# SENIOR LIVING FACILITIES

Shums Coda Associates

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- Colorado Regional Manager, Education Director
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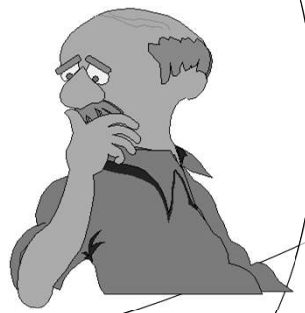
- Author
  - Building Code Basics, Commercial (2009, 2012)
  - Building Code Essentials (2015, 2018, 2021)
  - Applying Codes to Cannabis Facilities





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## Today's Discussion

- In-Depth review of senior living facilities
  - Independent Living
  - Assisted Living
  - Memory Care
- Application of the 2024 International Building Code.
- Brief discussion on NFPA 101 – Life Safety Code
- Challenges with projects

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## Applicable Codes

- Local Code
  - 2024 International Codes
  - As adopted and amended by the local jurisdiction
- State Licensing
  - NFPA 101 Life Safety Code (LSC) or State Code as applicable
- CMS – Medicare/Medicaid
  - 2012 NFPA 101 Life Safety Code (LSC)


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## Determining Health Care Occupancy Classification

- Type of Care
  - Custodial
  - Medical
- Length of Care
  - < 24 hours
  - > 24 hours
- Ability to self preserve
- Number of people

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## Definitions

- **CUSTODIAL CARE**
  - Describes persons who receive assistance with day-to-day living tasks such as cooking, taking medication, bathing, using toilet facilities and other tasks of daily living.
  - Custodial care includes persons receiving care who have the ability to respond to emergency situations and may receive limited verbal or physical assistance.
  - These care recipients may evacuate at a slower rate and/or who have mental and psychiatric complications.

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## Definitions

- MEDICAL CARE
  - Care involving medical or surgical procedures, nursing or for psychiatric purposes.

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## Definitions

- **24-HOUR BASIS**
  - The actual time that a person is an occupant within a facility for the purpose of receiving care. It must 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.

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## Definitions

- **INCAPABLE OF SELF-PRESERVATION.**
  - Describes persons who, because of age, physical limitations, mental limitations, chemical dependency or medical treatment, cannot respond as an individual to an emergency situation.

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## Definitions

- **FOSTER CARE FACILITIES**
  - Facilities that provide care to more than five children, 2 ½ years of age or less.

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## Definitions

- **NURSING HOME**
  - Facilities that provide care, including both intermediate care facilities and skilled nursing facilities where any of the persons are incapable of self-preservation.

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## Definitions

- GROUP HOME.
- A facility for social rehabilitation, substance abuse or mental health problems that contains a group housing arrangement that provides custodial care but does not provide medical care.

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## Occupancy Classification IBC

- Independent Living
  - Group R-2
- Residential occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily permanent in nature

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## 308.2 Institutional Group I-1

- Institutional Group I-1 occupancy must include buildings, structures or portions thereof for more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care.

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## 308.2.1 Condition 1

- This occupancy condition must include buildings in which all persons receiving custodial care who, without any assistance, are capable of responding to an emergency situation to complete building evacuation.

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## 308.2.2 Condition 2

- This occupancy condition must include buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation.

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## 308.3.1
## Group I-2 Occupancy conditions

- Buildings of Group I-2 must be classified as one of the occupancy conditions specified in Section 308.3.1.1 or 308.3.1.2 and must comply with Section 407.

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## 308.3.1.1
## Condition 1

- This occupancy condition must include facilities that provide nursing and medical care but do not provide emergency care, surgery, obstetrics or in-patient stabilization units for psychiatric or detoxification, including but not limited to nursing homes and foster care facilities.

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## 308.3.1.2
## Condition 2

- This occupancy condition must include facilities that provide nursing and medical care and could provide emergency care, surgery, obstetrics or in-patient stabilization units for psychiatric or detoxification, including but not limited to hospitals.

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## 310.5
## Residential Group R-4

- Residential Group R-4 occupancy must include buildings, structures or portions thereof for more than five but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive custodial care.

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## 310.5.1
## Group R-4 Condition 1

- This occupancy condition must include buildings in which all persons receiving custodial care, without any assistance, are capable of responding to an emergency situation to complete building evacuation.

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## 310.5.2
## Condition 2

- This occupancy condition must include buildings in which there are any persons receiving custodial care who require limited verbal or physical assistance while responding to an emergency situation to complete building evacuation.

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## Occupancy Classification
## IBC

- Memory Care
  - Group 1-1, Condition 2, or
  - Group I-2, Condition 1
- Buildings and structures used for *medical care* on a 24-hour basis for more than five persons who are *incapable of self-preservation.*


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## Occupancy Classification
## IBC

- Dining/Assembly
  - Group A-2/A-3
- Office
  - Group B
- Parking Garage
  - Group S-2

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## Occupancy Classification NFPA 101 - LSC

- Independent Living
  - Apartment
- Assisted Living
  - Large Board and Care Facility
  - Small Board and Care Facility
- Memory Care
  - Nursing Home
- Dining/Assembly
  - Assembly

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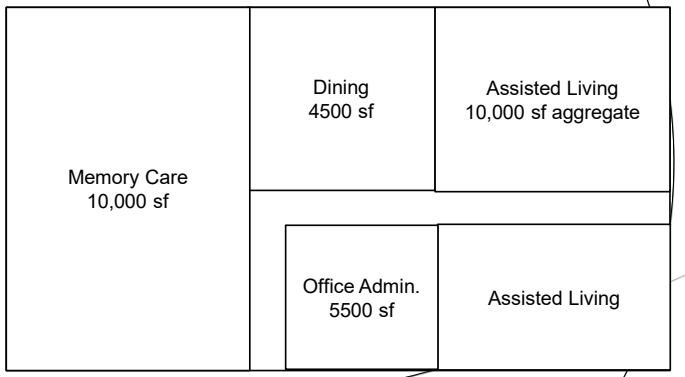
## Example Project First Floor

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## Example Project Second Floor


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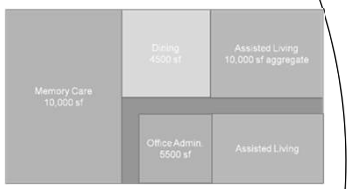
## Example Project Building Data

- Total Floor Area per Story
  - 30,000 square feet
- Type of Construction
  - Type VA
- Non-Separated Occupancy
- Automatic Sprinklers
  - NFPA 13 System
- Open Space
  - Minimum 30 feet on all sides

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## Height Evaluation

- Tables 504.3 & 504.4
  - Occupancy Classification
  - Type of Construction
  - Automatic Fire Sprinklers?

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## Height Evaluation 504

- Example building provided with automatic sprinklers
- Maximum Height
  - I-1, Cond. 1, 4 stories, 70 feet
  - I-1, Condition 2, 1 story, 60 feet
  - R-2, 4 stories, 70 feet
  - A-2, 3 stories, 70 feet
  - B, 4 stories, 70 feet

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## Minimum Construction Requirements LSC 18.1.6.4

- Health care occupancies must be limited to the types of building construction shown in Table 18.1.6.1, unless otherwise permitted by 18.1.6.2 through 18.1.6.6.

**Table 18.1.6.4 Construction Type Limitations**

| Construction Type | Stories | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 or More |
| I(443) | X | X | X | X |
| I(332) | X | X | X | X |
| II(222) | X | X | X | X |
| II(111) | X | X | X | NP |
| II(000) | X | NP | NP | NP |
| III(211) | X | NP | NP | NP |
| III(200) | NP | NP | NP | NP |
| IV(2HH) | X | NP | NP | NP |
| V(111) | X | NP | NP | NP |
| V(000) | NP | NP | NP | NP |

X: Permitted type of construction.
NP: Not permitted.

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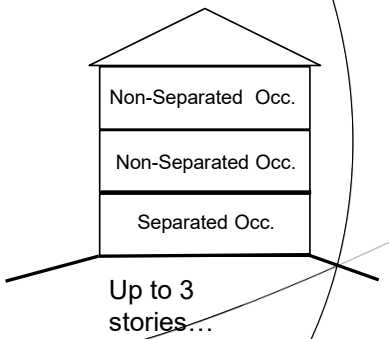
## Mixed-occupancy, multistory buildings 506.2.2

- The allowable area of each story of a mixed-occupancy building must be determined in accordance with the applicable provisions of , Section 508.3.2 for nonseparated occupancies and Section 508.4.2 for separated occupancies.

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## Maximum Building Area 506

- Assume Nonseparated Occupancy (First Story)
- NFPA 13 Fire Sprinklers
- I-1 Occupancy governing occupancy on first story
- R-2 Occupancy on second story
- Tabular area (Table 503)
  - 1-1 = 31,500 sq. ft.
  - R-2 = 36,000 sq. ft.
- I-1 (1st story)
  - $A_a$ = 31,500 sq. ft.
  - Actual area = 30,000 sq. ft.
- R-2 (2nd story)
  - $A_a$ = 36,000 sq. ft.
  - Actual area = 30,000 sq. ft.
- Areas OK for each floor

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## Mixed Occupancy 508

- No Separation between occupancies required (508.3.3)
- One-hour separation required between I-1, R-2 and other occupancies
  - Exception 2, 508.3.3

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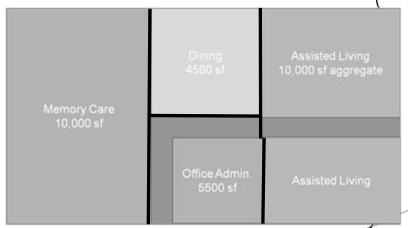
## Separated Occupancies 508.4.1

- Separated occupancies must be individually classified in accordance with Section 302.1.
- Each separated space must comply with this code based on the occupancy classification of that portion of the building.

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## Allowable Building Area 508.4.2

| Occupancy | Actual Area | Allowable Area | Ratio |
|---|---|---|---|
| A-2 | 4,500 | 34,500 | 0.13 |
| B | 5,500 | 54,000 | 0.10 |
| I-1 | 20,000 | 31,500 | 0.63 |
| Total Ratio 1st Floor | | | 0.86 |
| R-2 | 30,000 | 36,000 | 0.83 |
| Total Ratio 2nd Floor | | | 0.83 |

- In each story , the building area must be such that the sum of the ratios of the actual building area of each separated occupancy divided by the allowable building area of each separated occupancy must not exceed 1.

