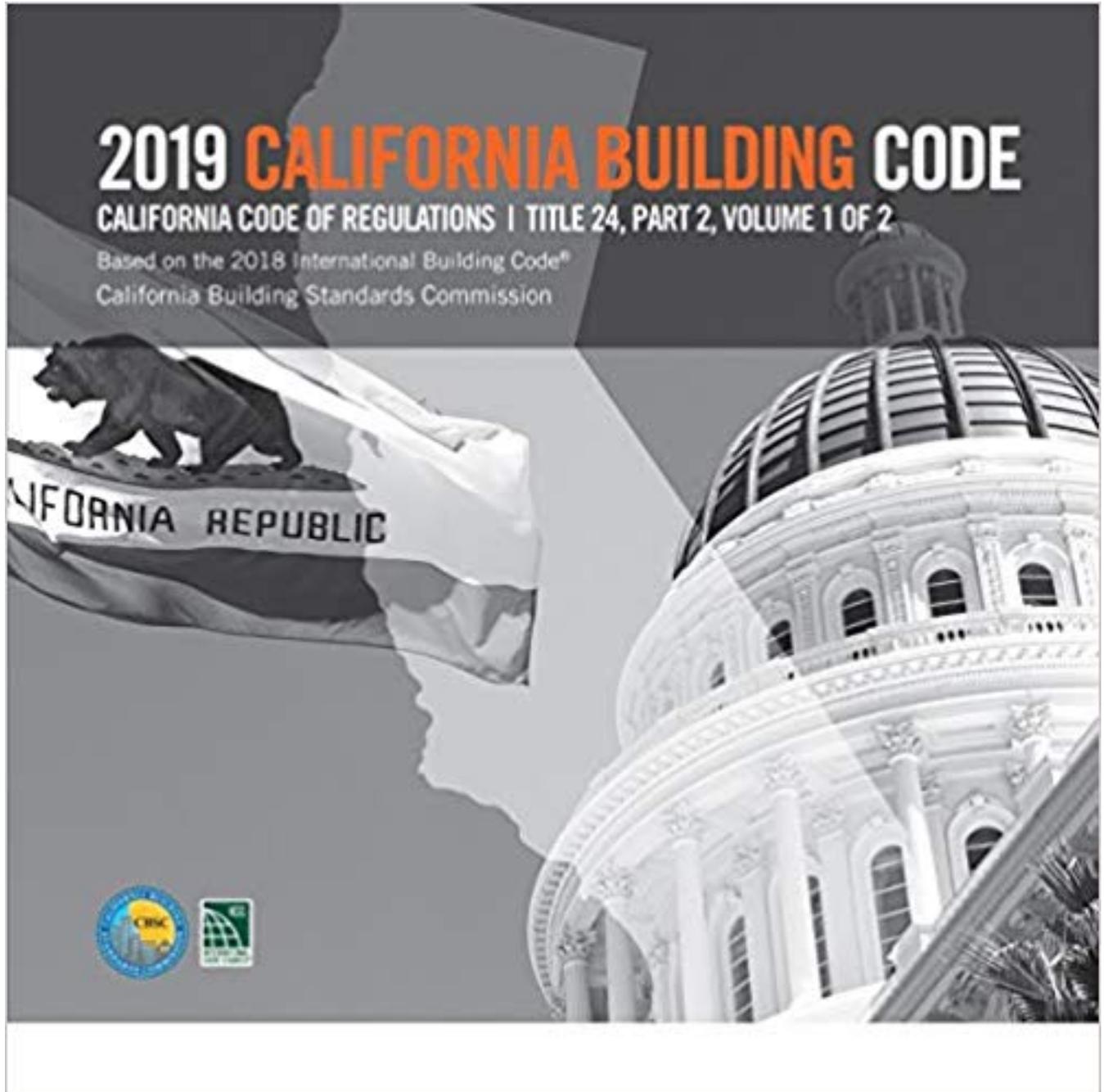


SIGNIFICANT CHANGES TO THE

2019 CALIFORNIA BUILDING CODE



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<https://codes.iccsafe.org/>

CHANGE TYPE: Modification

CHANGE SUMMARY: Regardless of size, storage rooms and storage spaces that are accessory to other uses are to be classified as part of the occupancy to which they are accessory.

2019 CODE: 311.1.1 Accessory storage spaces. A room or space used for storage purposes that is ~~less than 100 square feet (9.3 m²) in area and~~ accessory to another occupancy shall be classified as part of that occupancy. ~~The aggregate area of such rooms or spaces shall not exceed the allowable area limits of Section 508.2.~~

CHANGE SIGNIFICANCE: The proper occupancy classification of storage rooms has historically been one of the most elusive issues in the CBC. Although Group S occupancies are recognized in Section 311.1 as buildings, or portions thereof, used for storage purposes, there has always been some disagreement as to the classification of smaller storage areas, closets and similar spaces that are accessory to one or more other uses in the building. Assigning a Group S occupancy classification to a warehouse, or other significant storage area, has never been questioned. However, where the room or space poses little, if any, hazard above that created by the occupancy to which the storage use is accessory, there was some consensus that a unique Group S classification need not be applied. This approach to classifying a storage area is now formally addressed such that storage rooms or spaces that are accessory to other uses are to be classified as part of the occupancy to which they are accessory, regardless of the size of the storage area.

