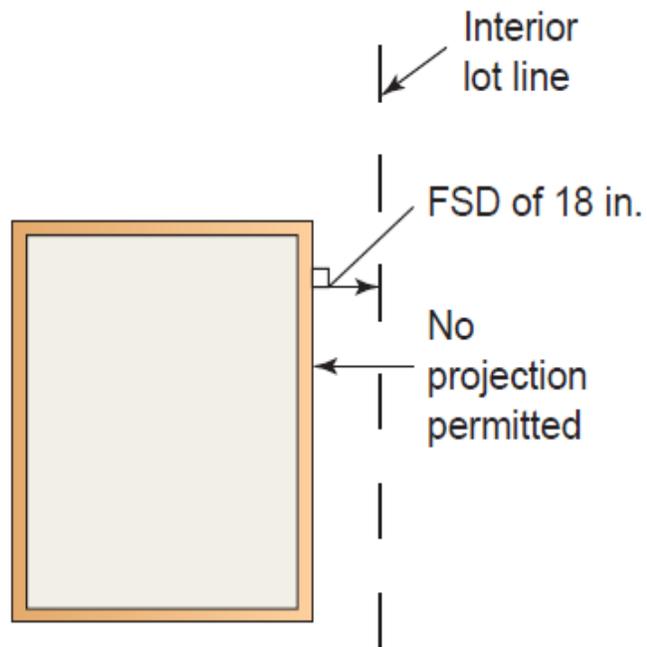
**Exception:** Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section.

# Fire Protection Exterior Walls



**TABLE 705.2** Minimum Distance of Projection

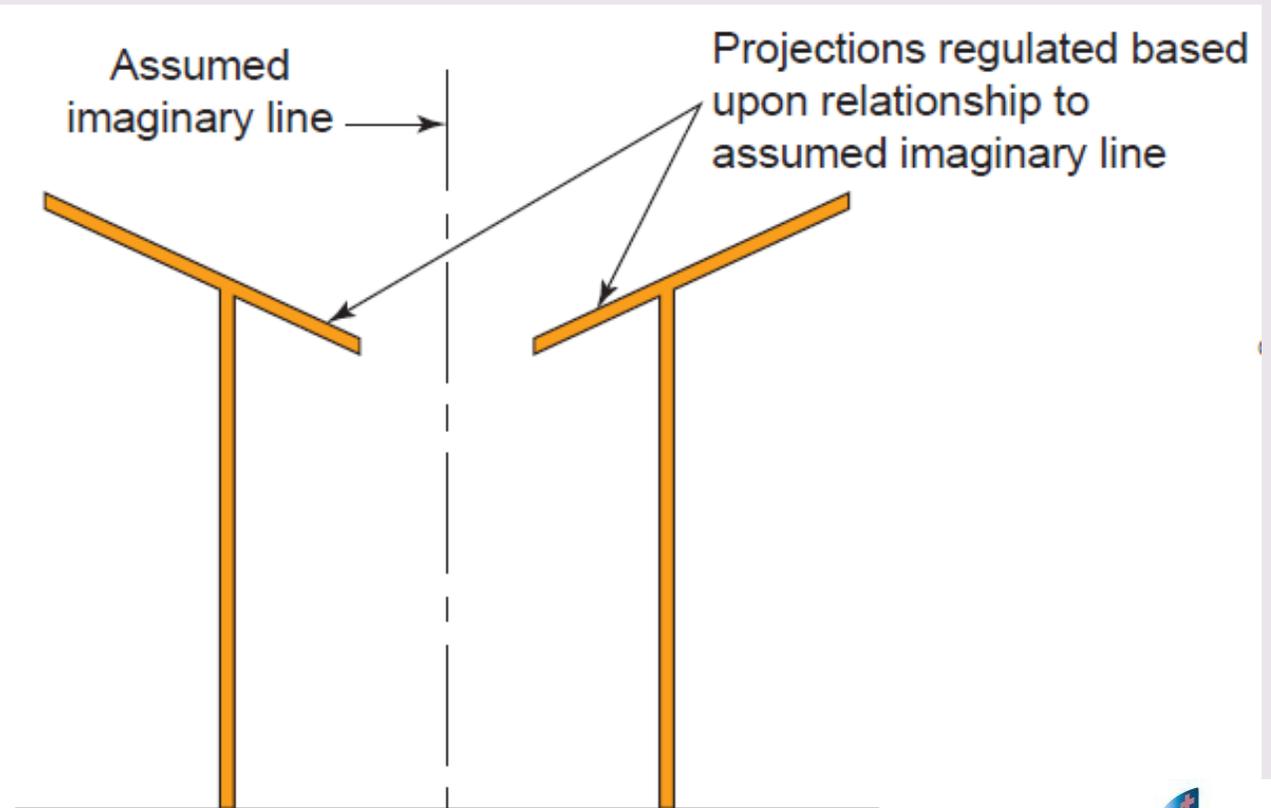
<u>Fire Separation Distance (FSD)</u>	<u>Minimum Distance From Line Used To Determine FSD</u>
<u>0 feet to less than 2 feet</u>	<u>Projections not permitted</u>
<u>2 feet to less than 5 feet</u>	<u>24 inches</u>
<u>5 feet or greater</u>	<u>40 inches</u>



## Fire Protection Exterior Walls



- **705.3 Buildings on the Same Lot.** For the purposes of determining the required wall and opening protection, projections, and roof-covering requirements, buildings on the same lot shall be assumed to have an imaginary line between them.



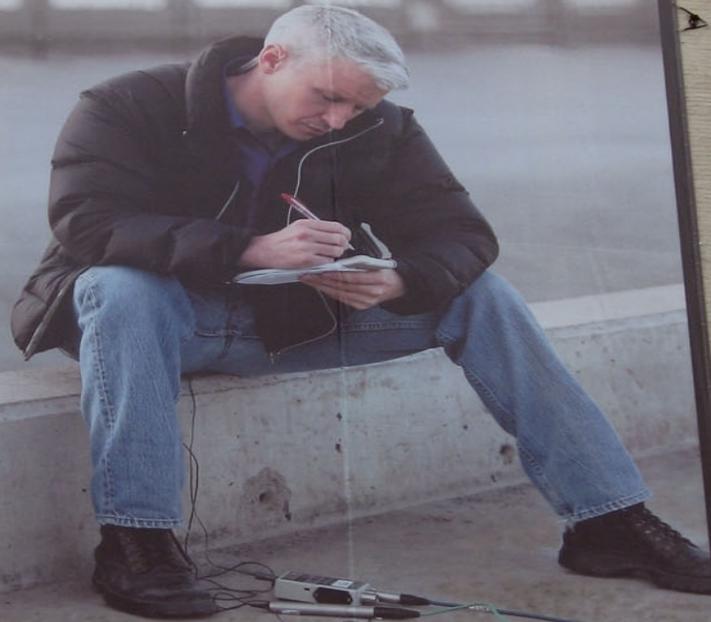
Projections from two buildings on the same lot

# Fire Protection Exterior Walls



- **705.12 Exterior graphics on exterior walls of high-rise buildings. [SFM]**  
*Where installed on the exterior walls of high-rise buildings, exterior graphics, both permanent and temporary, greater than 100 square feet in area or greater than 10 feet in either dimension shall comply with the following conditions subject to the review and approval of the fire code official and building official:*
  1. *The materials used for graphics installed at a height greater than 40 feet above the grade plane shall be noncombustible materials or shall have a flame spread index not greater than 25 when tested in accordance with ASTM E 84 or UL 723.*
  2. *The method of attachment and mounting of the graphics to the exterior wall shall be such that the graphics are securely attached.*
  3. *The graphics shall not interfere with the active or passive ventilation required for the building and the required smoke control systems in the building.*
  4. *The graphics shall not impair the functions of any fire or life safety systems in the building.*