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## Allowable Height
## 508.4.3

- Each separated occupancy must comply with the building height limitations and story limitations based on the type of construction of the building in accordance with Section 503.1.

| | Stories | Feet |
|---|---|---|
| A-2 | 3 | 70 |
| B | 4 | 70 |
| I-1, C1 | 4 | 70 |
| I-1, C2 | 3 | 50 |
| R-2 | 4 | 70 |

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## Separated Occupancies
## 508.4

TABLE 508.4
REQUIRED SEPARATION OF OCCUPANCIES (HOURS)[1]

| OCCUPANCY | A, E | | I-1[4], I-3, I-4 | | I-2 | | R[3] | | F-2, S-2[5], U | | B[5], F-1, M,S-1 | | H-1 | | H-2 | | H-3, H-4 | | H-5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | NS | S | NS | S | NS | S | NS | S | NS | S | NS | S | NS | S | NS | S | NS | S | NS |
| A, E | N | N | 1 | 2 | 2 | NP | 1 | 2 | N | 1 | 1 | 2 | NP | NP | 3 | 4 | 2 | 3 | 2 | NP |
| I-1[4], I-3, I-4 | 1 | 2 | N | N | 2 | NP | 1 | NP | 1 | 2 | 1 | 2 | NP | NP | 3 | NP | 2 | NP | 2 | NP |
| I-2 | 2 | NP | 2 | NP | N | N | 2 | NP | 2 | NP | 2 | NP | NP | NP | 3 | NP | 2 | NP | 2 | NP |
| R[3] | 1 | 2 | 1 | NP | 2 | NP | N | N | 1[2] | 2[2] | 1 | 2 | NP | NP | 3 | NP | 2 | NP | 2 | NP |
| F-2, S-2[5], U | N | 1 | 1 | 2 | 2 | NP | 1[2] | 2[2] | N | N | 1 | 2 | NP | NP | 3 | 4 | 2 | 3 | 2 | NP |
| B[5], F-1, M, S-1 | 1 | 2 | 1 | 2 | 2 | NP | 1 | 2 | 1 | 2 | N | N | NP | NP | 2 | 3 | 1 | 2 | 1 | NP |
| H-1 | NP | NP | NP | NP | NP | NP | NP | NP | NP | NP | NP | NP | N | NP | NP | NP | NP | NP | NP | NP |
| H-2 | 3 | 4 | 3 | NP | 3 | NP | 3 | NP | 3 | 4 | 2 | 3 | NP | NP | N | NP | 1 | NP | 1 | NP |
| H-3, H-4 | 2 | 3 | 2 | NP | 2 | NP | 2 | NP | 2 | 3 | 1 | 2 | NP | NP | 1 | NP | 1[2] | NP | 1 | NP |
| H-5 | 2 | NP | 2 | NP | 2 | NP | 2 | NP | 2 | NP | 1 | NP | NP | NP | 1 | NP | 1 | NP | N | NP |

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## Mixed Occupancy
## LSC 18.1.3.4

- Sections of health care facilities must be permitted to be classified as other occupancies, provided that they meet all of the following conditions:
  - (1) They are not intended to serve health care occupants for purposes of housing, treatment, or customary access by patients incapable of self-preservation.
  - (2) They are separated from areas of health care occupancies by construction having a fire resistance rating of not less than 2 hours.

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## Incidental Uses
## 509.1

- Incidental uses located within single occupancy or mixed occupancy buildings must 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 509.1.


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## Incidental Accessory Occupancies 509.1

[F]TABLE 509.1INCIDENTAL 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 |
| Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower | 1 hour or provide automatic sprinkler system |
| Refrigerant machinery room | 1 hour or provide automatic sprinkler system |
| Hydrogen fuel gas rooms, not classified as Group H | 1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies. |
| Incinerator rooms | 2 hours and provide automatic sprinkler system |
| Paint shops, not classified as Group H, located in occupancies other than Group F | 2 hours; or 1 hour and provide automatic sprinkler system |
| In Group E occupancies, laboratories and vocational shops not classified as Group H | 1 hour or provide automatic sprinkler system |
| In Group I-2 occupancies, laboratories not classified as Group H | 1 hour and provide automatic sprinkler system |
| In ambulatory care facilities, laboratories not classified as Group H | 1 hour or provide automatic sprinkler system |
| Laundry rooms over 100 square feet | 1 hour or provide automatic sprinkler system |
| In Group I-2, laundry rooms over 100 square feet | 1 hour and provide automatic sprinkler system |
| Group I-3 cells and Group I-2 patient rooms equipped with padded surfaces | 1 hour and provide automatic sprinkler system |
| In Group I-2, physical plant maintenance shops | 1 hour and provide automatic sprinkler system |
| In ambulatory care facilities or Group I-2 occupancies, waste and linen collection rooms with containers that have an aggregate volume of 8.67 cubic feet or greater | 1 hour and provide automatic sprinkler system |
| In other than ambulatory care facilities and Group I-2 occupancies, waste and linen collection rooms over 100 square feet | 1 hour or provide automatic sprinkler system |
| In ambulatory care facilities or Group I-2 occupancies, storage rooms greater than 50 square feet | 1 hour and provide automatic sprinkler system |
| Electrical installations and transformers | See Sections 110.26 through 110.34 and Sections 450.8 through 450.48 of NFPA 70 for protection and separation requirements. |

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## Occupancy classification 509.2

- Incidental uses must not be individually classified in accordance with Section 302.1.
- Incidental uses must be included in the building occupancies within which they are located.

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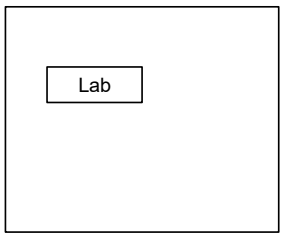
## Area limitations 509.3




- Incidental uses must not occupy more than 10 percent of the *building area* of the *story* in which they are located.

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## Separation and protection 509.4

- The incidental uses listed in Table 509.1 must 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.

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## Hazardous Areas – Health Care LSC 18.3.2.1.2

- The following areas must be considered hazardous areas and must be protected by fire barriers having a minimum 1-hour fire resistance rating in accordance with Section 8.3:
- (1) Boiler and fuel-fired heater rooms
- (2) Central/bulk laundries larger than 100 square feet
- (3) Paint shops employing hazardous substances and materials in quantities less than those that would be classified as a severe hazard
- (4) Physical plant maintenance shops
- (5) Rooms with soiled linen in volume exceeding 64 gallons
- (6) Rooms with collected trash in volume exceeding 64 gallons
- (7) Storage rooms larger than 100 square feet and storing combustible material

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## Hazardous Areas – Health Care LSC 18.3.2.1.3

- The following areas must be considered hazardous areas and must be protected by smoke partitions in accordance with Section 8.4:
- (1) Laboratories employing flammable or combustible materials in quantities less than those that would be considered a severe hazard
- (2) Storage rooms larger than 50 square feet but not exceeding 100 square feet and storing combustible material

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## Hazardous Areas – Residential Board & Care – LSC 32.3.3.2.2

- Hazardous areas must be protected in accordance with Section 8.7.
- The areas described in Table 32.3.3.2.2 must be protected as indicated.

**Table 32.3.3.2.2 Hazardous Area Protection**

| Hazardous Area Description | Separation/Protection* |
|---|---|
| Boiler and fuel-fired heater rooms | 1 hour |
| Central/bulk laundries larger than 100 ft$^2$ (9.3 m$^2$) | 1 hour |
| Paint shops employing hazardous substances and materials in quantities less than those that would be classified as a severe hazard | 1 hour |
| Physical plant maintenance shops | 1 hour |
| Soiled linen rooms | 1 hour |
| Storage rooms larger than 50 ft$^2$ (4.6 m$^2$), but not exceeding 100 ft$^2$ (9.3 m$^2$), storing combustible material | Smoke partition |
| Storage rooms larger than 100 ft$^2$ (9.3 m$^2$) storing combustible material | 1 hour |
| Trash collection rooms | 1 hour |

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## Hazardous Area Protection LSC 8.7.1.1

- Protection from any area having a degree of hazard greater than that normal to the general occupancy of the building or structure must be provided by one of the following means:
  - (1) Enclosing the area with a fire barrier without windows that has a 1-hour fire resistance rating in accordance with Section 8.3
  - (2) Protecting the area with automatic extinguishing systems in accordance with Section 9.7
  - (3) Applying both 8.7.1.1(1) and 8.7.1.1(2) where the hazard is severe or where otherwise specified by Chapter 12 through Chapter 42

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## Type of Construction Chapter 6

- Type VA
- One Hour
  - Primary Structural Frame
  - Bearing Walls
    - Interior
    - Exterior
  - Floor Construction
  - Roof Construction
- Non-Rated
  - Interior Non-Bearing Walls
  - Exterior Non-Bearing Walls
- Exterior Walls per Table 602

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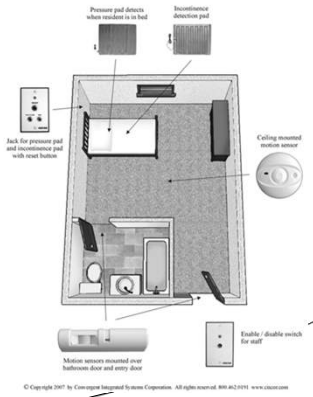
## Specific Occupancy Requirements Chapter 4

- I-2 Occupancy
  - Section 407
- I-1/R-2 Occupancy
  - Section 420

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## 407.2.5 Nursing home housing units

- In Group I-2, Condition 1, occupancies, in areas where nursing home residents are housed, shared living spaces, group meeting or multipurpose therapeutic spaces must be permitted to be open to the corridor, where all of the following criteria are met:
- 1. The walls and ceilings of the space are constructed as required for corridors.
- 2. The spaces are not occupied as resident sleeping rooms, treatment rooms, incidental uses in accordance with Section 509, or hazardous uses.
- 3. The open space is protected by an automatic fire detection system installed in accordance with Section 907.
- 4. 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.
- 5. The space is arranged so as not to obstruct access to the required exits.

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## 407.2.6 Nursing home cooking facilities

- In Group I-2, Condition 1 occupancies, rooms or spaces that contain a cooking facility with domestic cooking appliances must be permitted to be open to the corridor where all of the following criteria are met:
- 1.The number of care recipients housed in the smoke compartment must not be greater than 30.
- 2.The number of care recipients served by the cooking facility must not be greater than 30.
- 3.Not more than one cooking facility area must be permitted in a smoke compartment.
- 4.The corridor must be a clearly identified space delineated by construction or floor pattern, material or color.
- 5.The space containing the domestic cooking facility must be arranged so as not to obstruct access to the required exit.
- 6.The cooking appliance must comply with Section 407.2.7.

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## 407.2.7
## Domestic cooking appliances

- In Group I-2 occupancies, installation of cooking appliances used in domestic cooking facilities must comply with all of the following:
- 1. The types of cooking appliances permitted must be limited to ovens, cooktops, ranges, warmers and microwaves.
- 2. Domestic cooking hoods installed and constructed in accordance with Section 505 of the International Mechanical Code must be provided over cooktops and ranges.
- 3. Cooktops and ranges must be protected in accordance with Section 904.14.

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## 407.2.7
## Domestic cooking appliances

- 4. A shut-off for the fuel and electrical power supply to the cooking equipment must be provided in a location to which only staff has access.
- 5.A timer must be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes.
- 6. A portable fire extinguisher must be provided. Installation must be in accordance with Section 906, and the extinguisher must be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance.

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## 407.2.7
## Domestic cooking appliances

- Exceptions:
- 1.Cooktops and ranges located within smoke compartments with no patient sleeping or patient care areas are not required to comply with this section.
- 2.Cooktops and ranges used for care recipient training or nutritional counseling are not required to comply with Item 3 of this section.

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## 407.5
## Smoke barriers

- Smoke barriers must be provided to subdivide every story used by persons receiving care, treatment or sleeping into not fewer than two smoke compartments. Smoke barriers must be provided to subdivide other stories with an occupant load of 50 or more persons, into not fewer than two smoke compartments.
- The smoke barrier must be in accordance with Section 709.

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## Smoke Barriers
## 709

- Materials permitted by the building type of construction.
- 1-hour fire-resistance rating required.

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## Smoke Barrier Continuity
## 709.4

- Must form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces.

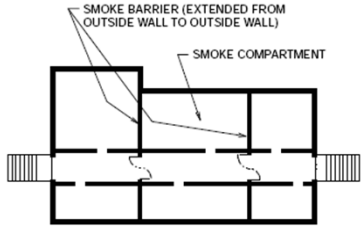


Figure 407.4.2(1)
ACCEPTABLE EGRESS ARRANGEMENT

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## Smoke Barrier Continuity
## 709.4

- The supporting construction must be protected to afford the required fire-resistance rating of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

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## 709.4.1 - Smoke-barrier walls separating smoke compartments

- Smoke-barrier assemblies used to separate smoke compartments must form an effective membrane enclosure that is continuous from an outside wall or smoke barrier wall to an outside wall or another smoke barrier wall and to the horizontal assemblies.