**GET THE STORY  
FIRSTHAND.**



**ANDERSON  
COOPER 360**

**WEEKNIGHTS 10 PM**   
THE MOST COMPREHENSIVE NEWS

ROOSEVELT  
HOTEL



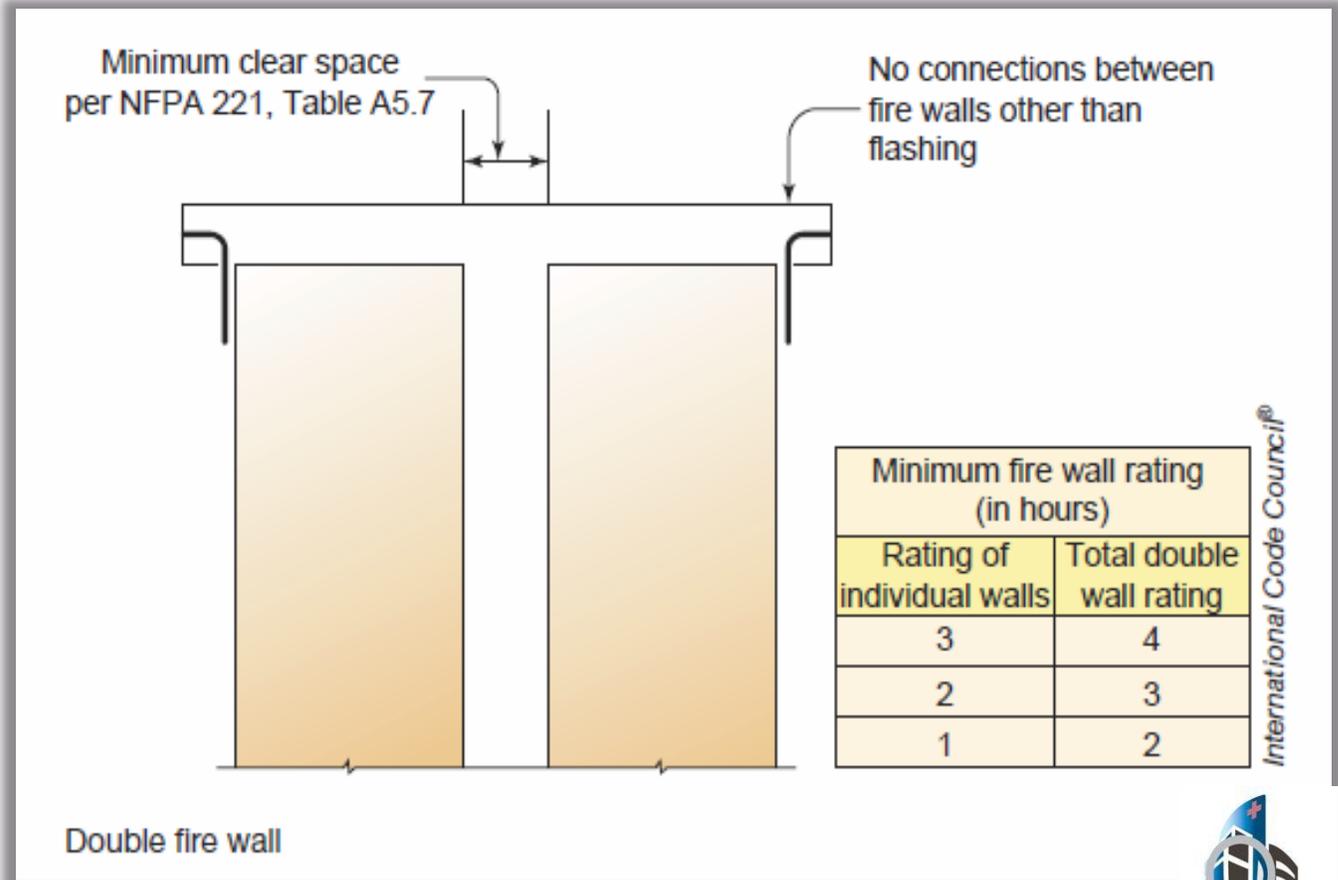
*Cinegrill*

NOMADS WELCOME  
THOMPSON HOTELS

6922

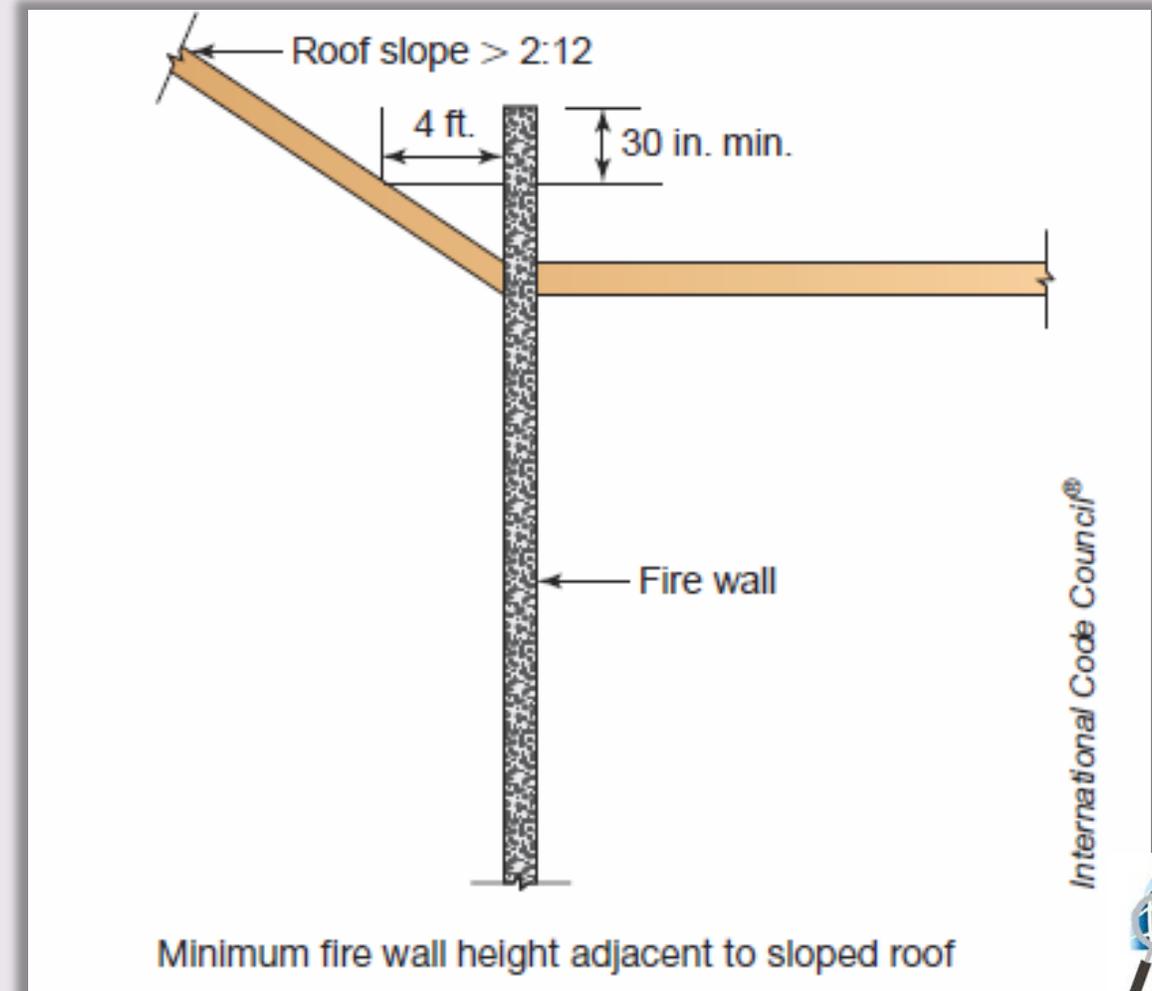
# Fire Protection Fire Walls

- **706.2 Structural stability.** Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required fire-resistance rating or shall be constructed as double fire walls in accordance with NFPA 221.



# Fire Protection Fire Walls

- **706.6.2 Buildings with sloped roofs.** Where a fire wall serves as an interior wall for a building, and the roof on one side or both sides of the fire wall slopes toward the fire wall at a slope greater than two units vertical in 12 units horizontal (2: 12), the fire wall shall extend to a height equal to the height of the roof located 4 feet from the fire wall plus 30 inches. In no case shall the extension of the fire wall be less than 30 inches.



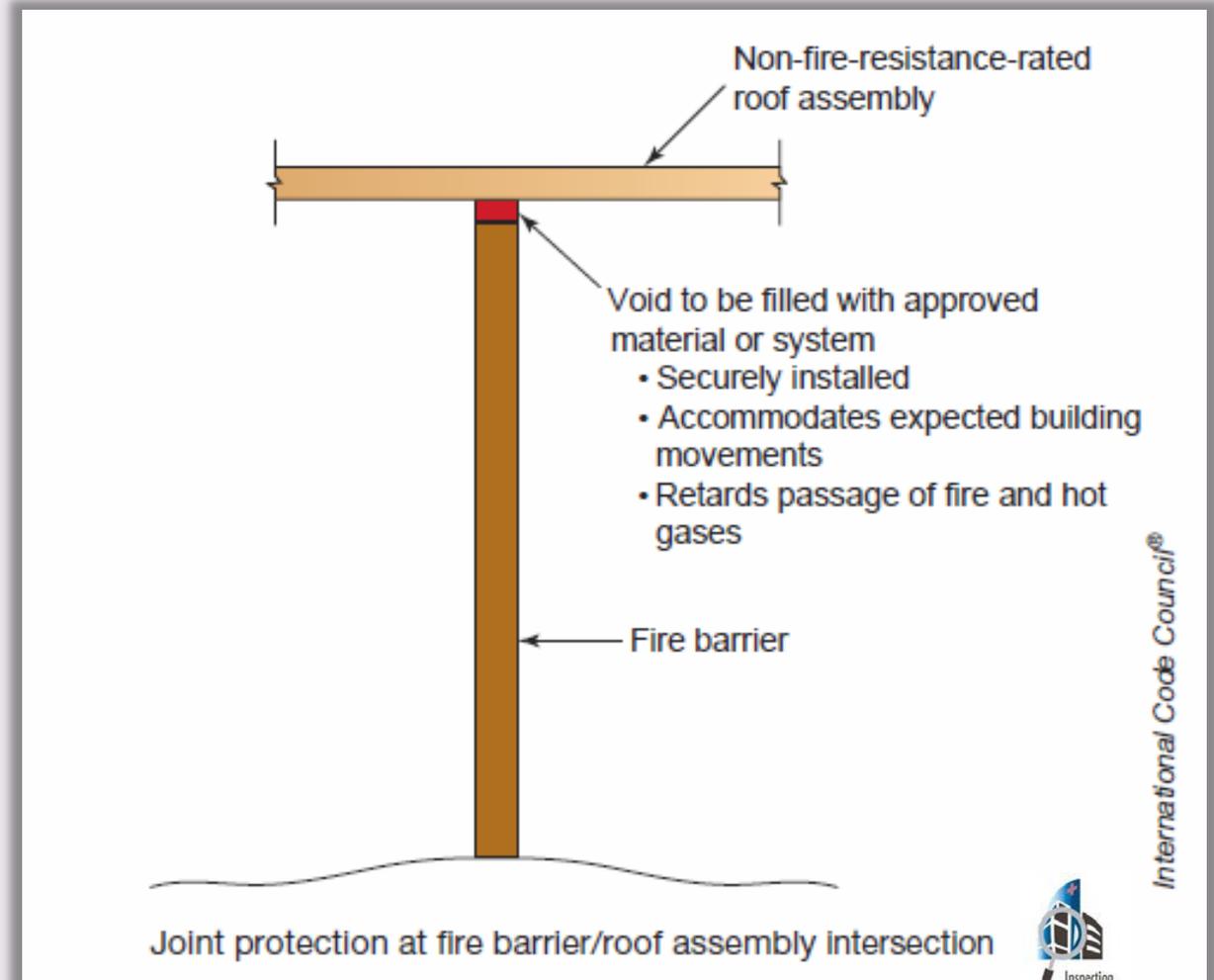
# Fire Protection Fire Barriers



- **707.8 Joints.** Joints made in or between fire barriers, and joints made at the intersection of fire barriers with underside of **a fire-resistance rated** floor or roof sheathing, slab, or deck above, **and the exterior vertical wall intersection** shall comply with Section ~~714~~ 715.

# Fire Protection Fire Barriers

- 707.9 Voids at intersections.  
The voids created at the intersection of a fire barrier and a non-fire-resistance-rated roof assembly shall be filled. An approved material or system shall be used to fill the void, shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gases.



# Fire Protection Vertical Openings



- SECTION ~~708~~ 712
- ~~SHAFT ENCLOSURES~~ VERTICAL OPENINGS
- ~~708.1~~ 712.1 **General.** The provisions of this section shall apply to the vertical opening applications listed in Sections 712.1.1 through 712.1.18. ~~shafts required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies. Shaft enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 712, or both.~~

# Fire Protection Vertical Openings



- ~~708.2 Shaft Enclosure Required.~~ Openings through a floor ceiling assembly shall be protected by a shaft enclosure complying with this section.
  - ~~Exceptions:~~ (Exceptions 1 through 16 have been reformatted as Sections 712.1.2 through 712.1.18 with limited editorial changes.)
- 712.1.1 Shaft Enclosures. Vertical openings contained entirely within a shaft enclosure complying with Section 713 shall be permitted.

# Fire Protection Shaft Enclosures



- **713.1 General.** The provisions of this section shall apply to shafts required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies. Exit access stairways and exit access ramps shall be protected in accordance with the applicable provisions of Section 1009. Interior exit stairways and interior exit ramps shall be protected in accordance with the requirements of Section 1022.
- **713.2 Construction.** Shaft enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 711, or both.
- (remainder of section remains relatively unchanged from 2009 IBC Section 708)



Piping extending through opening in floor

International Code Council

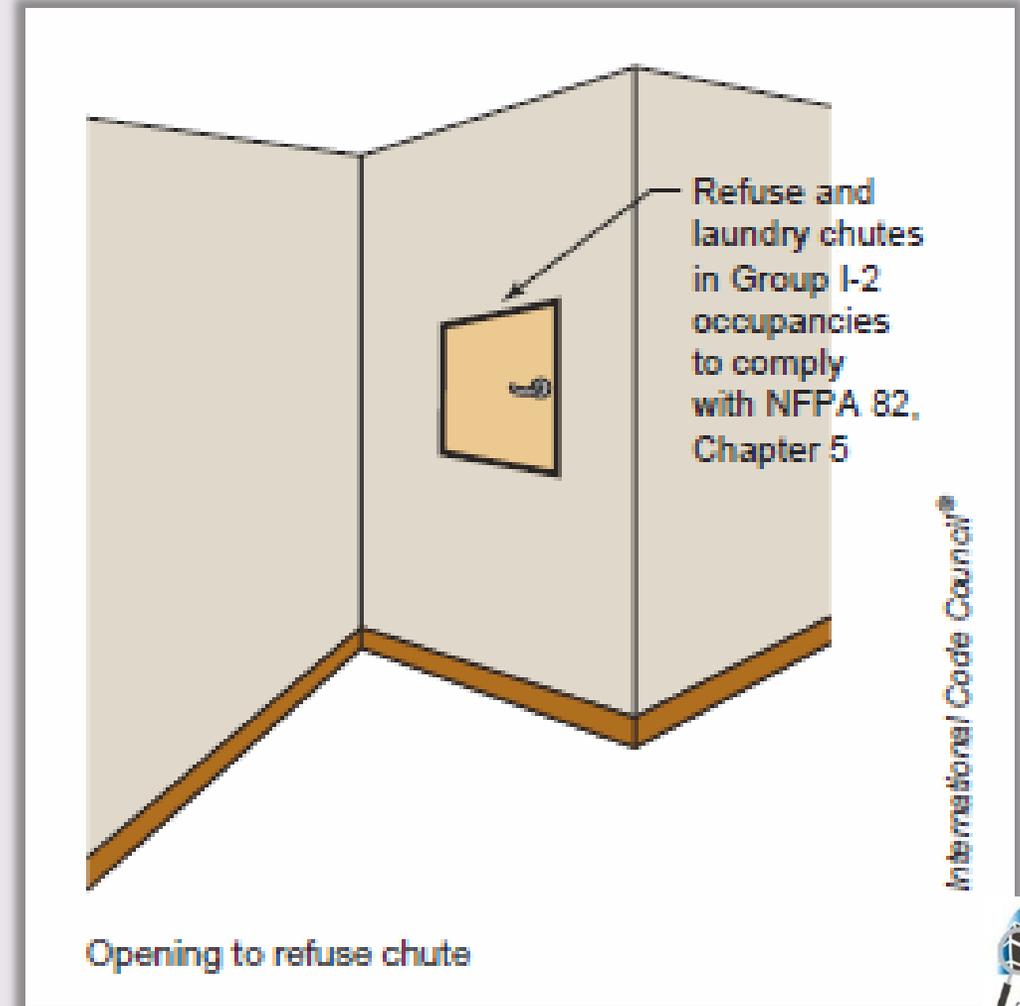
# Fire Protection Chutes



- ~~708.13~~ **713.13** Refuse and Laundry Chutes. In other than Group I-2, refuse and laundry chutes, access and termination rooms, and incinerator rooms shall meet the requirements of Section 713.13.1 through 713.13.6.

- **Exceptions:**

1. Chutes serving and contained within a single dwelling unit.
2. Refuse and laundry chutes in Group I-2 shall comply with the provisions of NFPA 82, Chapter 5.