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## Openings
## 709.5

- Openings in a smoke barrier must be protected in accordance with Section 716.
  - 1/3 hour doors
- Exceptions
  - Opposite swing doors
  - horizontal sliding, accordion or folding doors

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## 709.5.1 Group I-2 and ambulatory care facilities

- In Group I-2 and ambulatory care facilities, where doors protecting openings in smoke barriers are installed across a corridor and have hold-open devices, the doors must be automatic-closing in accordance with Section 716.2.6.6.
- Such doors must have a vision panel with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which must not exceed that tested.

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## Penetrations
## 709.6

- In accordance with Section 714
  - Through penetration firestop systems
- 714.5
  - Penetrations in smoke barriers must be tested in accordance with the requirements of UL 1479 for air leakage.
- The *L rating* of the system measured at 0.30 inch of water in both the ambient temperature and elevated temperature tests, must 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.

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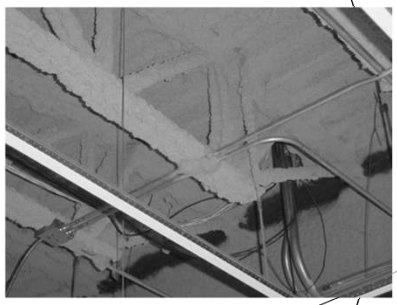
## Joints
## 709.7

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, must be tested in accordance with the requirements of UL 2079 for air leakage.
- The L rating of the joint must not exceed 5 cfm per lineal foot of joint at 0.30 inch of water for both the ambient temperature and elevated temperature tests.



 64

64

## Ducts and Air Transfer Openings 709.8

717.5.5 Smoke barriers.

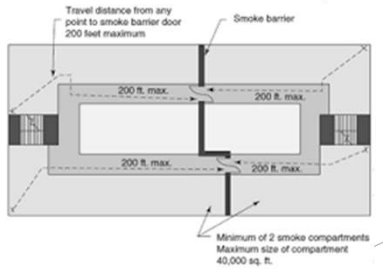
- A listed smoke damper designed to resist the passage of smoke must be provided at each point a duct or air transfer opening penetrates a smoke barrier.
- Smoke dampers and smoke damper actuation methods must comply with Section 716.3.3.2.
  - Exception: Smoke dampers are not required where the openings in ducts are limited to a single smoke compartment and the ducts are constructed of steel.

 65

65

## 407.5.1 Smoke compartment size

- Stories must be divided into smoke compartments with an area of not more than 22,500 square feet in Group I-2 occupancies.




 66

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## 407.5.2 Exit access travel distance

- The distance of travel from any point in a smoke compartment to a smoke barrier door must be not greater than 200 feet

 67

67

## 407.5.3 Refuge area

- Refuge areas must be provided within each smoke compartment.
- The size of the refuge area must 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 must accommodate the largest occupant load of the adjoining compartments.
- The size of the refuge area must provide the following:
  - 1. Not less than 30 net square feet for each care recipient confined to bed or stretcher.
  - 2. Not less than 6 square feet for each ambulatory care recipient not confined to bed or stretcher 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.

 68

68

## 407.5.4
## Independent egress

- A means of egress must be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.
- Smoke compartments that do not contain an exit must be provided with direct access to not less than two adjacent smoke compartments.


 69

69

## 407.9
## Automatic fire detection

- Corridors in Group I-2, Condition 1 occupancies and spaces permitted to be open to the corridors by Section 407.2 must be equipped with an automatic fire detection system.
- Except…

 70

70

## 407.9
## Automatic fire detection

- Exceptions:
- 1. Corridor smoke detection is not required where sleeping rooms are provided with smoke detectors that comply with UL 268. Such detectors must provide a visual display on the corridor side of each sleeping room and an audible and visual alarm at the care provider's station attending each unit.
- 2. Corridor smoke detection is not required where sleeping room doors are equipped with automatic door-closing devices with integral smoke detectors on the unit sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

 71

71

## 407.10
## Secured yards

- Grounds are permitted to be fenced and gates therein are permitted to be equipped with locks, provided that safe dispersal areas having 30 net square feet for bed and stretcher care recipients and 6 net square feet for ambulatory care recipients and other occupants are located between the building and the fence.
- Such provided safe dispersal areas must be located not less than 50 feet from the building they serve.

 72

72

## 407.11
## Electrical systems

- In Group I-2 occupancies, the essential electrical system for electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of Chapter 27 and NFPA 99.

 73

73

## Groups I-1 & R-2
## 420.2

- Walls separating dwelling units in the same building, walls separating sleeping units in the same building, walls separating dwelling units from sleeping units in the same building and walls separating dwelling or sleeping units from other occupancies contiguous to them in the same building shall be constructed as fire partitions in accordance with Section 708.

 74

74

## Fire Resistance Rating
## 708.3

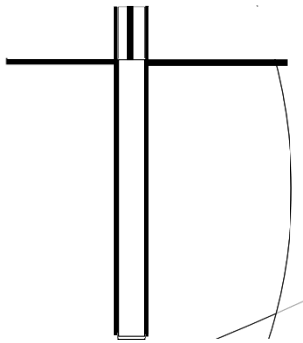
- One Hour
  - Except: Corridor walls per Table 1020.2
  - Dwelling unit & guestroom separation Types IIB, IIIB and VB permitted to be ½ hour rated with NFPA 13 sprinkler system

 75

75

## Fire Partitions Continuity
## 708.4

- Fire partitions must extend from the top of the foundation or floor/ceiling assembly below and be securely attached to one of the following:
  - 1. The underside of the floor or roof sheathing, deck or slab above.
  - 2. The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating that is not less than the fire-resistance rating of the fire partition.



 76

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## 708.4.2
## Supporting construction

- The supporting construction for a fire partition must have a fire-resistance rating that is equal to or greater than the required fire-resistance rating of the supported fire partition.
- Exceptions for Types IIB, IIIB and VB

 77

77

## Horizontal Separation
## 420.3

- Floor assemblies separating dwelling units in the same buildings, floor assemblies separating sleeping units in the same building and floor assemblies separating dwelling or sleeping units from other occupancies contiguous to them in the same building must be constructed as horizontal assemblies in accordance with Section 711.


 78

78

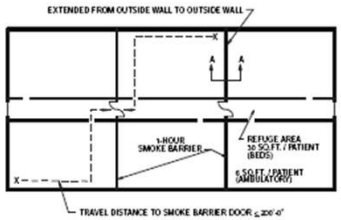
## Smoke Barriers in I-1, Cond. 2
## 420.6

- Must subdivide every story used by patients for sleeping or treatment and to divide other stories with an occupant load of 50 or more persons, into at least two smoke compartments.
- Must be divided into smoke compartments with an area of not more than 22,500 square feet
- Travel distance from any point in a smoke compartment to a smoke barrier door cannot exceed 200 feet.
- Constructed in accordance with Section 709.

 79

79

## Refuge Area
## 420.6.1




- Refuge areas must be provided within each *smoke compartment*. The size of the refuge area must 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 must accommodate the largest *occupant load* of the adjoining compartments.

 80

80

## Refuge Area
## 420.6.1

- The size of the refuge area must provide the following:
  - 1. Not less than 15 net square feet for each care recipient.
  - 2. Not less than 6 net square feet 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.

 81

81

## 420.7 Group I-1 assisted living housing units

- In Group I-1 occupancies, where a fire-resistance corridor is provided in areas where assisted living residents are housed, shared living spaces, group meeting or multipurpose therapeutic spaces open to the corridor must be in accordance with all of the following criteria:
- Similar to nursing homes

 82

82

## 420.8
## Group I-1 cooking facilities

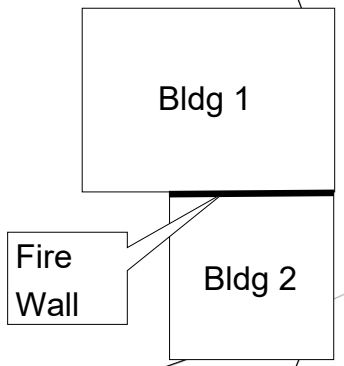
- In Group I-1 occupancies, rooms or spaces that contain cooking facilities with domestic cooking appliances must be in accordance with all of the following criteria:
- Similar to nursing homes

 83

83

## Fire Walls
## 706

- Fire walls must be constructed in accordance with Sections 706.2 through 706.11.
- The extent and location of such fire walls must provide a complete separation.
- Where a fire wall separates occupancies that are required to be separated by a fire barrier wall, the most restrictive requirements of each separation must apply.




 84

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## Structural Stability 706.2

- Fire walls must be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions.
- Fire walls designed and constructed in accordance with NFPA 221 must be deemed to comply with this section.

 85

85

## Materials 706.3

- Noncombustible materials except Type V

 86

86

## Fire Resistance Rating Table 706.4

**TABLE 706.4**
**FIRE WALL FIRE-RESISTANCE RATINGS**

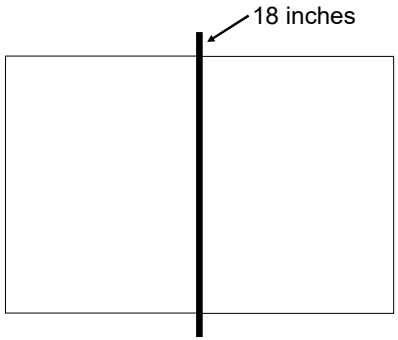
| GROUP | FIRE-RESISTANCE RATING (hours) |
|---|---|
| A, B, E, H-4, I, R-1, R-2, U | 3[a] |
| F-1, H-3[b], H-5, M, S-1 | 3 |
| H-1, H-2 | 4[b] |
| F-2, S-2, R-3, R-4 | 2 |

a. In Type II or V construction, walls shall be permitted to have a 2-hour fire-resistance rating.
b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.4 and 415.5.

 87

87

## Horizontal Continuity 706.5



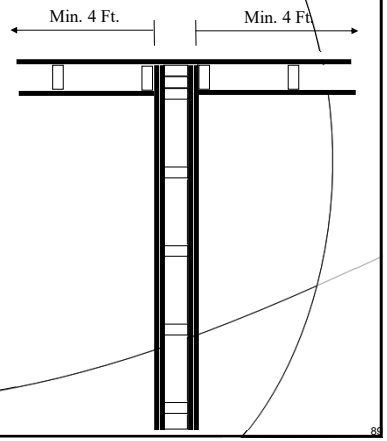

- Fire walls must be continuous from exterior wall to exterior wall and must extend at least 18 inches beyond the exterior surface of exterior walls.

 88

88

## Horizontal Continuity
## 706.5, Exception 1

- Must be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided the exterior wall has a fire-resistance rating of at least 1 hour for a horizontal distance of at least 4 feet on both sides of the fire wall.
- Openings within such exterior walls must be protected by fire assemblies having a fire-protection rating of not less than 3/4 hour.





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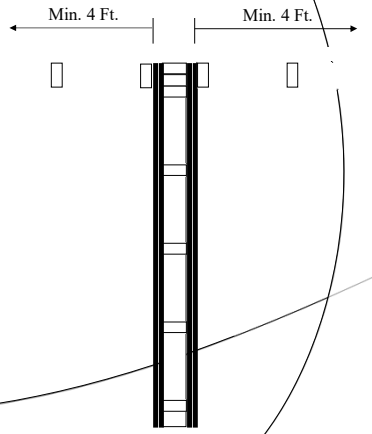
## Horizontal Continuity
## 706.5, Exception 2

- must be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided the sheathing, siding, or other exterior noncombustible finish extends a horizontal distance of at least 4 feet on both sides of the fire wall.





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## Horizontal Continuity
## 706.5, Exception 3

- Fire walls must be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the fire wall is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.