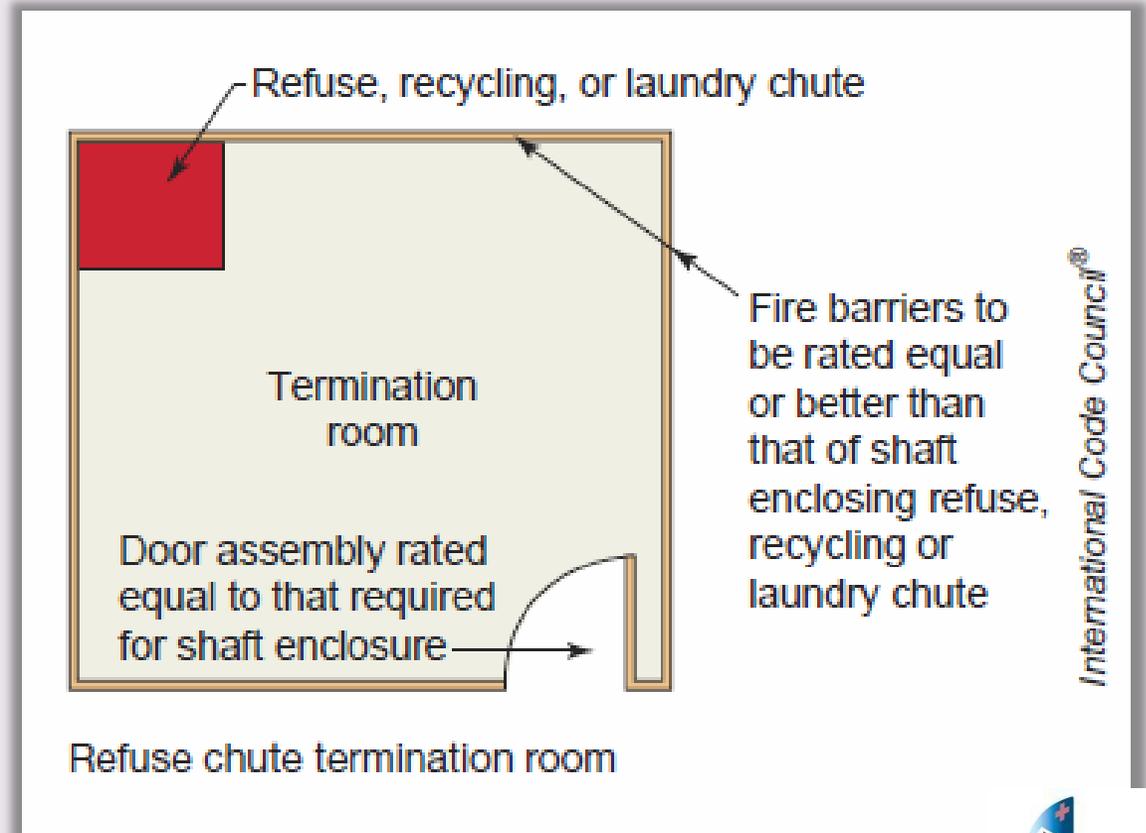


# Fire Protection Chutes



- ~~708.13.4~~ 713.13.4 **Termination Room.**

Refuse, recycling, and laundry chutes shall discharge into an enclosed room separated from the remainder of the building by ~~not less than 1-hour fire~~ barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Openings into the termination room shall be protected by opening protectives having a fire protection rating ~~of not less than ¾ hour~~ equal to the protection required for the shaft enclosure.



# Fire Protection Floor Penetrations



- ~~713.4.1.1.2~~ 714.4.1.1.2 **Through-Penetration Firestop System.**

Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an F rating/T rating of not less than 1 hour but not less than the required rating of the floor penetrated.

- **Exceptions:**

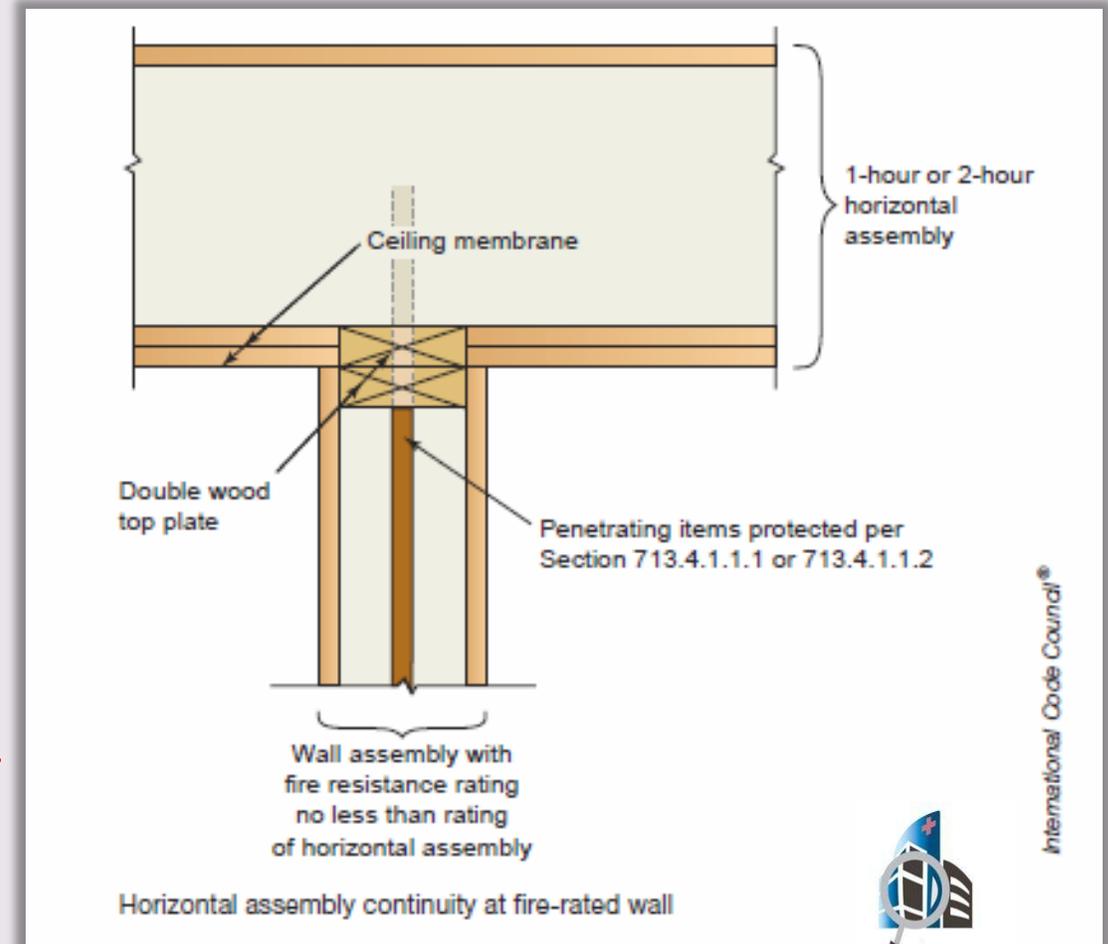
1. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating.
2. Floor penetrations by floor drains, tub drains, or shower drains contained and located within the concealed space of a horizontal assembly do not require a T rating.

# Fire Protection Membrane Penetrations



## • 713.4.1.2 714.4.1.2 Membrane Penetrations.

6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.
7. The ceiling membrane of 1-hour and 2-hour fire-resistance rated horizontal assemblies is permitted to be interrupted with the double wood top plate of a fire-resistance wall assembly, provided that all penetrating items through the double top plates are protected in accordance with Section 714.4.1.1.1 or 714.4.1.1.2. The fire-resistance rating of the wall shall not be less than the rating of the horizontal assembly.



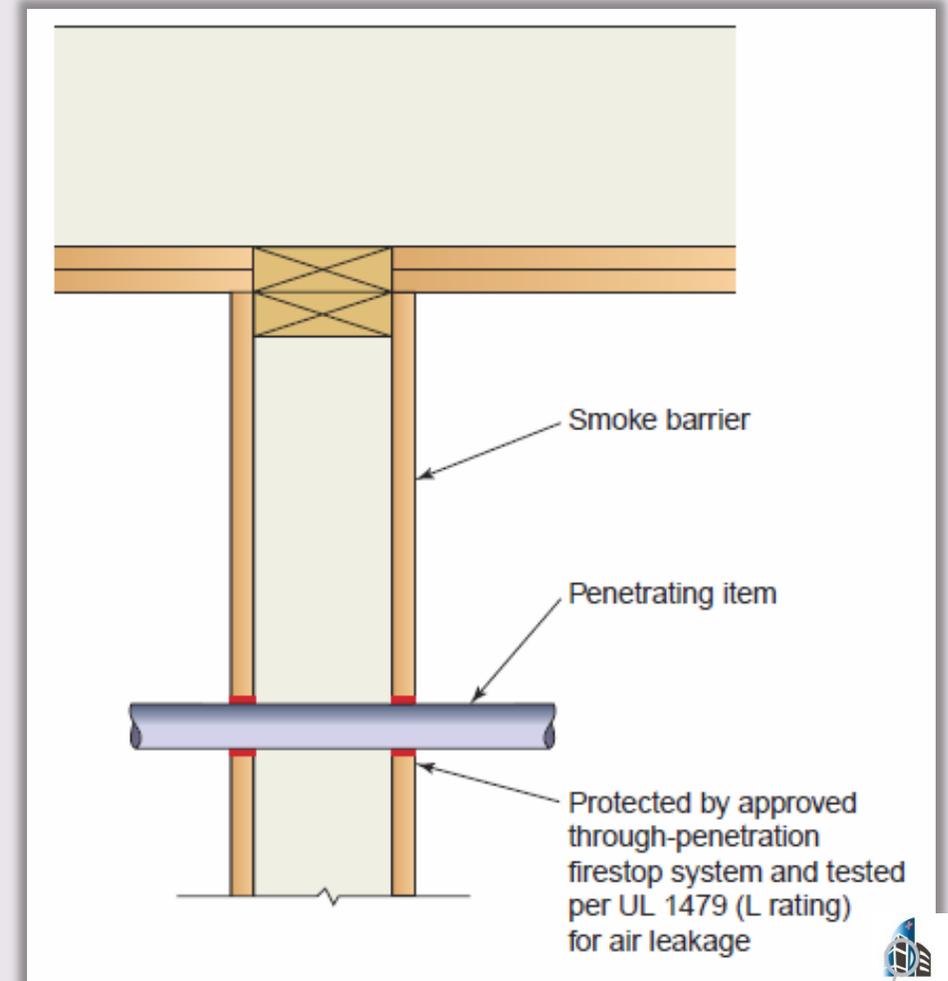
# Fire Protection L Rating



- ~~713.5~~ 714.5 Penetrations in Smoke Barriers.

Penetrations in smoke barriers shall be protected by approved through-penetration firestop systems installed and tested in accordance with the requirements of UL 1479 for air leakage. The air leakage rate L rating of the penetration assemblies system measured at 0.30 inch (7.47 Pa) of water in both the ambient temperature and elevated temperature tests, shall not exceed:

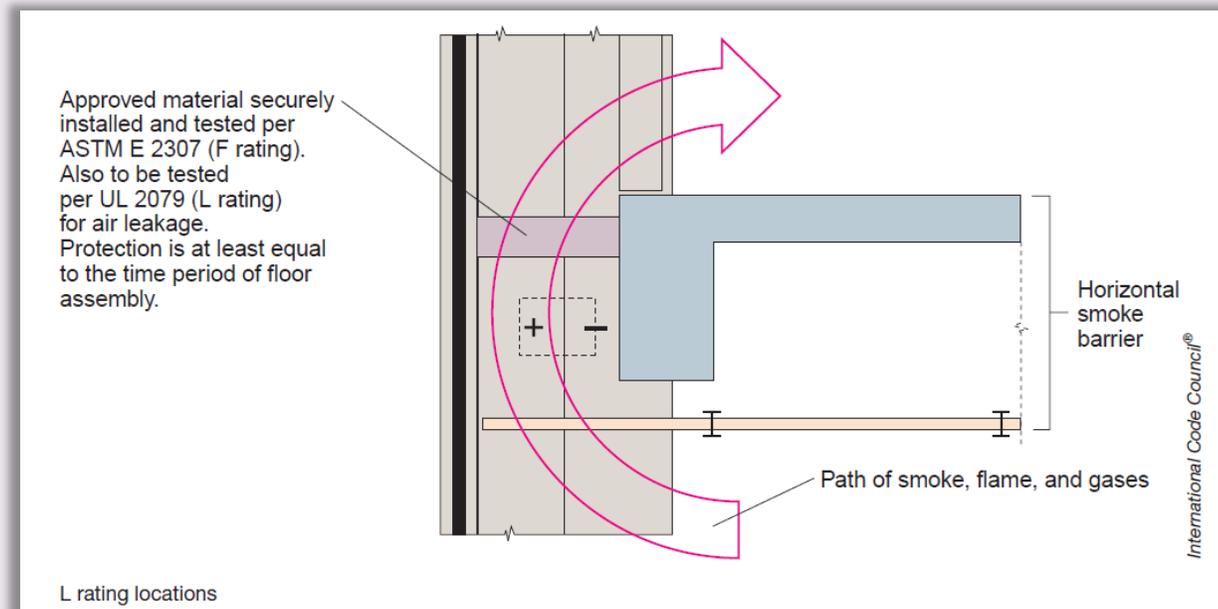
1. 5.0 cfm per square foot of penetration opening for each through-penetration firestop system; or
2. A total cumulative leakage of 50 cfm for any 100 square feet of wall area or floor area.