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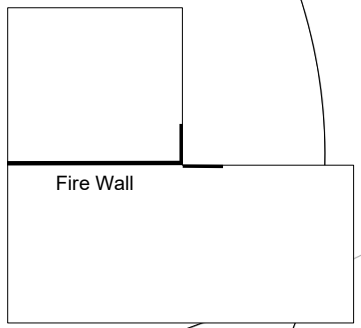
## Exterior Walls
## 706.5.1

- Where the fire wall intersects exterior walls , the fire-resistance rating and opening protection of the exterior walls must comply with one of the following:





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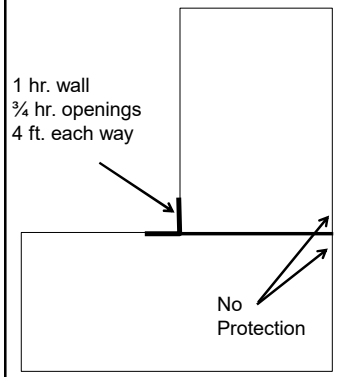
## Horizontal Continuity 706.5



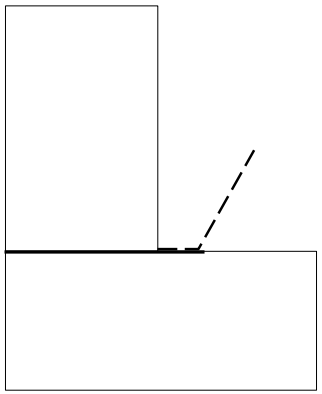

1. The exterior walls on both sides of the fire wall must have a 1-hour fire-resistance rating with 3/4-hour protection where opening protection is required by Section 705.8. The fire-resistance rating of the exterior wall must extend a minimum of 4 feet on each side of the intersection of the fire wall to exterior wall.

- Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees do not need exterior wall protection.




93

## Horizontal Continuity 706.5.1



2. Buildings or spaces on both sides of the intersecting fire wall must assume to have an imaginary lot line at the fire wall and extending beyond the exterior of the fire wall. The location of the assumed line in relation to the exterior walls and the fire wall must be such that the exterior wall and opening protection meet the requirements set forth in Sections 705.5 and 705.8.

- Such protection is not required for exterior walls terminating at fire walls that form an angle equal to or greater than 180 degrees




94

## Horizontal Projecting Elements 706.5.2

- Fire walls must extend to the outer edge of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees and similar projections that are within 4 feet of the fire wall.
  - Exceptions




95

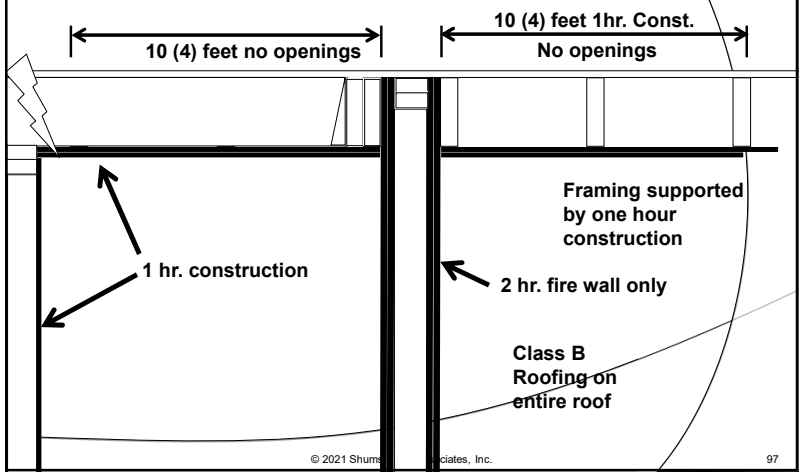
## Vertical continuity 706.6

- Fire walls must extend from the foundation to a termination point at least 30 inches above both adjacent roofs.




96

## Vertically Continuity 706.6, Exception 2

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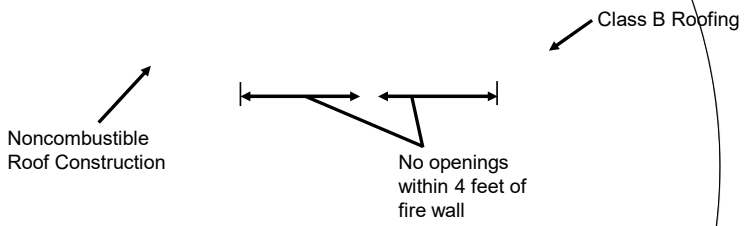
## Vertically Continuity 706.6, Exception 3




 98

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## Fire Wall Openings 706.8

- Section 715.4
- Each opening limited to 156 square feet
- Aggregate width at any floor limited to 25 % of length of wall

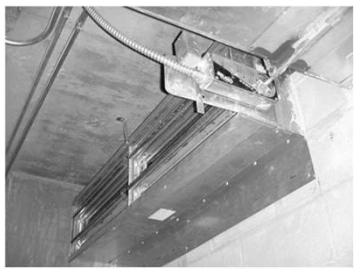
TABLE 715.4
FIRE DOOR AND FIRE SHUTTER FIRE PROTECTION RATINGS

| TYPE OF ASSEMBLY | REQUIRED ASSEMBLY RATING (hours) | MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours) |
|---|---|---|
| Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour | 4<br>3<br>2<br>1½ | 3<br>3[a]<br>1½<br>1½ |

 99

99

## Ducts and Air Transfer Openings – 706.11

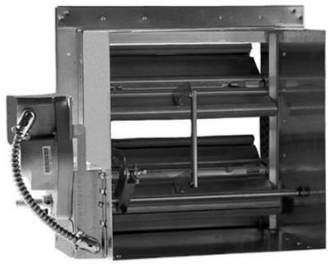


- Ducts and air transfer openings must not penetrate fire walls.
  - Exception:
    walls not located on a lot line complying with 716
    Limited 25% of length of wall

 100

100

## Fire Walls
## 717.5.1



- Ducts and air transfer openings permitted in fire walls in accordance with Section 705.11 must be protected with approved fire dampers.
- A listed smoke damper must be provided at each point a duct or air transfer opening penetrates a fire wall that serves as a horizontal exit .

 101

101

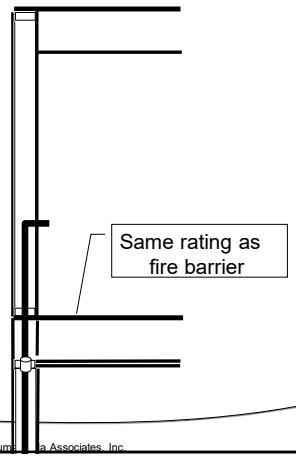
## Fire Barriers
## 707

- Shaft enclosures
- Interior exit stairways
- Exit access stairway enclosures
- Exit passageways
- Horizontal exits
- Atrium Separations
- Incidental use areas
- Control Areas
- Separation of mixed occupancies
- Fire areas

 102

102

## Fire Barrier Continuity
## 707.5




- Fire barriers must extend from the top of the floor/ceiling assembly below to the underside of the floor sheathing, slab or deck above
- Continuous through concealed spaces such as suspended ceiling.
- Joints and voids at intersections must comply with Sections 707.8 and 707.9

 103

103

## Supporting construction
## 707.5.1

- The supporting construction for a fire barrier must be protected to afford the required fire-resistance rating of the fire barrier supported.
- Hollow vertical spaces within a fire barrier must be fireblocked in accordance with Section 717.2 at every floor level.

Exceptions:

1. Fire barriers separating tank storage as provided for in Section 415.6.2.1 must be a maximum of 2 hours, but not less than required by Table 601
2. Shaft enclosures permitted to terminate at a top enclosure per Section 708.12.
3. Supporting construction for 1-hour fire barriers required by Table 508.2.5 in buildings of Type IIB, IIIB and VB construction are not required to be fire-resistance rated unless required by other sections of this code.

 104

104

## Fire Barrier Openings 707.6

- Per Section 716.
- Limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening must not exceed 156 square feet.
- Openings in exit enclosures must also comply with Section 1022.6.
- Exceptions
  - Not limited to 156 sq. ft. if sprinklered.
  - Exit enclosure fire doors not limited.
  - If tested to ASTM E119 or UIL 263.
  - Fire windows in atria.
  - Not limited in fire doors separating exit enclosures from exit passageways.
  - Elevator hoistways
  - Shafts
  - Chute access room or discharge room

 105

105

## Vertical Openings 712.1

- Each vertical opening must comply in accordance with one of the protection methods in Sections 712.1.1 through 712.1.16.

 106

106

## Shaft enclosures 712.1.1

- Vertical openings contained entirely within a shaft enclosure complying with Section 713 must be permitted.

 107

107

## Two-story openings 712.1.9

- In other than Groups I-2 and I-3, a floor opening that is not used as one of the applications listed in this section must be permitted if it complies with all of the items below.
  1. Does not connect more than two stories.
  2. Does not penetrate a horizontal assembly that separates fire areas or smoke barriers that separate smoke compartments.
  3. Is not concealed within the construction of a wall or a floor/ceiling assembly.
  4. Is not open to a corridor in Group I and R occupancies.
  5. Is not open to a corridor on nonsprinklered floors.
  6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.

 108

108

## Construction
## 713.1

- Shaft enclosures must be constructed as *fire barriers* in accordance with Section 707 or horizontal assemblies in accordance with Section 711, or both.

 109

109

## Fire-Resistance Rating
## 713.4

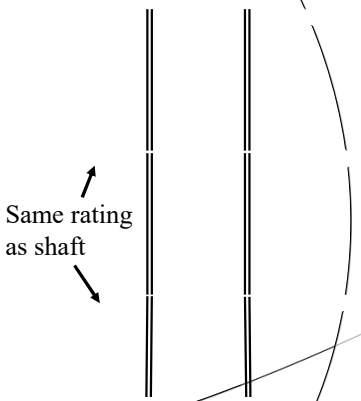
- Four stories or more
  - two-hour
- Less than four stories
  - one-hour
- Includes basements, but not mezzanines
- Not less than the floor assembly penetrated, but need not exceed 2 hours

 110

110

## Continuity
## 713.5

- Shaft enclosures must be constructed as a fire barrier or horizontal assembly or both.




 111

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## Fire Barriers
## 717.5.2

- Duct and air transfer openings of fire barriers must be protected with approved fire dampers.

 112

112

## Group A-2 Automatic Sprinklers 903.2.1.2

- An automatic sprinkler system must be provided for Group A-2 occupancies where one of the following conditions exists:

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

 113

113

## Group I Automatic Sprinklers 903.2.6

- An automatic sprinkler system must be provided throughout buildings with a Group I fire area.

 114

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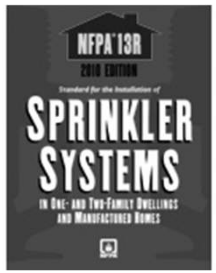
## Group I Automatic Sprinklers 903.2.6 Exceptions




- 1. An automatic sprinkler system installed in accordance with Section 903.3.1.2 must be permitted in Group I-1, Condition 1 facilities.

 115

115

## Group R Automatic Sprinklers 903.2.8

- An automatic sprinkler system installed in accordance with Section 903.3 must be provided throughout all buildings with a Group R fire area.

 116

116

## Quick-Response and Residential Sprinklers 903.3.2

- Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers must be installed in the following areas in accordance with Section 903.3.1 and their listings:
  1. Throughout all spaces within a smoke compartment containing care recipient sleeping units in Group I-2 in accordance with this code.
  2. Throughout all spaces within a smoke compartment containing gas fireplace appliances and decorative gas appliances in Group I-2.
  3. Throughout all spaces within a smoke compartment containing treatment rooms in ambulatory care facilities.
  4. Dwelling units , and sleeping units in Group R and I-1 occupancies.
  5. Light-hazard occupancies as defined in NFPA 13.

 117

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## 904.15 Domestic cooking systems

- Cooktops and ranges installed in the following occupancies must be protected in accordance with Section 904.13.1:
  - 1. In Group I-1 occupancies where domestic cooking facilities are installed in accordance with Section 420.8.
  - 2. In Group I-2, Condition 1 occupancies where domestic cooking facilities are installed in accordance with Section 407.2.6.