# Fire Protection L Rating



- ~~714.6~~ 715.6 **Fire-Resistant Joint Systems In Smoke Barriers.** Fire-resistant joint systems in smoke barriers, and joints at the intersection of a horizontal smoke barrier and an exterior curtain wall, shall be tested in accordance with the requirements of UL 2079 for air leakage. The ~~air leakage rate~~ L rating of the joint system shall not exceed 5 cfm per lineal foot (0.00775 m<sup>3</sup>/s m) of joint at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature tests.

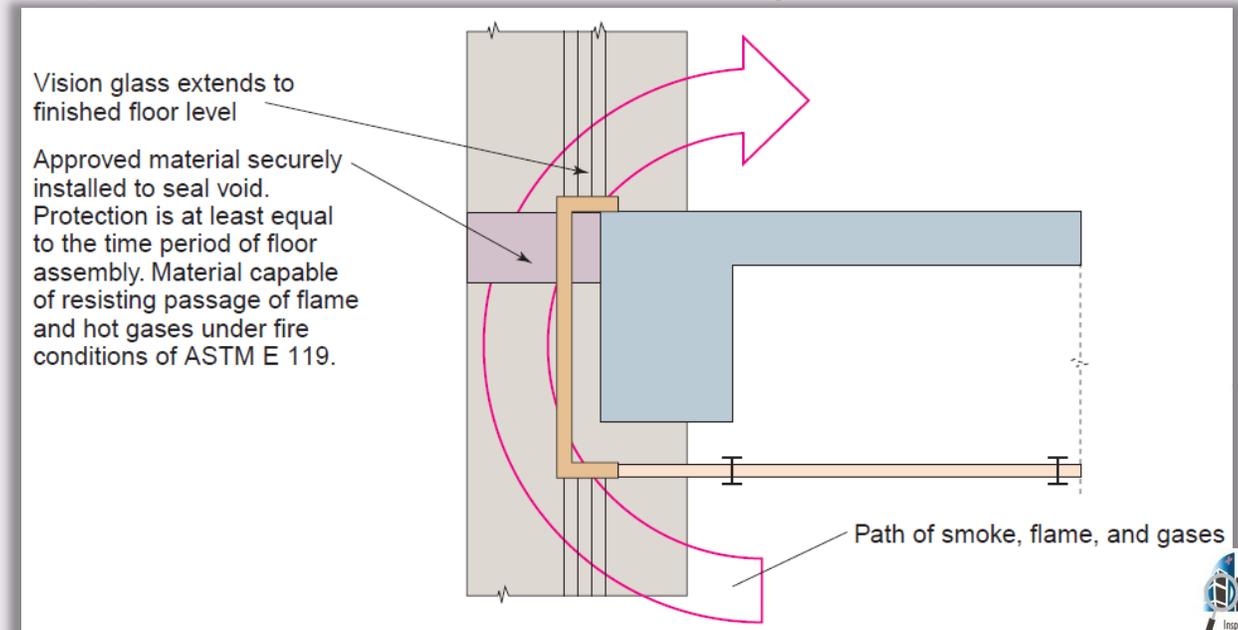


# Fire Protection Curtain Walls



## • ~~714.4~~ 715.4 Exterior Curtain Wall/Floor Intersection.

**Exception:** Voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies where the vision glass extends to the finished floor level shall be permitted to be sealed with an approved material to prevent the interior spread of fire. Such material shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch of water column for the time period at least equal to the fire resistance rating of the floor assembly.



# Fire Protection

## Fire Rated Glazing



- **716.3.1 Fire-Rated Glazing That Exceeds the Code Requirements.** Fire-rated glazing assemblies marked as complying with hose stream requirements (H) shall be permitted in applications that do not require compliance with hose stream requirements. Fire-rated glazing assemblies marked as complying with temperature rise requirements (T) shall be permitted in applications that do not require compliance with temperature rise requirements. Fire-rated glazing assemblies marked with ratings (XXX) that exceed the ratings required by this code shall be permitted.

# Fire Protection Fire Rated Glazing



- **Definitions**
- **Fire Rated Glazing.** Glazing with either a fire-protection rating or a fire-resistance rating.
  - **Fire-protection rating:** Opening protectives (NFPA 256)
  - **Fire-resistance rating:** Building elements (ASTM E 119)

# Fire Protection Fire Rated Glazing



**TABLE 716.3** Marking Fire-Rated Glazing Assemblies

<u>Fire Test Standard</u>	<u>Marking</u>	<u>Definition Of Marking</u>
<u>ASTM E 119 or UL 263</u>	<u>W</u>	<u>Meets wall assembly criteria.</u>
<u>NFPA 257 or UL 9</u>	<u>OH</u>	<u>Meets fire window assembly criteria including the hose stream test.</u>
<u>NFPA 252 or UL 10B or UL 10C</u>	<u>D</u>	<u>Meets fire door assembly criteria.</u>
	<u>H</u>	<u>Meets fire door assembly "Hose Stream" test.</u>
	<u>T</u>	<u>Meets 450° F temperature rise criteria for 30 minutes</u>
	<u>XXX</u>	<u>The time in minutes of the fire resistance or fire protection rating of the glazing assembly</u>



Glazing to be labeled with 4-part identifier:

- "D": applicable for fire-door assemblies and meets applicable fire-resistance requirements
- "H": meets hose stream requirements (if applicable)
- "T": meets temperature requirements (if applicable)
- "XXX": fire-protection rating in minutes

Marking of fire-rated glazing in fire door

# Fire Protection Opening Protection



**TABLE 715.4 716.5** Fire Door and Fire Shutter Fire Protection Ratings  
Opening Fire-Protection Assemblies, Ratings, and Markings

Type of Assembly	Required Wall Assembly Rating (Hours)	Minimum Fire Door and Fire Shutter Assembly Rating (Hours)	Fire-Rated Glazing		Minimum Sidelight/Transom Assembly Rating (Hours)		Fire-Rated Glazing Marking Sidelite/Transom Panel	
			Door Vision Panel Size	Door Vision Panel <sup>e</sup>	Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4	3	<u>Not Permitted</u>	<u>Not Permitted</u>	<u>Not Permitted</u>	<u>4</u>	<u>Not Permitted</u>	<u>W-240</u>
	3	3 <sup>a</sup>	<u>Not Permitted</u>	<u>Not Permitted</u>	<u>Not Permitted</u>	<u>3</u>	<u>Not Permitted</u>	<u>W-180</u>
	2	1½	<u>100 sq. in.<sup>c</sup></u>	<u>≤100 in.<sup>2</sup> = D-H--90</u> <u>&gt;100 in.<sup>2</sup> = D-H-W-90</u>	<u>Not Permitted</u>	<u>2</u>	<u>Not Permitted</u>	<u>W-120</u>
	1½	1½	<u>100 sq. in.<sup>c</sup></u>	<u>&gt;100 in.<sup>2</sup> = D-H-W-90</u> <u>&lt;100 in.<sup>2</sup> = D-H-90</u>	<u>Not Permitted</u>	<u>1½</u>	<u>Not Permitted</u>	<u>W-90</u>
<u>Shaft, exit enclosures, and exit passageway walls</u>	<u>2</u>	1½	<u>100 in.<sup>2 c, d</sup></u>	<u>≤100 in.<sup>2</sup> = D-H -T-or D-H-T-W-90</u>	<u>Not Permitted</u>	<u>2</u>	<u>Not Permitted</u>	<u>W-120</u>



**TABLE 716.5  
OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS**

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL *	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDELITE/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4	3	Not Permitted	Not Permitted	Not Permitted	4	Not Permitted	W-240
	3	3*	Not Permitted	Not Permitted	Not Permitted	3	Not Permitted	W-180
	2	1½	100 sq. in. <sup>c</sup>	≤100 sq.in. = D-H-90 >100 sq.in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	1½	1½	100 sq. in. <sup>c</sup>	≤100 sq.in. = D-H-90 >100 sq.in.= D-H-W-90	Not Permitted	1½	Not Permitted	W-90
Shaft, exit enclosures and exit passageway walls	2	1½	100 sq. in. <sup>c,d</sup>	≤100 sq.in. = D-H-90 > 100 sq.in.= D-H-T-or D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways, interior exit ramps and exit passageway walls	1	1	100 sq. in. <sup>c,d</sup>	≤100 sq.in. = D-H-60 >100 sq.in.= D-H-T-60 or D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
					<b>Fire protection</b>			
Other fire barriers	1	¾	Maximum size tested	D-H-NT-45	¾		D-H-NT-45	
Fire partitions: Corridor walls	1	⅓ <sup>b</sup>	Maximum size tested	D-20	¾ <sup>b</sup>		D-H-OH-45	
	0.5	⅓ <sup>b</sup>	Maximum size tested	D-20	⅓		D-H-OH-20	
Other fire partitions	1	¾	Maximum size tested	D-H-45	¾		D-H-45	
	0.5	⅓	Maximum size tested	D-H-20	⅓		D-H-20	

*(continued)*

**TABLE 716.5—continued  
OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS**

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL *	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDELITE/TRANSOM PANEL		
					Fire protection	Fire resistance	Fire protection	Fire resistance	
Exterior walls	3	1½	100 sq. in. <sup>c</sup>	≤100 sq.in. = D-H-90 >100 sq.in = D-H-W-90	Not Permitted	3	Not Permitted	W-180	
	2	1½	100 sq. in. <sup>c</sup>	≤100 sq.in. = D-H-90 >100 sq.in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120	
						<b>Fire Protection</b>			
	1	¾	Maximum size tested	D-H-45	¾		D-H-45		
Smoke barriers						<b>Fire protection</b>			
	1	1/3 <sup>b</sup>	Maximum size tested	D-20	¾		D-H-OH-45		

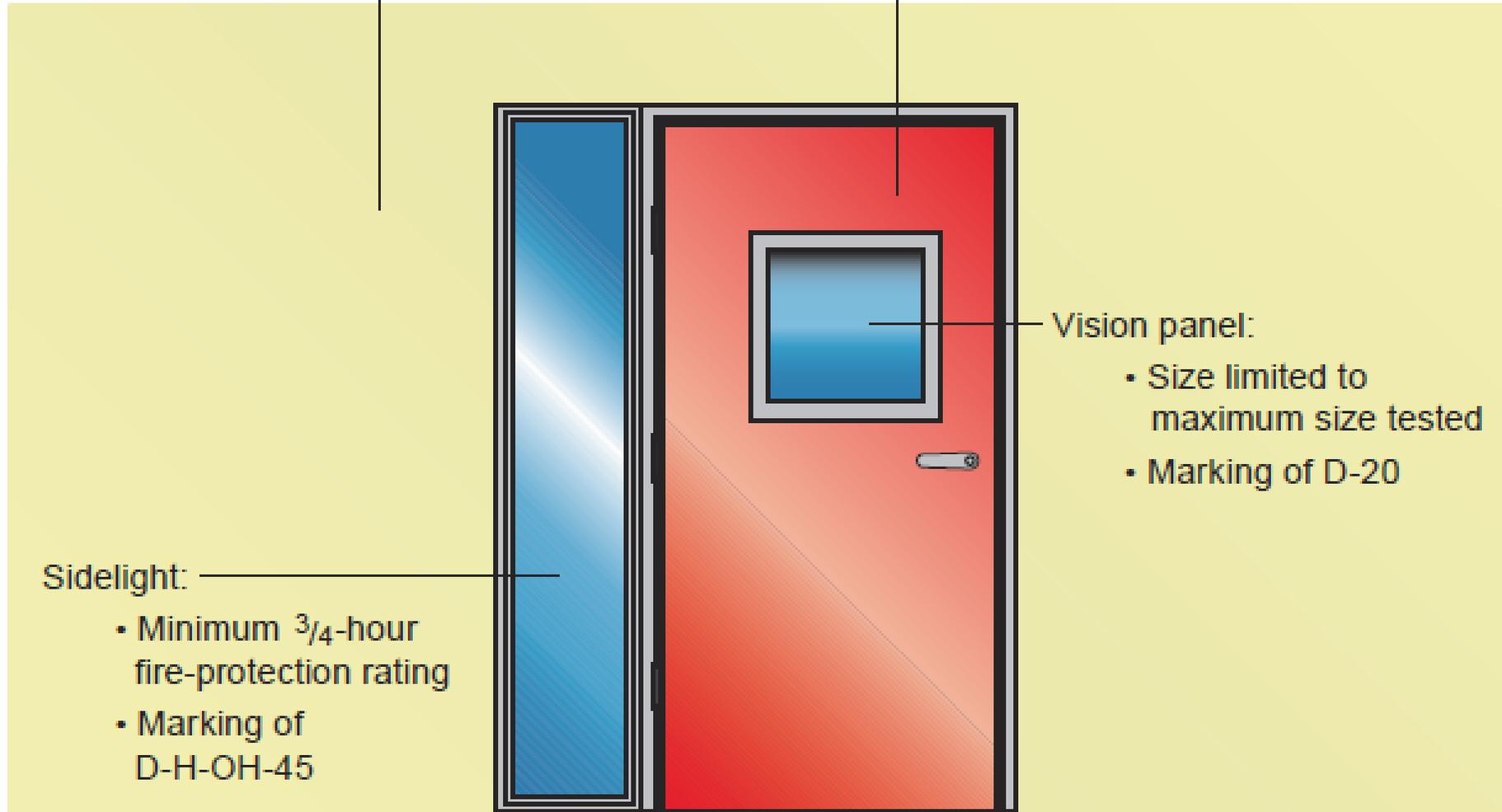
For SI: 1 square inch = 645.2 mm.

- a. Two doors, each with a fire protection rating of 1½ hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.
- b. For testing requirements, see Section 716.6.3.
- c. Fire-resistance-rated glazing tested to ASTM E 119 in accordance with Section 716.2 shall be permitted, in the maximum size tested.
- d. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 716.5.5.
- e. Under the column heading "Fire-rated glazing marking door vision panel," W refers to the fire-resistance rating of the glazing, not the frame.

1-hour fire-resistance-rated smoke barrier

Fire door assembly:

- Minimum  $\frac{1}{3}$ -hour fire-protection rating



Vision panel:

- Size limited to maximum size tested
- Marking of D-20

Sidelight:

- Minimum  $\frac{3}{4}$ -hour fire-protection rating
- Marking of D-H-OH-45

International Code Council®

Markings for fire door assembly, vision panel, and sidelight

# Fire Protection Opening Protection

- ~~715.4.4.1~~ 716.5.5.1 **Glazing in Doors.** Fire-protection-rated glazing in excess of 100 square inches is not permitted. Fire-resistance rated glazing in excess of 100 square inches shall be permitted in fire door assemblies when tested as components of the door assemblies, and not as glass lights, and shall have a maximum transmitted temperature rise of 450°F in accordance with Section 716.5.5.



- Fire-protection-rated glazing limited to 100 square inches
- Fire-resistance-rated glazing permitted in excess of 100 square inches when:
  - Tested as component of door assembly
  - Limited in maximum transmitted temperature rise to 450°F

Glazing in interior exit stairway or ramp or exit passageway door

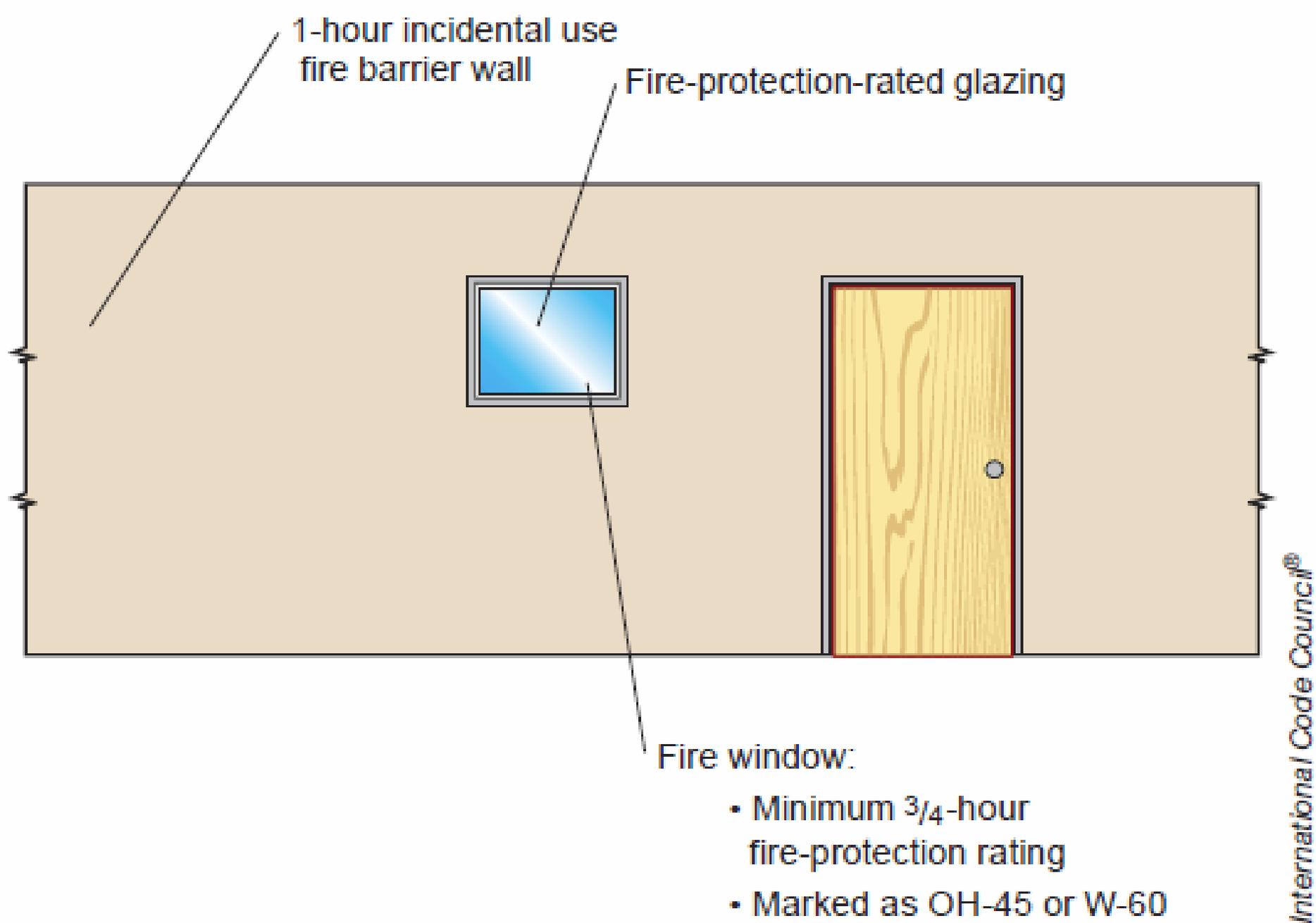
**TABLE 715.5 716.6** Fire Window Assembly Fire-Protection Ratings

Type of Wall Assembly	Required Wall Assembly Rating (Hours)	Minimum Fire Window Assembly Rating (Hours)	Fire-Rated Glazing Marking
Interior walls			
Fire walls	All	NP <sup>a</sup>	<u>W-xxx<sup>b</sup></u>
Fire barriers	>1	NP <sup>a</sup>	<u>W-xxx<sup>b</sup></u>
	1	NP <sup>a</sup>	<u>W-xxx<sup>b</sup></u>
<u>Incidental-use areas (707.3.6)</u>	<u>1</u>	<u>¾</u>	<u>OH-45 or W-60</u>
<u>Mixed-occupancy separations (707.3.8)</u>			
Fire partitions	1	¾	<u>OH-45 or W-60</u>
	0.5	½	<u>OH-20 or W-30</u>
Smoke barriers	1	¾	<u>OH-45 or W-60</u>
Exterior walls	>1	1½	<u>OH-90 or W-XXX<sup>b</sup></u>
	1	¾	<u>OH-45 or W-60</u>
	<u>0.5</u>	<u>½</u>	<u>OH-20 or W-30</u>
Party wall	All	NP	<u>Not applicable</u>

NP – Not Permitted

a. Not permitted except fire-resistance-rated glazing assemblies tested to ASTM E 119 or UL 263, as specified in Section 716.2.

b. XXX = The fire rating duration period in minutes, which shall be equal to the fire resistance rating required for the wall assembly.



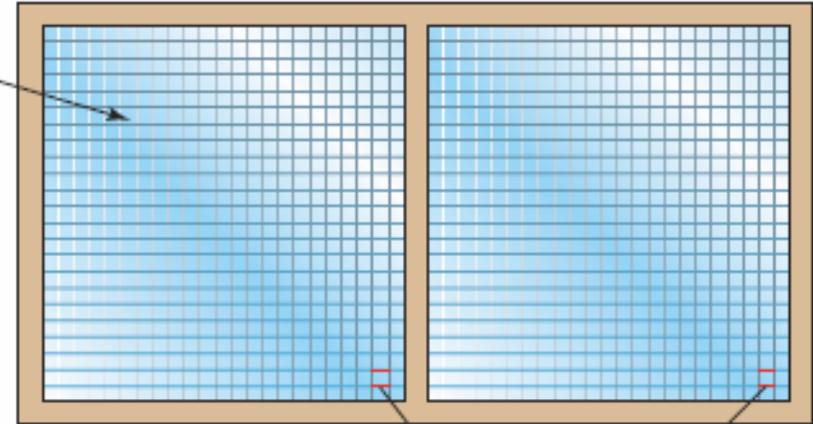
Fire window in incidental-use fire barrier wall

# Fire Protection Opening Protection



- ~~715.5~~ 716.6 Fire-Protection-Rated Glazing
- Specific requirements related to wire glass have been deleted.

Wired glass to meet NFPA 257 or UL 9 for fire-protection-rated glazing



Marking of wired glass to comply with Table 716.6 for fire window assemblies

Wired glass used in a fire window assembly

International Code Council®

## Chapter 10



# Means of Egress



# Means of Egress Occupant Load



- **1004.1.1 Cumulative occupant loads.** Where the path of egress travel includes intervening rooms, areas or spaces, cumulative occupant loads shall be determined in accordance with this section.
- **1004.1.1.1 Intervening spaces or accessory areas.** Where occupants egress from one or more rooms, areas or spaces through others, the design occupant load shall be the combined occupant load of interconnected accessory or intervening spaces. Design of egress path capacity shall be based on the cumulative portion of occupant loads of all rooms, areas or spaces to that point along the path of egress travel.



# Means of Egress Capacity Determination



- 1005.1 General. All portions of the means of egress system shall be sized in accordance with this section.
  - Exception: Means of egress complying with Section 1028.
- 1005.2 Minimum Width Based on Component. The minimum width, in inches, of any means of egress components shall not be less than that specified for such component elsewhere in this code.
- 1005.3 Required Capacity Based on Occupant Load. The required capacity, in inches, of the means of egress for any room, area, space, or story shall not be less than that determined in accordance with the following:

# Means of Egress Capacity Determination



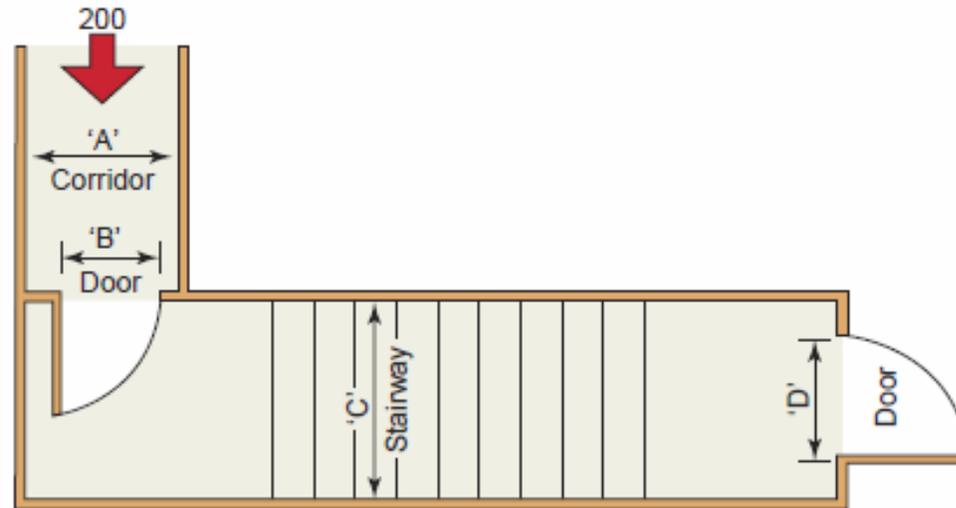
- **1005.3.1 Stairways.** The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.3 inches per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.
  - **Exception:** For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.2 inches per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