 118

118

## 904.15.1.1 Automatic fire-extinguishing system

- The domestic recirculating or exterior vented cooking hood provided over the cooktop or range must be equipped with an approved automatic fire-extinguishing system complying with the following:
  - 1. The automatic fire-extinguishing system must be of a type recognized for protection of domestic cooking equipment. Preengineered automatic fire-extinguishing systems must be listed and labeled in accordance with UL 300A and installed in accordance with the manufacturer's instructions.
  - 2. Manual actuation of the fire-extinguishing system must be provided in accordance with Section 904.12.1.
  - 3. Interconnection of the fuel and electric power supply must be in accordance with Section 904.12.2.

 119

119

## 904.15.1.2 Ignition prevention

- Cooktops and ranges must include burners that have been tested and listed to prevent ignition of cooking oil with burners turned on to their maximum heat settings and allowed to operate for 30 minutes.

 120

120

## Group I Fire Alarms 907.2.6

- A manual fire alarm system that activates the occupant notification system must be installed in Group I occupancies.

Exceptions:

1. Manual fire alarm boxes in sleeping units of Group I-1 and I-2 occupancies must not be required at exits if located at all care providers' control stations or other constantly attended staff locations, provided that such manual fire alarm boxes are visible and provided with ready access, and the distances of travel required in Section 907.4.2.1 are not exceeded.
2. Occupant notification systems are not required to be activated where private mode signaling installed in accordance with NFPA 72 is approved by the fire code official.

 121

121

## Group I-1 Smoke Detection 907.2.6.1

- An automatic smoke detection system must be installed in corridors , waiting areas open to corridors and habitable spaces other than sleeping units and kitchens. The system must be activated in accordance with Section 907.5.

Exceptions:

1. For Group I-1 Condition 1 occupancies, smoke detection in habitable spaces is not required where the facility is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
2. Smoke detection is not required for exterior balconies.

 122

122

## Smoke Alarms 907.2.6.1.1

- Single- and multiple-station smoke alarms must be installed in accordance with Section 907.2.10

 123

123

## Group I-2 Smoke Detection 907.2.6.2

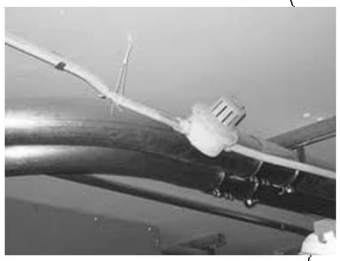
- An automatic smoke detection system must be installed in corridors in Group I-2 Condition 1 facilities and spaces permitted to be open to the corridors by Section 407.2.
- The system must be activated in accordance with Section 907.4.
- Group I-2 Condition 2 occupancies must be equipped with an automatic smoke detection system as required in Section 407.

 124

124

## Group I-2 Smoke Detection 907.2.6.2 Exceptions

1. Corridor smoke detection is not required in smoke compartments that contain sleeping units where such units are provided with smoke detectors that comply with UL 268. Such detectors must provide a visual display on the corridor side of each patient sleeping unit and must provide an audible and visual alarm at the care provider station attending each unit.



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## Group I-2 Smoke Detection 907.2.6.2 Exceptions

2. Corridor smoke detection is not required in smoke compartments that contain sleeping units where patient sleeping unit doors are equipped with automatic door-closing devices with integral smoke detectors on the unit sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

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## Group R-2 Manual Fire Alarm System 907.2.9.1

- A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 must be installed in Group R-2 occupancies where:

1. Any dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge ;
2. Any dwelling unit or sleeping unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit or sleeping unit ; or
3. The building contains more than 16 dwelling units or sleeping units.


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## Group R-2 Manual Fire Alarm System 907.2.9.1 Exceptions

1. A fire alarm system is not required in buildings not more than two stories in height where all dwelling units or sleeping units and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hour fire partitions and each dwelling unit or sleeping unit has an exit directly to a public way , exit court or yard .

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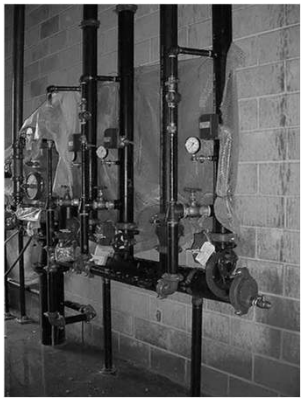
## Group R-2 Manual Fire Alarm System 907.2.9.1 Exceptions



2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler waterflow.

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## Group R-2 Manual Fire Alarm System 907.2.9.1 Exceptions

3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1026.6, Exception 4.

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## Group R-2 Smoke alarms 907.2.9.2

- Single- and multiple-station smoke alarms must be installed in accordance with Section 907.2.11.


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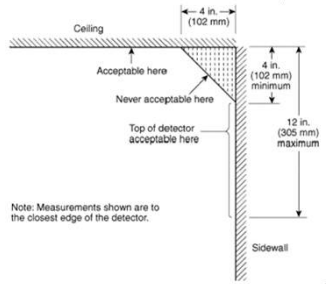
## Single- and multiple-station smoke alarms 907.2.11

- Listed single- and multiple-station smoke alarms complying with UL 217 must be installed in accordance with Sections 907.2.11.1 through 907.2.11.4, NFPA 72, and manufacturer's instructions.

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## Groups R-2 and I-1 Smoke Alarms 907.2.11.2

- Single- or multiple-station smoke alarms must be installed and maintained in Groups R-2, R-3, R-4 and I-1 regardless of occupant load at all of the following locations:

1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.
2. In each room used for sleeping purposes.
3. In each story within a dwelling unit , including basements but not including crawl spaces and uninhabitable attics . In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level must suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

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907.2.11.3
Installation near cooking appliances

- Smoke alarms shall be installed not less than 10 horizontally from a permanently installed cooking appliance.
  - Exception: Smoke alarms shall be permitted to be installed not less than 6 feet horizontally from a permanently installed cooking appliance where necessary to comply with Section 907.2.11.1 or 907.2.11.2.

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## 907.2.11.4 Installation near bathrooms

- Smoke alarms must be installed not less than 3 feet horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by Section 907.2.11.1 or 907.2.11.2.

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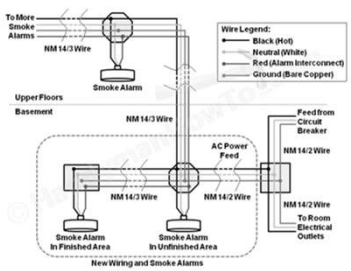
## Interconnection 907.2.11.5

- Where more than one smoke alarm is required to be installed within an individual dwelling unit or sleeping unit in Group R or I-1 occupancies, the smoke alarms must be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit.
- Physical interconnection of smoke alarms must not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.
- The alarm must be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

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## Power Source
## 907.2.11.4

- In new construction, required smoke alarms must receive their primary power from the building wiring where such wiring is served from a commercial source and must be equipped with a battery backup.
- Smoke alarms with integral strobes that are not equipped with battery backup must be connected to an emergency electrical system.
- Smoke alarms must emit a signal when the batteries are low.
- Wiring must be permanent and without a disconnecting switch other than as required for overcurrent protection.

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## Manual Fire Alarm Boxes
## 907.4.2

- Where a manual fire alarm system is required by another section of this code, it must be activated by fire alarm boxes installed in accordance with Sections 907.4.2.1 through 907.4.2.6.


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## Location
## 907.4.2.1

- Manual fire alarm boxes must be located not more than 5 feet from the entrance to each exit.
- In buildings not protected by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, additional manual fire alarm boxes must be located so that the distance of travel to the nearest box does not exceed 200 feet .

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## Height
## 907.4.2.2

- The height of the manual fire alarm boxes must be a minimum of 42 inches and a maximum of 48 inches measured vertically, from the floor level to the activating handle or lever of the box.

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## Color
## 907.4.2.3


- Manual fire alarm boxes must be red in color.

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## Signs
## 907.4.2.4

- Where fire alarm systems are not monitored by a supervising station, an approved permanent sign must be installed adjacent to each manual fire alarm box that reads: WHEN ALARM SOUNDS CALL FIRE DEPARTMENT.

  Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.


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## Protective covers
## 907.4.2.5


- The fire code official is authorized to require the installation of *listed* manual fire alarm box protective covers to prevent malicious false alarms or to provide the manual fire alarm box with protection from physical damage.

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## Unobstructed and unobscured
## 907.4.2.6

- Manual fire alarm boxes must be accessible, unobstructed, unobscured and visible at all times.


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## Groups I-1 and R-1
## 907.5.2.3.2

- Habitable spaces in dwelling units and sleeping units in Group I-1 and R-1 occupancies in accordance with Table 907.5.2.3.2 must be provided with visible alarm notification.
- Visible alarms must be activated by the in-room smoke alarm and the building fire alarm system.

[F] TABLE 907.5.2.3.2
VISIBLE ALARMS

| NUMBER OF SLEEP UNITS | SLEEPING ACCOMMODATIONS WITH VISIBLE ALARMS |
|---|---|
| 6 to 25 | 2 |
| 26 to 50 | 4 |
| 51 to 75 | 7 |
| 76 to 100 | 9 |
| 101 to 150 | 12 |
| 151 to 200 | 14 |
| 201 to 300 | 17 |
| 301 to 400 | 20 |
| 401 to 500 | 22 |
| 501 to 1,000 | 5% of total |
| 1,001 and over | 50 plus 3 for each 100 over 1,000 |

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## Group R-2
## 907.5.2.3.3


- In Group R-2 occupancies required by Section 907 to have a fire alarm system, each story that contains dwelling units and sleeping units must be provided with the capability to support visible alarm notification appliances in accordance with Chapter 11 of ICC A117.1.
- Such capability shall accommodate wired or wireless equipment

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## 915.1
## Carbon monoxide detection

- Carbon monoxide (CO) detection shall be installed in new buildings in accordance with Section 915.1.1. Carbon monoxide detection shall be installed in existing buildings in accordance with Chapter 11 of the International Fire Code.
  - Exception: Carbon monoxide detection is not required in Group S, Group F and Group U occupancies that are not normally occupied.


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## 915.1.1
## Where required

- Carbon monoxide detection shall be installed in the locations specified in Section 915.2 where any of the following conditions exist.
  - 1. In buildings that contain a CO source.
  - 2. In buildings that contain or are supplied by a CO-producing forced-air furnace.
  - 3. In buildings with attached private garages.
  - 4. In buildings that have a CO-producing vehicle that is used within the building.

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## 915.2 Locations

- Carbon monoxide detection shall be installed in the locations specified in Sections 915.2.1 through 915.2.3.
- Dwelling units
- Sleeping units
- Group E occupancies
- CO-producing forced-air furnace
- Private garages
- All other occupancies

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## Means of Egress 1003.5

- Throughout a story in a Group I-2 occupancy, any change in elevation in portions of the means of egress that serve nonambulatory persons must be by means of a ramp or sloped walkway.

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## Occupant Load 1004.5

- Residential
  - 200 SF/occupant
- Memory Care Sleeping Areas
  - 120 SF/occupant
- Dining Areas
  - 15 SF/occupant
- Offices
  - 150 SF/occupant

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## Minimum width based on component 1005.2

- The minimum width, in inches, of any means of egress components must not be less than that specified for such component, elsewhere in this code.

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## Required capacity based on occupant load - 1005.3

- The required capacity, in inches, of the means of egress for any room, area, space or story must not be less than that determined in accordance with Sections 1005.3.1 and 1005.3.2:

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## Stairways 1005.3.1

- The capacity, in inches, of means of egress stairways must be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.3 inch per occupant.
- Where stairways serve more than one story, only the occupant load of each story considered individually must be used in calculating the required capacity of the stairways serving that story.

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## Stairways 1005.3.1 Exception

- For other than Group H and I-2 occupancies, the capacity, in inches, of *means of egress stairways* must be calculated by multiplying the *occupant load* served by such *stairway* by a *means of egress* capacity factor of 0.2 inch 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.