# Means of Egress Capacity Determination



- 1005.3.2 Other Egress Components. The capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inches per occupant.
  - Exception: For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.15 inches per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

# Means of Egress Capacity Determination



Example : Assuming exit is serving 200 people

Component	Min width based on component (1005.2)	Min width based on occupant load (1005.3)	
		General <sup>1</sup>	Sprinklered building with EV/ACS <sup>2</sup>
Corridor 'A'	44"	40"	30"
Door 'B'	32"	40"	30"
Stairway 'C'	44"	60"	40"
Door 'D'	32"	40"	30"

1. Building without sprinkler system or EV/ACS; (also includes Group H and I-2 occupancies)

2. Other than Group H and I-2 occupancies

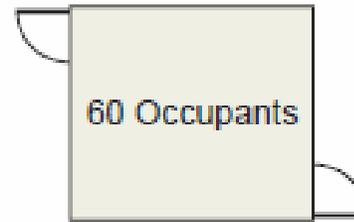
International Code Council®

Means of egress sizing

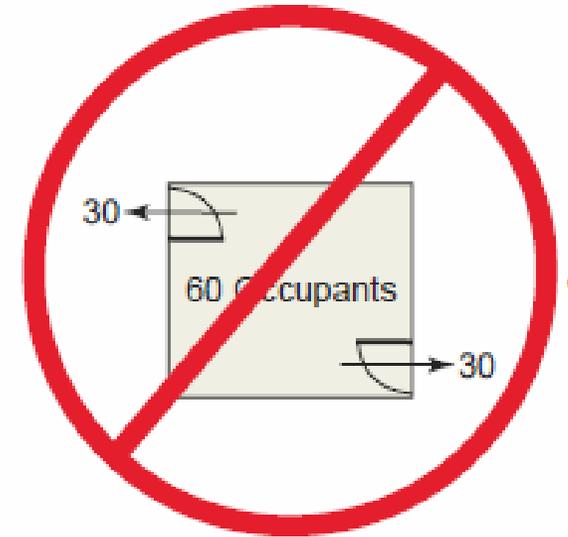


# Means of Egress Door Swing

- **1008.1.2 Door Swing.** Egress doors shall be of the pivoted or side-hinged swinging.
  - **Exceptions:** (no changes to exceptions)
- Doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy.



Doors required to swing in the direction of egress travel



A distributed or tributary occupant load is not used for determining door swing requirement

International Code Council®

# Means of Egress Hardware



- **1008.1.9.1 Hardware.** Door handles, pulls, latches, locks and other operating devices on doors required to be accessible by Chapter IIA or 11 B shall not require tight grasping, tight pinching or twisting of the wrist to operate.
- *These design requirements for door handles, pulls, latches, locks and other operating devices, intended for use on required means of egress doors in other than Group Rand M occupancies with an occupant load of 10 or less, shall comply with SFM Standard 12-10-2, Section 12-10-202 contained in the CCR, Title 24, Part 12, California Referenced Standards Code.*



- **SFM Standard 12-10-2, Section 12-10-202**
- (f) **Levers.** The lever of lever actuated latches or locks shall be curved with a return to within ½ inch of the door to prevent catching on the clothing of persons during egress.

# Means of Egress

## Electromagnetically Locked Egress Doors



- ~~1008.1.9.8~~ 1008.1.9.9 **Electromagnetically Locked Egress Doors.**

Doors in the means of egress ~~that are not otherwise required to have panic hardware~~ in buildings with an occupancy in Group A, B, E, M, R-1, or R-2 and doors to tenant spaces in Group A, B, E, M, R-1, or R-2 shall be permitted to be electromagnetically locked if equipped with listed hardware that incorporates a built-in switch and meet the requirements below:

1. The listed hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The listed hardware is capable of being operated with one hand.
3. Operation of the listed hardware directly releases interrupts the power to the electromagnetic lock and unlocks the door immediately.
4. Loss of power to the listed hardware automatically unlocks the door.
5. Where panic or fire exit hardware is required by Section 1008.1.10, operation of the listed panic or fire exit hardware also releases the electromagnetic lock.

# Means of Egress Stairways



- **1009.1 General.** Stairways serving occupied portions of a building shall comply with the requirements of this section.
- **1009.2 Interior Exit Stairways.** Interior exit stairways 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.
  - **1009.2.1 Where Required.** Interior exit stairways shall be included, as necessary, to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance.
  - **1009.2.2 Enclosure.** All interior exit stairways shall be enclosed in accordance with the provisions of Section 1022.

# Means of Egress Stairways



- 1009.3 Exit Access Stairways. Floor openings between stories created by exit access stairways shall be enclosed.

## Exceptions:

1. In other than Group I-2, I-2.1, I-3 and R-2.1 occupancies, exit access stairways that serve, or atmospherically communicate between, only two stories are not required to be enclosed.
2. Exit access 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.
3. In buildings with only Group B or M occupancies, exit access stairway openings are not required to be enclosed provided that the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the area of the floor opening between stories does not exceed twice the horizontal projected area of the exit access stairway, and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13.

# Means of Egress Stairways



4. In other than Groups B, I-2, I-2.1, I-3 and M occupancies, exit access stairway openings are not required to be enclosed provided that the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the floor opening does not connect more than four stories, the area of the floor opening between stories does not exceed twice the horizontal projected area of the exit access stairway, and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13.
5. Exit access stairways within an atrium complying with the provisions of Section 404 are not required to be enclosed.
6. Exit access stairways and ramps in open parking garages that serve only the parking garage are not required to be enclosed.
7. Stairways serving outdoor facilities where all portions of the means of egress are essentially open to the outside are not required to be enclosed.

# Means of Egress Stairways



8. Exit access stairways serving stages, platforms, and technical production areas in accordance with Sections 410.6.2 and 410.6.3 are not required to be enclosed.
9. Stairways are permitted to be open between the balcony, gallery, or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums, and sports facilities.
10. In Group I-3 occupancies, exit access stairways constructed in accordance with Section 408.5 are not required to be enclosed.
11. [SFM] Fixed guideway transit stations, constructed in accordance with Section 433.

# Means of Egress Enclosure Construction



- **1009.3.1 Construction.** Where required, enclosures for exit access stairways shall be constructed in accordance with this section. Exit access stairway enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 711, or both.

# Means of Egress Ramps



- **1010.2 Enclosure.** All interior exit ramps shall be enclosed in accordance with the applicable provisions of Section 1022. Exit access ramps shall be enclosed in accordance with the provisions of Section 1009.3 for enclosure of stairways.

# Means of Egress

## Exit Access and Exit Access Doorways



- **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. Exit access doorways, contributing to the total number of exits or exit access doorways required by Sections 1015.1 and 1015.1.1, shall lead to separate exits.

# Means of Egress Corridors



- **1018.1 Construction.** Corridors shall be fire-resistance rated in accordance with Table 1018. The corridor walls required to be fire-resistance rated shall comply with Section 708 for fire partitions.
  - **Exceptions:**
    6. *A fire-resistance rating is not required for corridors within suites in a Group I-2 occupancy provided with an automatic sprinkler system throughout and constructed in accordance with Section 407.4.3.5 or 407.4.3.6.*

# Means of Egress

## Number of Exits



- **1021.1 General.** Each story and occupied roof shall have the minimum number of independent exits, or access to exits, as specified in Table 1021.1. A single exit or access to a single exit shall be permitted in accordance with Section 1021.2. The required number of exits, or exit access stairways or ramps providing access to exits, from any story shall be maintained until arrival at grade or a public way.
- **1021.2 Single Exits.** A single exit or access to a single exit shall be permitted from any story or occupied roof, provided one of the following conditions exists:
  1. The occupant load, number of dwelling units and exit access travel distance does not exceed the values in Table 1021.2(1) or 1021.2(2).
  2. Rooms, areas 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 or access to a single exit.

# Means of Egress Number of Exits



**TABLE 1021.2(2)  
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES**

STORY	OCCUPANCY	MAXIMUM OCCUPANTS PER STORY	MAXIMUM EXIT ACCESS TRAVEL DISTANCE
First story <i>above or below grade plane</i> basement	A, B <sup>b</sup> , E, F <sup>b</sup> , M, U, S <sup>b</sup>	49 occupants	75 feet
	H-2, H-3	3 occupants	25 feet
	H-4, H-5, I, R-1, R-2 <sup>a,c</sup> , R-4	10 occupants	75 feet
	<i>I-2, I-2.1</i>	29 occupants	100 feet
	S	7 occupants	50 feet
Second story <i>above grade plane</i>	B, F, M, S	29 occupants	75 feet
Third story <i>above grade plane</i> and above <i>higher</i>	NP	NA	NA

For SI: 1 foot = 304.8 mm.

NP – Not Permitted

NA – Not Applicable

- 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.
- 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.
- This table is used for R-2 occupancies consisting of sleeping units. For R-2 occupancies consisting of dwelling units, use Table 1021.2(1).

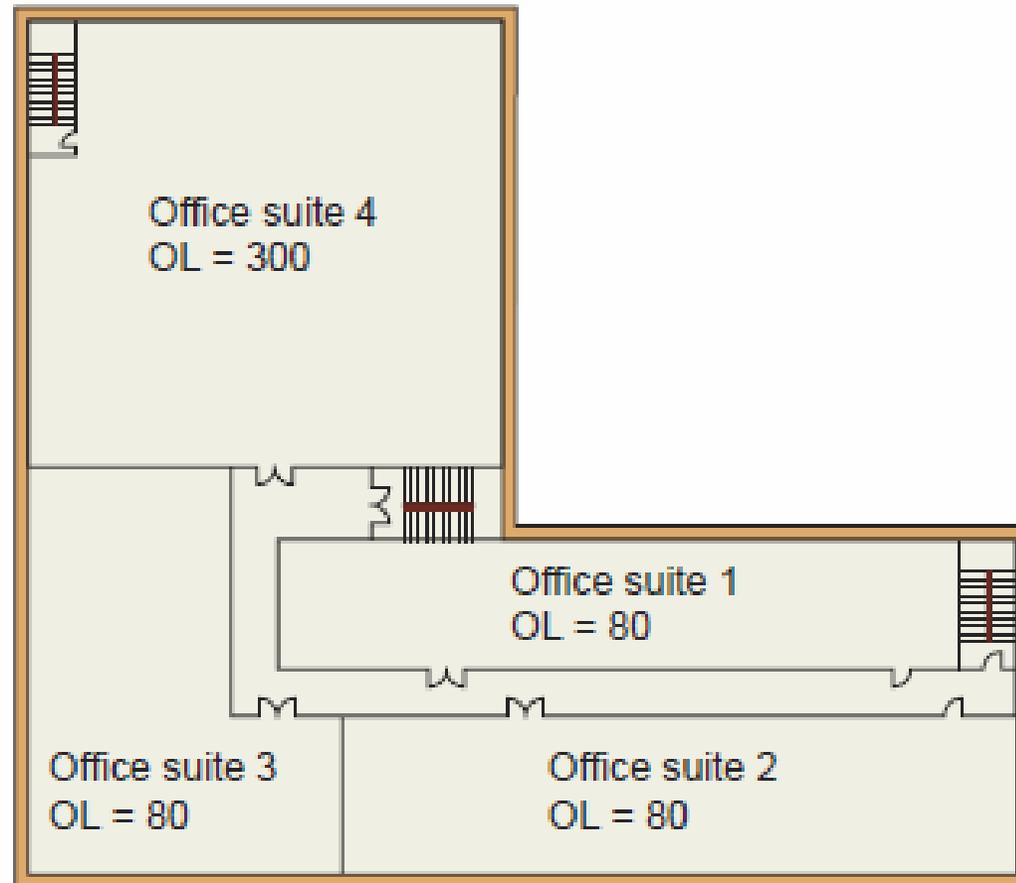
# Means of Egress

## Number of Exits



- 1021.2.2 Exits from specific space. [SFM] Exits serving specific spaces or areas need not be accessed by the remainder of the story when all of the following are met:
  1. The number of exits from the entire story complies with Section 1021.1 and 1021.4.1;
  2. The access to exits from each individual space in the story complies with Section 1015.1; and
  3. All spaces within each portion of a story shall have access to the minimum number of approved independent exits based on the occupant load of that portion of the story but not less than two exits.