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## Other egress components 1005.3.2

- The capacity, in inches, of means of egress components other than stairways must be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch per occupant.

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## Other egress components 1005.3.2 Exception

- For other than Group H and I-2 occupancies, the capacity, in inches, of *means of egress* components other than *stairways* must be calculated by multiplying the *occupant load* served by such component by a *means of egress* capacity factor of 0.15 inch 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.

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## 1006.1 - Number of exits and exit access doorways

- The number of exits or exit access doorways required within the means of egress system must comply with the provisions of Section 1006.2 for spaces, including mezzanines, and Section 1006.3 for stories.

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## 1006.2.1 - Egress based on occupant load and common path of egress travel distance

- Two exits or exit access doorways from any space must be provided where the design occupant load or the common path of egress travel distance exceeds the values listed in Table 1006.2.1.
  - Exceptions:
  - 1. In Group R-2 and R-3 occupancies, one means of egress is permitted within and from individual dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the common path of egress travel does not exceed 125 feet.
  - 2. Care suites in Group I-2 occupancies complying with Section 407.4.

TABLE 1006.2.1
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

| OCCUPANCY | MAXIMUM OCCUPANT LOAD OF SPACE | MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet) | | |
|---|---|---|---|---|
| | | Without Sprinkler System (feet) | | With Sprinkler System (feet) |
| | | Occupant Load | | |
| | | OL ≤ 30 | OL > 30 | |
| A[c], E, M | 49 | 75 | 75 | 75[a] |
| B | 49 | 100 | 75 | 100[a] |
| F | 49 | 75 | 75 | 100[a] |
| H-1, H-2, H-3 | 3 | NP | NP | 25[b] |
| H-4, H-5 | 10 | NP | NP | 75[b] |
| I-1, I-2[d], I-4 | 10 | NP | NP | 75[a] |
| I-3 | 10 | NP | NP | 100[a] |
| R-1 | 10 | NP | NP | 75[a] |
| R-2 | 10 | NP | NP | 125[a] |
| R-3[e] | 10 | NP | NP | 125[a] |
| R-4[e] | 10 | 75 | 75 | 125[a] |
| S[f] | 29 | 100 | 75 | 100[a] |
| U | 49 | 100 | 75 | 75[a] |

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## 1006.3.3 Egress based on occupant load

- Each story and occupiable roof must have the minimum number of exits, or access to exits, as specified in Table 1006.3.1. A single exit or access to a single exit must be permitted in accordance with Section 1006.3.2.
- The required number of exits, or exit access stairways or ramps providing access to exits, from any story or occupiable roof must be maintained until arrival at the exit discharge or a public way.

TABLE 1006.3.3MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS PER STORY OR OCCUPIABLE ROOFS

| OCCUPANT LOAD PER STORY OR OCCUPIABLE ROOF | MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS PER STORY OR OCCUPIABLE ROOF |
|---|---|
| 1-500 | 2 |
| 501-1,000 | 3 |
| More than 1,000 | 4 |

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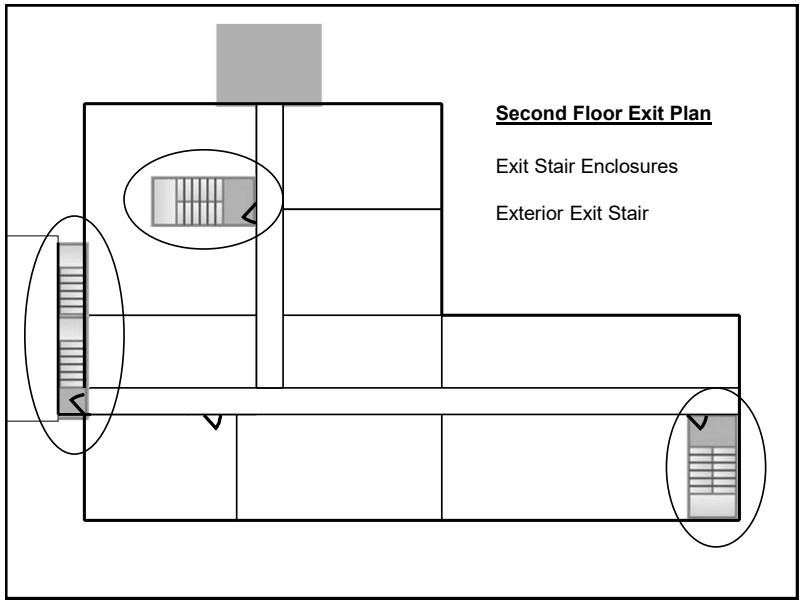


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## 1006.3.4
## Single exits

- 5. Individual single-story or multistory dwelling units must be permitted to have a single exit or access to a single exit from the dwelling unit provided that both of the following criteria are met:
  - 5.1. The dwelling unit complies with Section 1006.2.1 as a space with one means of egress.
  - 5.2. Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.




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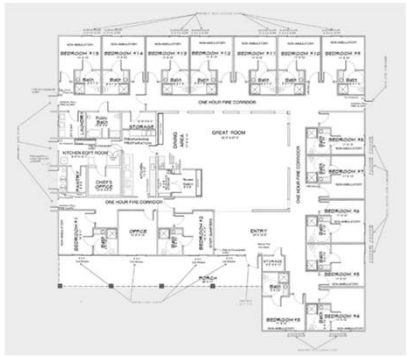
## Two Exits or Exit Access Doorways
## 1007.1.1



- Exit doors or exit access doorways must be placed a distance apart equal to not less than ½ of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between exit doors or exit access doorways.
  - 1/3 the overall diagonal dimension when sprinklered.

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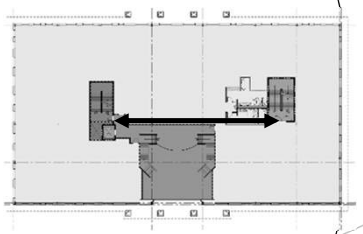
## 1007.1.1.1
## Diagonal Measurement point

- The separation distance must be measured in accordance with the following:
  - 1. The separation distance to exit or exit access doorways must be measured to any point along the width of the doorway.
  - 2. The separation distance to exit access stairways must be measured to the closest riser.
  - 3. The separation distance to exit access ramps must be measured to the start of the ramp run.



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## Illumination Required 1008.2

- The means of egress serving a room or space must be illuminated at all times that the room or space is occupied.

Exceptions:

1. Occupancies in Group U.
2. Self-service storage <400 SF with exterior use.
3. Aisle accessways in Group A.
3. Dwelling units and sleeping units in Groups R-1, R-2 and R-3.
4. Sleeping units of Group I occupancies.

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## 1008.2.1 & 1008.3 Illumination level under normal power

- The means of egress illumination level must be not less than 1 footcandle at the walking surface.
- Along exit access stairways, exit stairways and at their required landings, the illumination level must not be less than 10 footcandles at the walking surface when the stairway is in use.

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## 1008.2.2 Group I-2

- In Group I-2 occupancies where two or more exits are required, on the exterior landings required by Section 1010.1.6, means of egress illumination levels for the exit discharge must be provided such that failure of a single lamp in a luminaire must not reduce the illumination level on that landing to less than 1 footcandle

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## 1008.3.1 Emergency power for illumination

- An emergency electrical system shall be provided to automatically illuminate the following areas in the event of a power supply failure:
- 1. In rooms or spaces that require two or more exits or access to exits:
  - 1.1. Aisles.
  - 1.2. Corridors.
  - 1.3. Exit access stairways and ramps.

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## 1008.3.2 Buildings

- 2.In buildings that require two or more exits or access to exits:
  - 2.1. Interior exit access stairways and ramps.
  - 2.2. Interior and exterior exit stairways and ramps.
  - 2.3. Exit passageways.
  - 2.4. Vestibules and areas on the level of discharge used for exit discharge in accordance with Section 1028.2.
  - 2.5. Exterior landings as required by Section 1010.1.5 for exit doorways that lead directly to the exit discharge.

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## 1008.3.3 Rooms and spaces

- 3.In other rooms and spaces:
  - 3.1. Electrical equipment rooms.
  - 3.2. Fire command centers.
  - 3.3. Fire pump rooms.
  - 3.4. Generator rooms.
  - 3.5. Public restrooms with an area greater than 300 square feet

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## Accessible Means of Egress Required 1009.1

- Accessible spaces must be provided with not less than one accessible means of egress.
- Where more than one means of egress are required by Section 1015.1 or 1021.1 from any accessible space, each accessible portion of the space must be served by not less than two accessible means of egress .


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## 1009.8 Two-way communication

- A two-way communication system complying with Sections 1009.8.1 and 1009.8.2 must be provided at the landing serving each elevator or bank of elevators on each accessible floor that is one or more stories above or below the level of exit discharge.

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## 1009.8
## Two-Way Communication (Exceptions)

1. Two-way communication systems are not required on floors provided with ramps conforming to the provisions of Section 1012.
2. Two-way communication systems are not required at the landings serving only service elevators that are not designated as part of the accessible means of egress or serve as part of the required accessible route into a facility.

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## 1009.8
## Two-way communication (Exceptions)

- 3. Two-way communication systems are not required at the landings serving only service elevators that are not designated as part of the accessible means of egress or serve as part of the required accessible route into a facility.
- 4. Two-way communication systems are not required at the landings serving only freight elevators.
- 5. Two-way communication systems are not required at the landing serving a private residence elevator.
- 6. Two-way communication systems are not required in Group I-2 or I-3 facilities.

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## 1010.1.1
## Size of doors


- The required capacity of each door opening must be sufficient for the occupant load thereof and must provide a minimum clear opening width of 32 inches.
- The clear opening width of doorways with swinging doors must be measured between the face of the door and the stop, with the door open 90 degrees.
- Where this section requires a minimum clear opening width of 32 inches and a door opening includes two door leaves without a mullion, one leaf must provide a minimum clear opening width of 32 inches.

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## 1010.1.1
## Size of doors

- In Group I-2, doors serving as means of egress doors where used for the movement of beds must provide a minimum clear opening width of 41 ½ inches.
- The maximum width of a swinging door leaf must be 48 inches nominal.
- The minimum clear opening height of doors must be not less than 80 inches.
  - Exceptions

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## Controlled egress doors in Groups I-1 and I-2 - 1010.2.13

- Controlled egress electrical locking systems where egress is controlled by authorized personnel must be permitted on doors in the means of egress in Group I-1 or I-2 occupancies where the clinical needs of persons receiving care require their containment.
- Controlled egress doors must be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke detection system installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following:

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## Controlled egress doors in Groups I-1 and I-2 - 1010.2.13

- 1. The door's electric locks shall unlock on actuation of the automatic sprinkler system or automatic smoke detection system allowing immediate free egress.
- 2. The door's electric locks shall unlock on loss of power to the electrical locking system or to the electric lock mechanism allowing immediate free egress.
- 3. The electrical locking system shall be installed to have the capability of unlocking the electric locks by a switch located at the fire command center, a nursing station or other approved location. The switch shall directly break power to the electric lock.
- 4. A building occupant shall not be required to pass through more than one door equipped with a controlled egress locking system before entering an exit.

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## Controlled egress doors in Groups I-1 and I-2 - 1010.2.13

- 5. The procedures for unlocking the doors shall be described and approved as part of the emergency planning and preparedness required by Chapter 4 of the International Fire Code.
- 6. All clinical staff shall have the keys, codes or other means necessary to operate the controlled egress electrical locking systems.
- 7. Emergency lighting shall be provided at the door.
- 8. The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034.


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## Controlled egress doors in Groups I-1 and I-2 - 1010.2.13

- Exceptions:
- 1. Items 1 through 4 shall not apply to doors to areas occupied by persons who, because of clinical needs, require restraint or containment as part of the function of a psychiatric or cognitive treatment area.
- 2. Items 1 through 4 shall not apply to doors to areas where a listed egress control system is utilized to reduce the risk of child abduction from nursery and obstetric areas of a Group I-2 hospital.

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## Delayed Egress 1010.2.12

- Delayed egress electrical locking systems are permitted on doors in the means of egress serving the following occupancies in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907.
  - 1. Group B, F, I, M, R, S and U occupancies.
  - 2. Group E classrooms with an occupant load of less than 50.
  - 3. In courtrooms in Group A-3 and B occupancies, delayed egress electrical locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, in buildings that are equipped throughout with an automatic sprinkler systemin accordance with Section 903.3.1.1.

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## 1010.2.12.1 Delayed egress locking system


- The delayed egress electrical locking system must be installed and operated in accordance with all of the following:

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## Delayed Egress 1010.2.12.1


- 1. The delay of the delayed egress electrical locking system shall deactivate upon actuation of the automatic sprinkler system or automatic fire detection system, allowing immediate free egress.
- 2. The delay of the delayed egress electrical locking system shall deactivate upon loss of power to the electrical locking system or electrical lock, allowing immediate free egress.
- 3. The delay of the delayed egress locking electrical system shall have the capability of being deactivated at the fire command center and other approved locations.

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## Delayed Egress 1010.2.12.1


- 4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay has been deactivated, rearming the delay electronics shall be by manual means only.
  - Exception: Where approved, a delay of not more than 30 seconds is permitted on a delayed egress door.

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## Delayed Egress 1010.2.12.1

5. The egress path from any point must not pass through more than one delayed egress locking system.

Exceptions
1. In Group I-1, Condition 2, I-2 or I-3 occupancies, the egress path from any point in the building must pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds.
2. In Group I-1, Condition 1 or I-4 occupancies, the egress path from any point in the building must pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

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## Delayed Egress 1010.2.12.1

- 6. A sign must be provided on the door and must be located above and within 12 inches of the door exit hardware:
  - 6.1. For doors that swing in the direction of egress, the sign must read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
  - 6.2. For doors that swing in the opposite direction of egress, the sign must read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
  - 6.3. The sign must comply with the visual character requirements in ICC A117.1.


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## Delayed Egress 1010.2.12.1


7. Emergency lighting must be provided on the egress side of the door.

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

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## 407.4.1 Direct access to a corridor


- Habitable rooms in Group I-2 occupancies must 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 407.4.4.

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## 407.4.1.1 Locking devices

- Locking devices that restrict access to a care recipient's room from the corridor and that are operable only by staff from the corridor side must not restrict the means of egress from the care recipient's room.
  - Exceptions:
  - 1. This section must not apply to rooms in psychiatric treatment and similar care areas.
  - 2.Locking arrangements in accordance with Section 1010.2.13.

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## 407.4.3 Projections in nursing home corridors

- In Group I-2, Condition 1 occupancies, where the corridor width is not less than 96 inches, projections must be permitted for furniture where all of the following criteria are met:
- 1. The furniture is attached to the floor or to the wall.
- 2. The furniture does not reduce the clear width of the corridor to less than 72 inches except where other encroachments are permitted in accordance with Section 1005.7.
- 3. The furniture is positioned on only one side of the corridor.
- 4. Each arrangement of furniture is 50 square feet maximum in area.
- 5. Furniture arrangements are separated by 10 feet minimum.
- 6. Placement of furniture is considered as part of the fire and safety plans in accordance with Section 1002.2.

 190

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## Exit Access Travel Distance 1017.2

- Exit access travel distance must not exceed the values given in Table 1017.2.

TABLE 1017.2EXIT ACCESS TRAVEL DISTANCE[a]

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

 191

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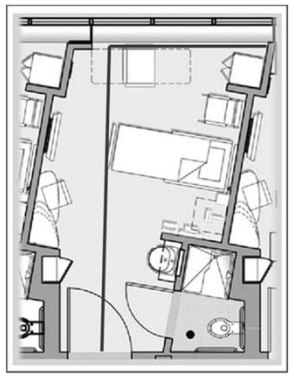
## 407.4.2 Distance of travel



- The distance of travel between any point in a Group I-2 occupancy sleeping room, not located in a care suite, and an exit access door in that room must be not greater than 50 feet

 192

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## Corridors
## 1020.1

TABLE 1020.2 CORRIDOR FIRE-RESISTANCE RATING

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

a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8.
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.


193

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## 1020.2.1
## Hoistway opening protection

- Elevator hoistway doors in elevators hoistway enclosures required to be fire-resistance rated shall be protected in accordance with Section 716.
- Elevator hoistway doors shall also be protected in accordance with Section 3006.2.


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## 3006.2 - Elevator hoistway door protection required

- Elevator hoistway doors shall be protected in accordance with Section 3006.3 where an elevator hoistway connects more than three stories, is required to be enclosed within a shaft enclosure in accordance with Section 712.1.1 and any of the following conditions apply:
- 6. The elevator hoistway door is located in the wall of a corridor required to be fire-resistance rated in accordance with Section 1020.1.
  - Exception for openings at the level of exit discharge.


195

195

## 3006.2.1
## Rated corridors

- Where corridors are required to be fire-resistance rated in accordance with Section 1020.2, elevator hoistway openings must be protected in accordance with Section 3006.3.


196

196

## Corridor walls (Group I-2)
## 407.3

- Corridor walls must be constructed as smoke partitions in accordance with Section 710.

 197

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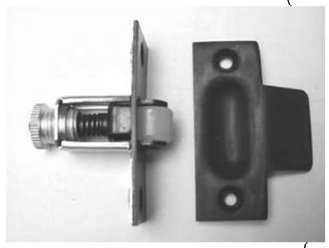
## 407.3.1
## Corridor doors

- Corridor doors, other than those in a wall required to be rated by Section 509.4 or for the enclosure of a vertical opening or an exit, must not have a required fire protection rating and must not be required to be equipped with self-closing or automatic-closing devices, but must provide an effective barrier to limit the transfer of smoke and must be equipped with positive latching.
- Roller latches are not permitted.
- Other doors must conform to Section 716.



 198

198

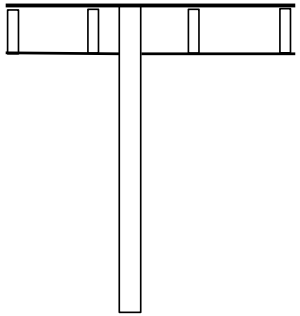
## Smoke Partitions
## 710

- The walls must be of materials permitted by the building type of construction.
- Unless required elsewhere in the code, smoke partitions are not required to have a fire-resistance rating.

 199

199

## Continuity
## 710.4



- Smoke partitions must extend from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.
  - Exception for lay-in ceilings

 200

200

## Windows
## 710.5.1

- Windows must be sealed to resist the free passage of smoke or be automatic-closing upon detection of smoke.

 201

201

## Doors
## 710.5.2

- Doors in smoke partitions must comply with Sections 711.5.2.1 through 711.5.2.3.
- 711.5.2.1
  - Doors in smoke partitions must not include louvers.

 202

202

## Smoke and Draft Control Doors
## 711.5.2.2

- Where required elsewhere in the code, doors in smoke partitions must meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784.
- The air leakage rate of the door assembly must not exceed 3.0 cubic feet per minute per square foot of door opening at 0.10 inch of water for both the ambient temperature test and the elevated temperature exposure test. Installation of smoke doors must be in accordance with NFPA 105.


 203

203

## Self- or Automatic-closing Doors
## 711.5.2.3

- Where required elsewhere in the code, doors in smoke partitions must be self- or automatic-closing by smoke detection in accordance with Section 715.4.8.3.

 204

204

## Penetrations and Joints 710.6 & 710.7

- The space around penetrating items must be filled with an approved material to limit the free passage of smoke.
- Joints must be filled with an approved material to limit the free passage of smoke.

 205

205

## Ducts and air transfer openings 710.8

- The space around a duct penetrating a smoke partition must be filled with an approved material to limit the free passage of smoke. Air transfer openings in smoke partitions must be provided with a smoke damper complying with Section 716.3.2.2.
  - Exception: Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection must be utilized.

 206

206

## 1020.3 Width and capacity

- The required capacity of corridors must be determined as specified in Section 1005.1, but the minimum width must be not less than that specified in Table 1020.3.
  - Exception: In Group I-2 occupancies, corridors are not required to have a clear width of 96 inches in areas where there will not be stretcher or bed movement for access to care or as part of the defend-in-place strategy.

**MINIMUM CORRIDOR WIDTH**

| OCCUPANCY | MINIMUM WIDTH (inches) |
|---|---|
| Any facilities not listed below | 44 |
| Access to and utilization of mechanical, plumbing or electrical systems or equipment | 24 |
| With an occupant load of less than 50 | 36 |
| Within a *dwelling unit* | 36 |
| In Group E with a *corridor* having an occupant load of 100 or more | 72 |
| In *corridors* and areas serving stretcher traffic in ambulatory care facilities | 72 |
| Group I-2 in areas where required for bed movement | 96 |

 207

207

## Dead End Corridors 1020.5

- Exceptions
2. In occupancies in Groups B, E, F, I-1, M, R-1, R-2, R-4, S and U, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the length of the dead-end corridors must not exceed 50 feet.

 208

208

## Exterior Exit Stairways 1027.2

- Exterior exit stairways must not be used as an element of a required means of egress for Group I-2 occupancies.
- For occupancies in other than Group I-2, exterior exit ramps and stairways must be permitted as an element of a required means of egress for buildings not exceeding six stories above grade plane or which are not high-rise buildings.

 209

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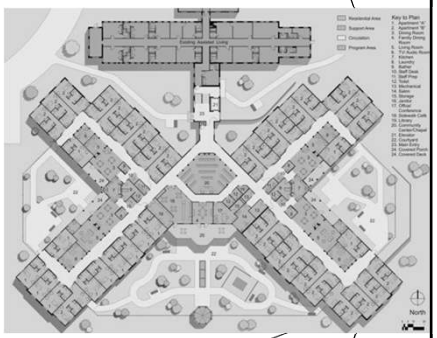
## Exit Discharge 1028.1

- Exits must discharge directly to the exterior of the building. The exit discharge must be at grade or must provide direct access to grade.
- The exit discharge must not reenter a building.



 210

210

## Access to a Public Way 1028.5

- The exit discharge must provide a direct and unobstructed access to a public way.

Exception: Where access to a public way cannot be provided, a safe dispersal area must be provided where all of the following are met:

1. The area must be of a size to accommodate at least 5 square feet for each person.
2. The area must be located on the same lot at least 50 feet away from the building requiring egress.
3. The area must be permanently maintained and identified as a safe dispersal area.
4. The area must be provided with a safe and unobstructed path of travel from the building.

 211

211

## Emergency Escape & Rescue Openings 1031.1

- In addition to the means of egress required by this chapter, emergency escape and rescue openings must be provided in the following occupancies:
  - 1. Group R-2 occupancies located in stories with only one exit or access to only one exit as permitted by Tables 1006.3.4(1) and 1006.3.4(2).
  - 2. Group R-3 and R-4 occupancies.

 212

212

## Accessibility Chapter 11

- Buildings and facilities must be designed and constructed to be accessible in accordance with this code and ICC A117.1.


 213

213

## Site arrival points 1104.1

- At least one accessible route within the site must be provided from public transportation stops, accessible parking, accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance served.
  - Exception: Other than in buildings or facilities containing or serving Type B units, an accessible route must not be required between site arrival points and the building or facility entrance if the only means of access between them is a vehicular way not providing for pedestrian access.

 214

214

## 1106.2 Accessible Parking Required

- Where parking is provided, accessible parking spaces shall be provided in compliance with Table 1106.2, except as required by Sections 1106.3 through 1106.5.
- Where more than one parking facility is provided on a site, the number of parking spaces required to be accessible shall be calculated separately for each parking facility.