# Means of Egress Number of Exits



Exits serving specific spaces or areas

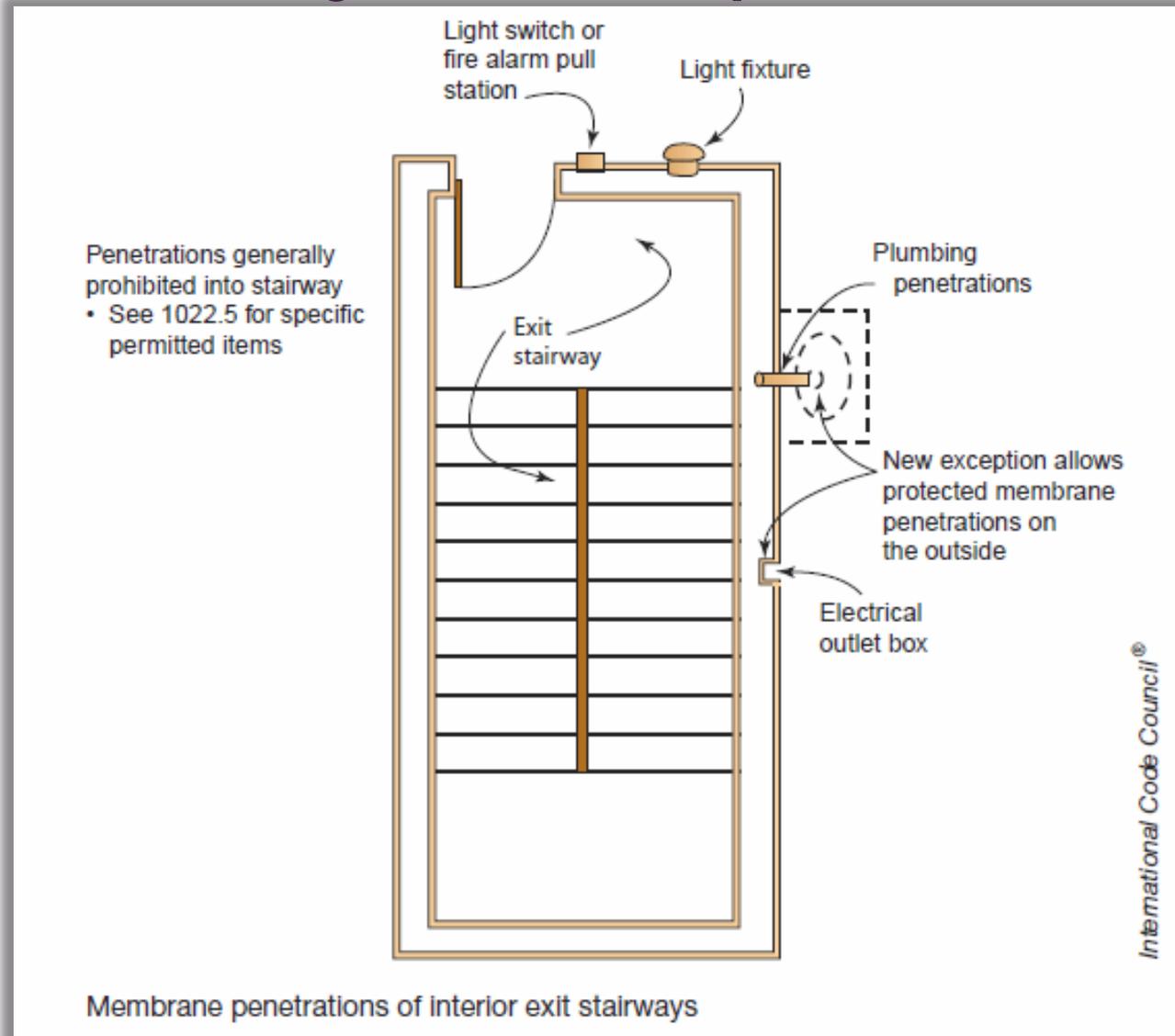
# Means of Egress

## Interior Exit Stairways and Ramps



- ~~1022.4~~ 1022.5 **Penetrations.** Penetrations into and openings through ~~an exit enclosure~~ interior exit stairways and ramps are prohibited except for required exit doors, equipment, and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication systems, and electrical raceway serving the ~~exit enclosure~~ interior exit stairway and ramp and terminating at a steel box not exceeding 16 square inches (0.010 m<sup>2</sup>). Such penetrations shall be protected in accordance with Section 714. There shall be no penetrations or communication openings, whether protected or not, between adjacent ~~exit enclosures~~ interior exit stairways and ramps.
  - **Exception:** Membrane penetrations shall be permitted on the outside of the interior exit stairway and ramp. Such penetrations shall be protected in accordance with Section 714.3.2.

# Means of Egress Interior Exit Stairways and Ramps



Chapters 12 through 26



- Building Envelope, Structural Systems, and Construction Materials



# Roof Top Structures Definitions



- **Definitions:**
- **MECHANICAL EQUIPMENT SCREEN.** A partially enclosed rooftop structure, not covered by a roof, used to aesthetically conceal heating, ventilating and air conditioning (HVAC) plumbing, electrical, or mechanical equipment from view.
- **PENTHOUSE.** An enclosed, unoccupied rooftop structure above the roof of a building, other than a tank, tower, spire, dome, cupola or bulkhead. used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, and vertical shaft openings.
- **ROOF DECK.** The flat or sloped surface constructed on top of the exterior walls of a building or other supports for the purpose of enclosing the story below, or sheltering an area, to protect it from the elements, not including its supporting members or vertical supports.
- **ROOFTOP STRUCTURE.** An enclosed A structure erected on or above top of the roof deck or on top of any part of a building.

# Roof Top Structures Definitions

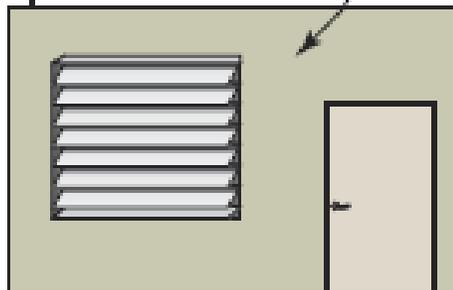


Aerial support – 1509.8.1



Penthouse – 1509.2

- Enclosed with roof



Mechanical equipment screen – 1509.6

- Not covered by roof



Flagpole – 1509.8.5



International Code Council®

# Roof Top Structures

## Penthouses



- **1509.2.2 Area Limitation.** The aggregate area of penthouses and other enclosed rooftop structures shall not exceed one-third the area of the supporting roof deck. Such penthouses and other enclosed rooftop structures shall not be required to be included in determining ~~contribute to either~~ the building area or number of stories as regulated by Section 503.1. The area of ~~the penthouse~~ such penthouses shall not be included in determining the fire area ~~defined~~ specified in Section 901.7 ~~902~~.
- **1509.2.3 Use Limitations.** ~~A penthouse~~ Penthouses ~~bulkhead or any other similar projection above the roof~~ shall not be used for purposes other than the shelter of mechanical or electrical equipment, tanks, or ~~shelter of~~ vertical shaft openings in the roof assembly.
- **1509.2.4 Weather Protection.** Provisions such as louvers, louver blades, or flashing shall be made to protect the mechanical and electrical equipment and the building interior from the elements. ~~Penthouses or bulkheads used for purposes other than permitted by this section shall conform to the requirements of this code for an additional story. The restrictions of this section shall not prohibit the placing of wood flagpoles or similar structures on the roof of any building.~~

# Special Inspections and Tests Statements and Reports



- **1704A.2.3 Statement of special inspections.** The applicant shall submit a statement of special inspections prepared by the registered design professional in general responsible charge in accordance with Section 107.1 as a condition for construction documents review. This statement shall be in accordance with Section 1704A.3.
- **1704A.2.4 Report requirement.** The inspector(s) of record and special inspectors shall keep records of inspections. The inspector of record and special inspector shall furnish inspection reports to the building official, and to the registered design professional in responsible charge as required by the California Administrative Code...

# Special Inspections and Tests

## Fire-resistant penetrations and Joints



- **1705A.16 Fire-resistant penetrations and joints.** In highrise buildings or in buildings assigned to Risk Category III or IV in accordance with Section 1604A.5, special inspections for through-penetrations firestops, membrane penetration firestops, fire-resistant joint systems, and perimeter fire barrier systems that are tested and listed in accordance with Sections 714A.3.1 714AA.1.2, 715A.3 and 715AA shall be in accordance with Section 1705A.16.1 or 1705A.16.2.
  - **1705A.16.1 Penetration firestops.** Inspections of penetration firestop systems that are tested and listed in accordance with Sections 714A.3.1.2 and 714AA.1.2 shall be conducted by an approved inspection agency in accordance with ASTM E 2174.
  - **1705A.16.2 Fire-resistant joint systems.** Inspection of fire-resistant joint systems that are tested and listed in accordance with Sections 715A.3 and 715AA shall be conducted by an approved inspection agency in accordance with ASTM E 2393.

# Safety Glazing Hazardous Locations



- **2406.1 Human Impact Loads.** Individual glazed areas, including glass mirrors, in hazardous locations as defined in Section 2406.4 shall comply with Sections 2406.1.1 through 2406.1.4.
  - Exception: Mirrors and other glass panels mounted or hung on a surface that provides a continuous backing support.

# Safety Glazing Hazardous Locations



- **2406.4 Hazardous Locations.** The following locations specified in Sections 2306.4.1 through 2406.4.7 shall be considered specific hazardous locations requiring safety glazing materials:
- ~~1. Glazing in swinging doors except jalousies (see Section 2406.4.1).~~
- ~~2. Glazing in fixed and sliding panels of sliding door assemblies and panels in sliding and bifold closet door assemblies.~~
- ~~3. Glazing in storm doors.~~
- ~~4. Glazing in unframed swinging doors.~~
- ~~5. Glazing in doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Glazing in any portion of a building wall enclosing these compartments where the bottom exposed edge of the glazing is less than 60 inches above a standing surface.~~

# Safety Glazing Hazardous Locations

- [2406.4.1 Glazing in Doors.](#)
- [2406.4.2 Glazing Adjacent to Doors.](#)
- [2406.4.3 Glazing in Windows.](#)
- [2406.4.4 Glazing in Guards and Railings.](#)
- [2406.4.5 Glazing and Wet Surfaces.](#)
- [2406.4.6 Glazing Adjacent Stairs and Ramps.](#)
- [2406.4.7 Glazing Adjacent The Bottom Stair Landing.](#)



# Safety Glazing Hazardous Locations



- 2406.2 Impact test.** Where required by other sections of this code, glazing shall be tested in accordance with CPSC 16 CFR Part 1201. Glazing shall comply with the test criteria for Category ~~I or II~~, as, unless otherwise indicated in Table 2406.2(1).

**TABLE 2406.2(1)  
MINIMUM CATEGORY CLASSIFICATION OF GLAZING USING CPSC 16 CFR PART 1201**

EXPOSED SURFACE AREA OF ONE SIDE OF ONE LITE	GLAZING IN STORM OR COMBINATION DOORS (Category class)	GLAZING IN DOORS (Category class)	GLAZED PANELS REGULATED BY SECTION 2406.4.3 (Category class)	GLAZED PANELS REGULATED BY SECTION 2406.4.2 (Category class)	DOORS AND ENCLOSURES REGULATED BY SECTION 2406.4.5 (Category class)	SLIDING GLASS DOORS PATIO TYPE (Category class)
9 square feet or less	I	I	No requirement	I	II	II
More than 9 square feet	II	II	II	II	II	II