**ACCESSIBLE PARKING SPACES**

| TOTAL PARKING SPACES PROVIDED IN PARKING FACILITIES | REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES |
|---|---|
| 1 to 25 | 1 |
| 26 to 50 | 2 |
| 51 to 75 | 3 |
| 76 to 100 | 4 |
| 101 to 150 | 5 |
| 151 to 200 | 6 |
| 201 to 300 | 7 |
| 301 to 400 | 8 |
| 401 to 500 | 9 |
| 501 to 1,000 | 2% of total |
| 1,001 and over | 20, plus one for each 100, or fraction thereof, over 1,000 |

 215

215

## 1106.3 Groups R-2, R-3 and R-4

- Accessible parking spaces shall be provided in Group R-2, R-3 and R-4 occupancies in accordance with the greatest number of parking spaces of any of the following:
  - 1. In Group R-2, R-3 and R-4 occupancies that are required to have Accessible, Type A or Type B dwelling units or sleeping units, at least 2 percent, but not less than one, of each type of parking space provided shall be accessible.
  - 2. Where at least one parking space is provided for each dwelling unit or sleeping unit, at least one accessible parking space shall be provided for each Accessible and Type A unit.

 216

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## Design
## 1108.2

- Dwelling units and sleeping units that are required to be Accessible units , Type A units and Type B units must comply with the applicable portions of Chapter 11 of ICC A117.1.
- Units required to be Type A units are permitted to be designed and constructed as Accessible units.
- Units required to be Type B units are permitted to be designed and constructed as Accessible units or as Type A units .

 217

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## Accessible spaces
## 1108.3

- Rooms and spaces available to the general public or available for use by residents and serving Accessible units, Type A units or Type B units must be accessible .
- Accessible spaces shall include, but are not limited to, toilet and bathing rooms, kitchen, living and dining areas and any exterior spaces, including patios, terraces and balconies.

 218

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## Accessible spaces
## 1108.3 Exceptions

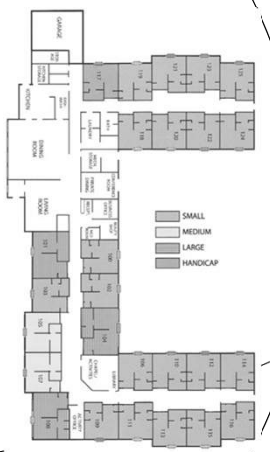

1. Stories and mezzanines exempted by Section 1108.4.
2. Recreational facilities in accordance with Section 1110.2.
3. Exterior decks, patios or balconies that are part of Type B units and have impervious surfaces, and that are not more than 4 inches below the finished floor level of the adjacent interior space of the unit.

 219

219

## 1108.4
## Accessible Route

- Not fewer than one accessible route shall connect accessible building or facility entrances with the primary entrance of each Accessible unit, Type A unit and Type B unit within the building or facility and with those exterior and interior spaces and facilities that serve the units.




 220

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## Accessible Route
## 1108.4 Exceptions

1. If due to circumstances outside the control of the owner, either the slope of the finished ground level between accessible facilities and buildings exceeds 1:12, or where physical barriers or legal restrictions prevent the installation of an accessible route , a vehicular route with parking that complies with Section 1106 at each public or common use facility or building is permitted in place of the accessible route.

 221

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## Accessible Route
## 1108.4 Exceptions

3. In Group R-2 facilities with Type A units complying with Section 1108.6.2.2.1, an accessible route is not required to connect stories or mezzanines where Type A units, all common use areas serving Type A units and all public use areas are on an accessible route.

 222

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## Accessible Route
## 1108.4 Exceptions

5. In congregate residences in Groups R-3 and R-4, an accessible route is not required to connect stories or mezzanines where Accessible units or Type B units, all common use areas serving Accessible units and Type B units and all public use areas serving Accessible units and Type B units are on an accessible route.

6. An accessible route between stories is not required where Type B units are exempted by Section 1108.7.

 223

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## Group I-1
## 1108.5.1

- Accessible units and Type B units must be provided in Group I-1 occupancies in accordance with Sections 1108.5.1.1 and 1108.5.1.3.

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224

## Accessible units 1108.5.1.1

- In Group I-1 Condition 1, at least 4 percent, but not less than one, of the dwelling units and sleeping units must be Accessible units.
- In Group I-1 Condition 2, at least 10 percent, but not less than one, of the dwelling units and sleeping units must be Accessible units.

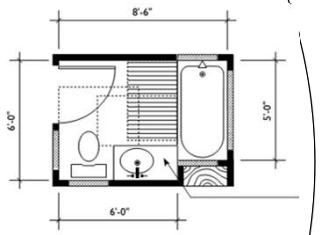
Assisted Toileting/bathing exceptions

 225

225

## Type B units 1108.5.1.3

- In structures with four or more dwelling units or sleeping units intended to be occupied as a residence, every dwelling unit and sleeping unit intended to be occupied as a residence must be a Type B unit.
  - Exception: The number of Type B units is permitted to be reduced in accordance with Section 1108.7.




 226

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## Group I-2 Nursing Homes 1108.5.2

- At least 50 percent but not less than one of each type of the dwelling units and sleeping units must be Accessible units.
- In structures with four or more dwelling units or sleeping unit s intended to be occupied as a residence, every dwelling unit and sleeping unit intended to be occupied as a residence must be a Type B unit.

Assisted Toileting/bathing exceptions

 227

227

## Apartment Houses, Monasteries and Convents 1108.6.2.2

- Type A units and Type B units must be provided in apartment houses, monasteries and convents in accordance with Sections 1108.6.2.2.1 and 1108.6.2.2.2.
- Bedrooms in monasteries and convents must be counted as units for the purpose of determining the number of units.
- Where the bedrooms are grouped in sleeping units, only one bedroom in each sleeping unit must count toward the number of required Type A units.

 228

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# 1108.6.2.2.1
## Type A units

- In Group R-2 occupancies containing more than 20 dwelling units or sleeping units, at least 2 percent but not less than one of the units must be a Type A unit.
- All Group R-2 units on a site must be considered to determine the total number of units and the required number of Type A units.
- Type A units must be dispersed among the various classes of units.
- Where two or more Type A units are provided, at least 5 percent but not less than one Type A unit shall include a bathroom with a shower complying with ICC A117.1 for Type A units.

Exceptions:
1. The number of Type A units is permitted to be reduced in accordance with Section 1108.7.
2. Existing structures on a site must not contribute to the total number of units on a site.

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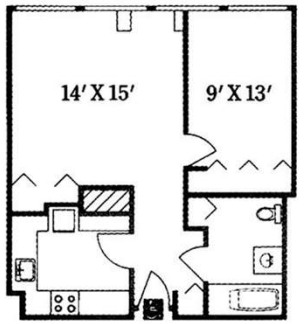
# Type B units
# 1108.6.2.2.2

- Where there are four or more dwelling units or sleeping unit s intended to be occupied as a residence in a single structure, every dwelling unit and sleeping unit intended to be occupied as a residence must be a Type B unit.

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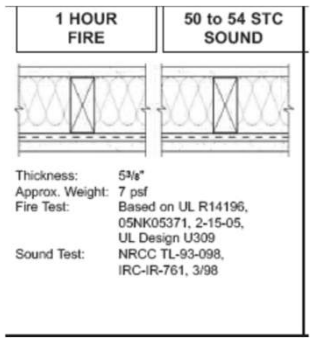
# Air-Borne Sound
# 1206.2




- Walls, partitions and floor-ceiling assemblies separating dwelling units and sleeping units from each other or from public or service areas must have a sound transmission class of not less than 50 where tested in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of not less than 45 if field tested, in accordance with ASTM E336 for airborne noise.
- Alternatively, the sound transmission class of walls, partitions and floor-ceiling assemblies must be established by engineering analysis based on a comparison of walls, partitions and floor-ceiling assemblies having sound transmission class ratings as determined by the test procedures set forth in ASTM E90.

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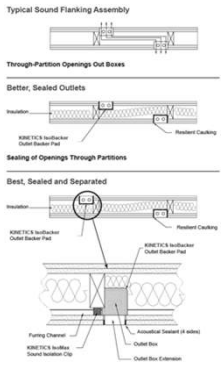
# Air-Borne Sound
# 1206.2




- Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts must be sealed, lined, insulated or otherwise treated to maintain the required ratings.
- This requirement must not apply to entrance doors; however, such doors must be tight fitting to the frame and sill.

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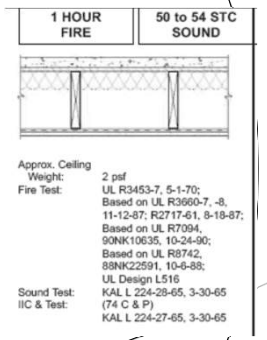
## Structure-Borne Sound 1206.3

- Floor-ceiling assemblies between dwelling units and sleeping units or between a dwelling unit or sleeping unit and a public or service area within the structure must have an impact insulation class rating of not less than 50 where tested in accordance with ASTM E492, or have a Normalized Impact Sound Rating (NISR) of not less than 45 if field tested in accordance with ASTM E1007.
- Alternatively, the impact insulation class of floor-ceiling assemblies must be established by engineering analysis based on a comparison of floor-ceiling assemblies having impact insulation class ratings as determined by the test procedures in ASTM E492.

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## Occupancy Category Of Buildings And Other Structures - Table 1604.5

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

| RISK CATEGORY | NATURE OF OCCUPANCY |
|---|---|
| I | Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to:<br>• Agricultural facilities.<br>• Certain temporary facilities.<br>• Minor storage facilities. |
| II | Buildings and other structures except those listed in Risk Categories I, III and IV |
| III | Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to:<br>• Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300.<br>• Buildings and other structures containing elementary school, secondary school or day care facilities with an occupa load greater than 250.<br>• Buildings and other structures containing adult education facilities, such as colleges and universities, with an occupant load greater than 500.<br>• Group I-2 occupancies with an occupant load of 50 or more resident care recipients but not having surgery or emergency treatment facilities.<br>• Group I-3 occupancies.<br>• Any other occupancy with an occupant load greater than 5,000[a].<br>• Power-generating stations, water treatment facilities for potable water, waste water treatment facilities and other public utility facilities not included in Risk Category IV.<br>• Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that:<br>Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and<br>Are sufficient to pose a threat to the public if released [b]. |

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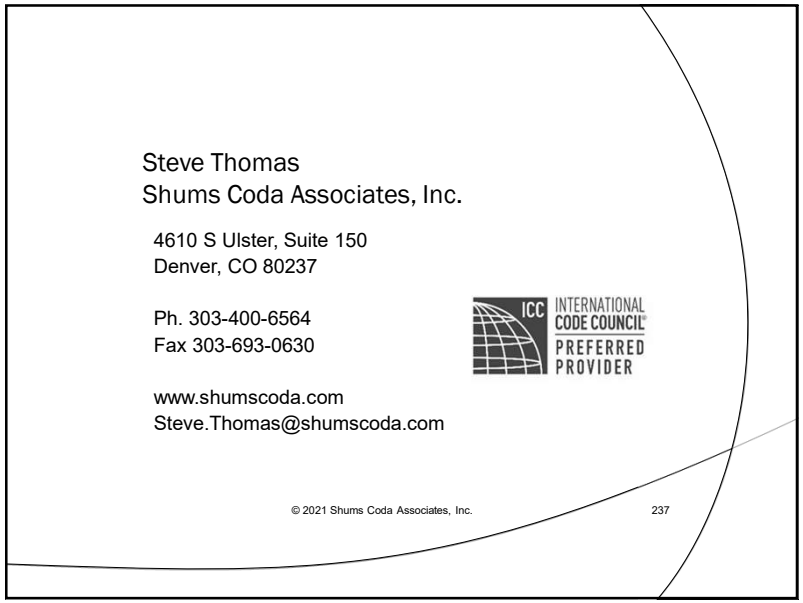
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