# Safety Glazing Hazardous Locations

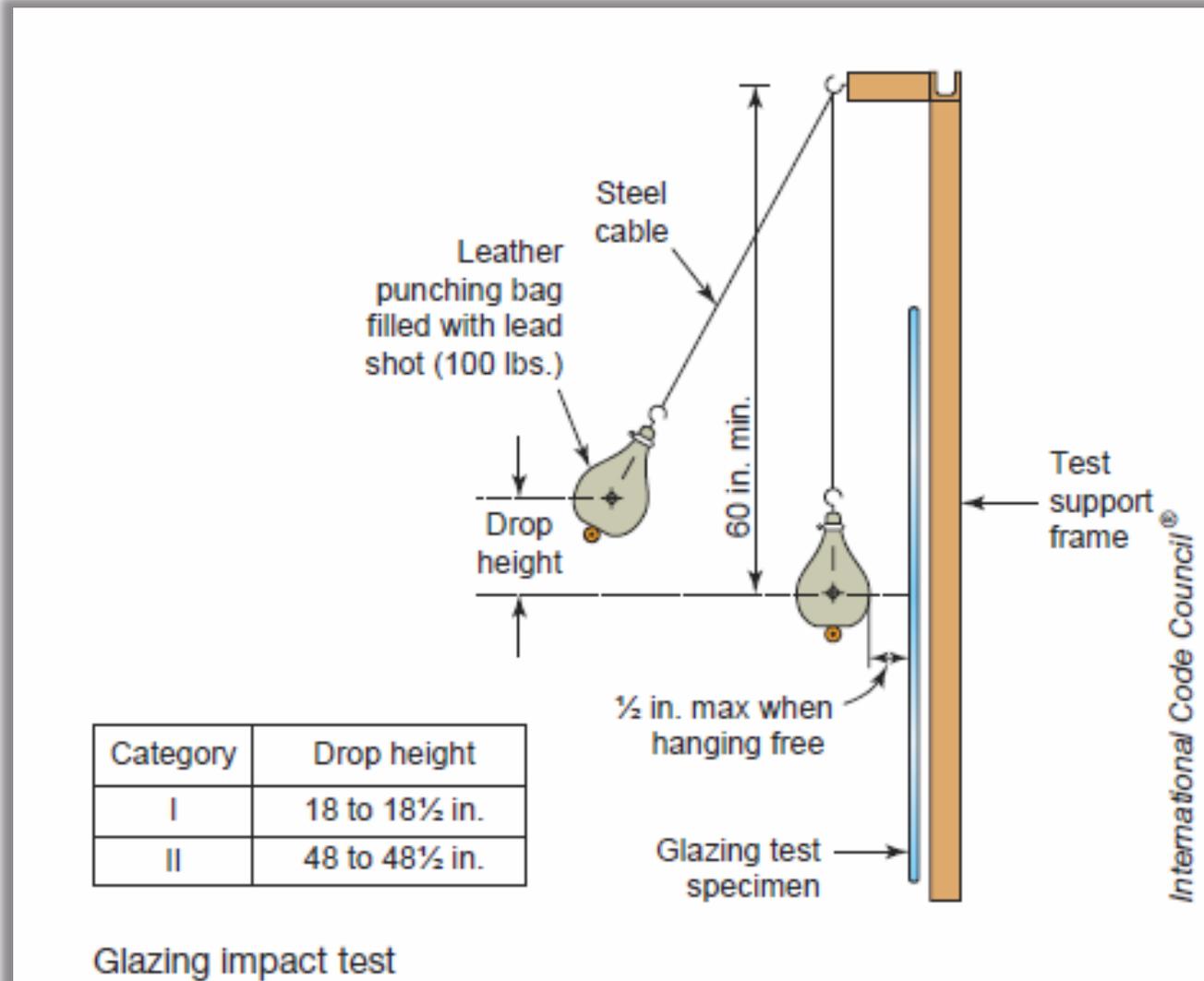


- Exception:** Glazing not in doors or enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers shall be permitted to be tested in accordance with ANSI Z97.1. Glazing shall comply with the test criteria for Class A, ~~or as~~ unless otherwise indicated in Table 2406.2(2).

**TABLE 2406.2(2)  
MINIMUM CATEGORY CLASSIFICATION OF GLAZING USING ANSI Z97.1**

EXPOSED SURFACE AREA OF ONE SIDE OF ONE LITE	GLAZED PANELS REGULATED BY SECTION 2406.4.3 (Category class)	GLAZED PANELS REGULATED BY SECTION 2406.4.2 (Category class)	DOORS AND ENCLOSURES REGULATED BY SECTION 2406.4.5 <sup>a</sup> (Category class)
9 square feet or less	No requirement	B	A
More than 9 square feet	A	A	A

# Safety Glazing Hazardous Locations



# Construction Materials Foam Plastic in Exterior Walls Approval



- 2603.10.1 Exterior Walls. Testing based on Section 2603.10 shall not be used to eliminate any component of the construction of an exterior wall assembly when that component was included in the construction that has met the requirements of Section 2603.5.5.
- **2603.5.5 ~~Test Standard~~ Vertical and lateral fire propagation.** The exterior wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.
  - **Exception:** One-story buildings complying with Section 2603.4.1.4.

# Construction Materials

## Fiber Reinforced Polymers

- 202 Definitions.
- **FIBER REINFORCED POLYMER.** A polymeric composite material consisting of reinforcement fibers, such as glass, impregnated with a fiber-binding polymer which is then molded and hardened. Fiber-reinforced polymers are permitted to contain cores laminated between fiber-reinforced polymer facings.
- **FIBERGLASS REINFORCED POLYMER.** Polymeric composite material consisting of glass reinforcement fibers impregnated with a fiber-binding polymer which is then molded and hardened.
- **Polymer:** A chemical compound that is made of small molecules that are arranged in a simple repeating structure to form a larger molecule. IE: Anything plastic but also includes paper and rubber.



An advertisement for "Panel Systems" with a blue border. At the top, the title "Panel Systems" is in large blue font. Below it are logos for "NUCO Alumacorr" and "FiberCorr". A list of product names is shown in various colors: "Fiber-Lite® Prelaminated", "Fiber-Lite® .090 Liner", "NU-ALUM®", "NU-BAY®", "NU-POLY™", "NU-LITE", "WHITE-WOOD", "GROUND/BREAKER", "KYDEX PRELAMINATED PANELS", and "MEZZANINE DECKING". To the right is a 3D cutaway illustration of several stacked panels showing their internal structure. At the bottom right are logos for "Secure Shield" and "Nu-Guard" with a small figure of a person in a hard hat.

# Construction Materials Fiber Reinforced Polymers



- FIBER-REINFORCED POLYMER ~~AND FIBERGLASS REINFORCED POLYMER~~
- **2612.1 General.** The provisions of this section shall govern the requirements and uses of fiber-reinforced polymer ~~or fiberglass reinforced polymer~~ in and on buildings and structures.
- Commonly called FRPs. Manufactured as panels and composite panels.



# Construction Materials Fiber Reinforced Polymers



- **2612.2 Labeling and Identification.** Packages and containers of fiber-reinforced polymer ~~or fiberglass reinforced polymer~~ and their components delivered to the job site shall bear the label of an approved agency showing the manufacturer's name, product listing, product identification, and information sufficient to determine that the end use will comply with the code requirements.



# Construction Materials

## Fiber Reinforced Polymers



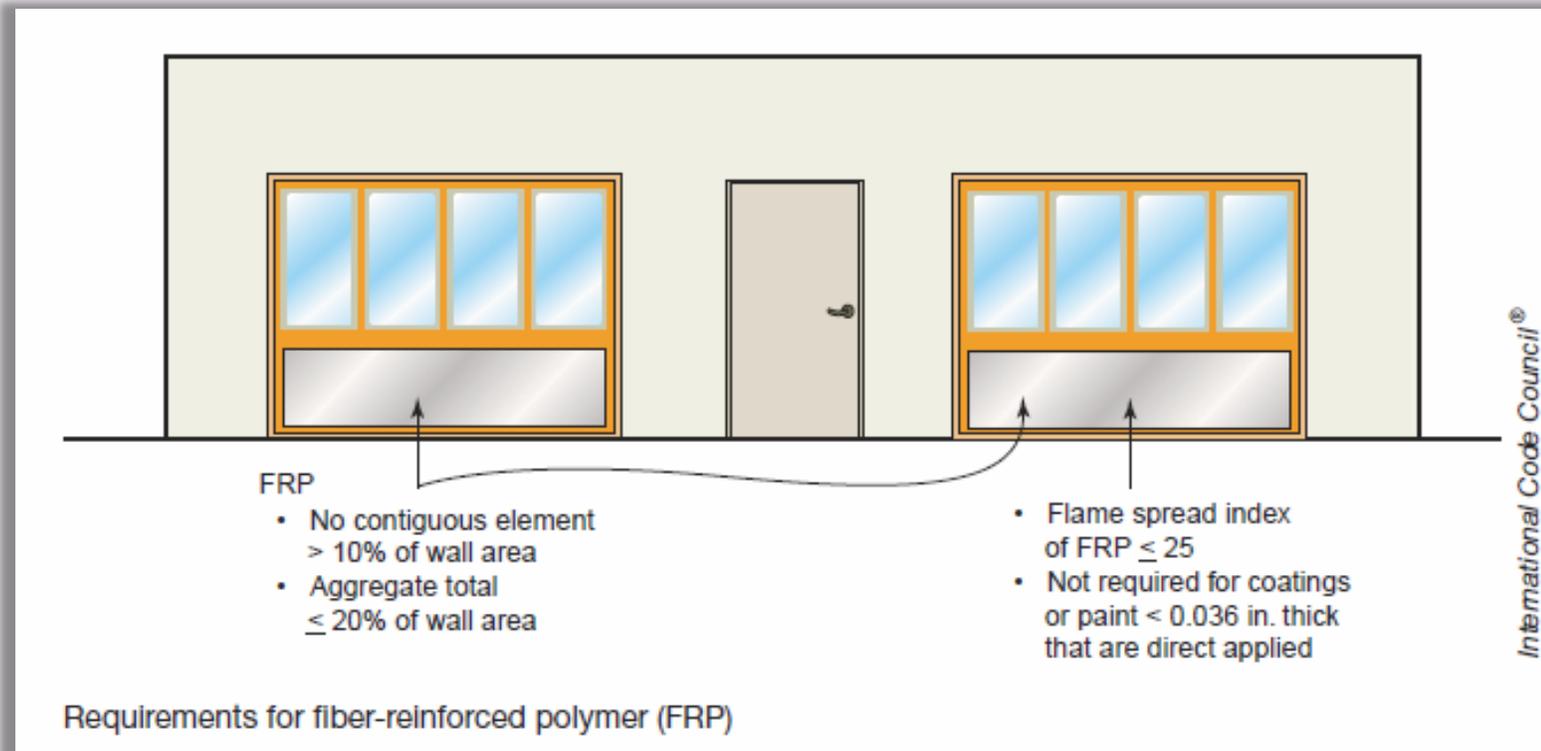
- **2612.5 Exterior Use.** Fiber-reinforced polymer or fiberglass reinforced polymer shall be permitted to be installed on the exterior walls of buildings of any type of construction when such polymers meet the requirements of Section 2603.5 ~~and is fireblocked.~~ Fireblocking shall be installed in accordance with Section 718. ~~The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613, respectively.~~

# Construction Materials

## Fiber Reinforced Polymers



- The minimum amount of separation required between the 10 percent areas is not specified, only that individual elements must be within that limit and that separate elements that are “contiguous” must also be less than 10 percent.



Chapters 27 through 34



# Building Services, Special Devices and Special Conditions



# Fire Safety During Construction



- **3302.3 Fire Safety during construction.** Fire safety during construction shall comply with the applicable requirements of this code and the applicable provisions of Chapter 33 of the California Fire Code.
- **3303.3 Means of egress.** A ~~party wall balcony or~~ horizontal exit shall not be destroyed unless and until a substitute means of egress has been provided and approved.
- **3303.7 Fire Safety during demolition.** Fire safety during demolition shall comply with the applicable requirements of this code and the applicable provisions of Chapter 33 of the California Fire Code.

# Fire Safety During Construction



- SECTION 3311 STANDPIPES
- ~~3311.4 Water Supply.~~ Water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material accumulates.
- SECTION 3313 WATER SUPPLY FOR FIRE PROTECTION
- 3313.1 Where Required. An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site.



International Code Council®

The IBC includes provisions for fire safety during construction.

# Existing Structures Compliance Alternatives for Services/Systems and Utilities



- **3416A.1 General.** The provisions of this section are intended to maintain or increase the current degree of public safety, health and general welfare in existing buildings while permitting repair, alteration, addition and change of occupancy without requiring full compliance with Chapters 2 through or Sections 3401A.3, and 3403A through 3408A, except where compliance with other provisions of this code is specifically required in this section. Services/systems and utilities that originate in and pass through or under buildings and are necessary to the operation of an acute care hospital, skilled nursing facility, intermediate care facility or correctional treatment center shall meet the structural requirements of this section. Examples of services/systems and utilities include but are not limited to normal power; emergency power; nurse call; fire alarm; communication and data systems; space-heating systems; process load systems; cooling systems; domestic hot and cold water systems; means of egress systems; fire-suppression systems; building drain and sewer systems; and medical gas systems that support basic and supplemental services.

# Referenced Standards



- NFPA:
- 13-[2013](#) Installation of Sprinkler Systems
- 14-[2013](#) Installation of Standpipe and Hose Systems
- 17A-[2013](#) Wet Chemical Extinguishing Systems
- 20-[2013](#) Installation of Stationary Fire pumps for Fire Protection
- 24-[2013](#) Installation of Private Fire Service Mains and Their Appurtenances
- 37-2010 Installation and Use of Stationary Combustion Engines and Gas Turbines
- 58-2008 Liquefied Petroleum Gas





## More Referenced Standards

- NFPA:
- 72-[2013](#) National Fire Alarm and Signaling Code
- 80-[2013](#) Fire doors and Other Opening Protectives
- 99-[2012](#) Health Care Facilities Code
- 110-[2013](#) Emergency and Standby Power Systems
- 418-2006 Standard for Heliports
- 704-2007 Standard System for the Identification of the Hazards of Materials for Emergency Response