Storage rooms were specifically regulated in the initial edition of the CBC as incidental use areas where they exceeded 100 square feet. As such, they were not considered as distinct Group S occupancies.

311.1.1 continues

311.1.1

Classification of Accessory Storage Spaces



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Hospital storage room

311.1.1 continued

However, they were required to be separated from the remainder of the building by minimum 1-hour fire barriers. Due to the contradictions that occurred due to the potential for storage rooms to be classified as Group S occupancies eligible to be regulated under the nonseparated occupancy provisions, storage rooms were no longer considered as incidental use areas in the 2010 CBC. At that point, they were simply regulated under the general occupancy provisions of Chapter 3. The 2016 CBC introduced Section 311.1.1 recognizing that accessory storage spaces less than 100 square feet in area were to be classified as a part of the occupancy to which they are accessory. However, it has been typically viewed that the new provision implied that those storage spaces of 100 square feet or more should be classified as Group S. The 2016 provision has been revised to reflect that the Group S classification should not apply to accessory storage spaces.

The new approach to classifying storage spaces does not vary based upon the size of the storage space. There is no square footage or percentage threshold, such as 100 square feet or 10%, over which the Group S classification will be applied. Where the storage use is considered as accessory to the other uses in building, it shall be classified in accordance with those other uses. The key point is the hazard level that storage brings to the building. It is assumed that accessory storage uses pose little additional hazard above the occupancies which they serve. Where storage activities pose a significantly higher hazard than the other uses in the building, they would typically not be considered accessory and therefore classified as a Group S occupancy.

CHANGE TYPE: Clarification

CHANGE SUMMARY: Due to the reasonable expectation that self-storage facilities will contain a considerable amount of combustibles, such facilities are now specifically identified as Group S-1 occupancies.

2019 CODE: 311.2 Moderate-hazard storage, Group S-1. Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosols products, Levels 2 and 3

Self-service storage facility (mini-storage)

(No changes to other listed items.)

CHANGE SIGNIFICANCE: Hazards created by storage uses are primarily contents-related as opposed to occupant-related. The general public is seldom exposed to the risks imposed by storage activities, as the occupants are typically employees who are familiar with their surroundings. However, the presence of significant fire loads and hazardous materials can make storage uses a significant concern. Where a storage use is not considered as a Group H high-hazard occupancy, it shall be classified as Group S, either a Group S-1 moderate-hazard occupancy or a Group S-2 low-hazard occupancy. Due to the reasonable expectation that self-service storage facilities will contain a considerable amount of combustibles, such facilities are now specifically identified as Group S-1 occupancies.

Self-service storage facilities, sometimes referred to as mini-storage units, typically consist of multiple buildings housing numerous small garage-type storage spaces. In some cases, they can be multistory buildings with hundreds of individual storage rooms. Regardless of their

311.2 continues



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Self-storage units

311.2 continued configuration, such facilities are used by individuals and businesses to store a wide variety of goods and materials. As would be expected, the fire load created by the stored items could be just as varied. Because the specific items being stored are typically unknown, it is necessary to make an educated guess at the potential hazard created within these facilities.

The classification as Group S-2 would be inappropriate due to the reasonable expectation that a considerable fire load is probable due to the items in storage. A Group S-2 occupancy anticipates the exclusive storage of noncombustible items. In contrast, classification as a Group H-3 storage facility is considered unreasonable due to the historical use of such facilities. Although it is certainly possible that some hazardous materials will be stored, classifying all self-storage facilities as high-hazard occupancies would seem to be an overreach. Therefore, the Group S-1 classification is deemed the most appropriate decision in order to address the anticipated hazards.

406.1

Motor Vehicle-Related Occupancies

CHANGE TYPE: Clarification

CHANGE SUMMARY: Provisions specific to motor-vehicle-related uses have been reformatted in a manner such that those requirements that apply to all such uses have been relocated in a single Section 406.1.

2019 CODE: 406.1 General. All motor-vehicle-related occupancies shall comply with Sections 406.1 through 406.8. Section 406.2. Private garages and carports shall also comply with Section 406.3. Open public parking garages shall also comply with Sections 406.4 and 406.5. Enclosed public parking garages shall also comply with Sections 406.4 and 406.6. Motor fuel-dispensing facilities shall also comply with Section 406.7. Repair garages shall also comply with Section 406.8.

Format revisions to Sections 406.2.1 through 406.2.9.3, as well as Sections 406.3 through 406.8.3, are too extensive to be included here. Refer to Code Change G95-15 for the entire text of the code modifications.

CHANGE SIGNIFICANCE: Although uncommon, fire hazards related to motor vehicles are a concern. Therefore, specific requirements are established in Section 406 to regulate occupancies containing motor vehicles, whether they are parked, under repair or being fueled. Provisions specific to motor-vehicle-related uses have been reformatted in a manner such that those requirements that apply to all such uses have been relocated in a single Section 406.2.

Special regulations applicable to motor-vehicle-related uses are varied due to the differing activities that occur. Facilities addressed include repair garages, motor fuel-dispensing operations and three types of



Open parking garage

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Service station canopy

parking garages. The provisions have previously been inconsistently formatted throughout Section 406. They have now been reorganized in the following manner to allow for better consistency in application, particularly in those areas where a requirement applies to all types of motor-vehicle-related uses. Section 406.2, applicable to all motor-vehicle-related occupancies, now establishes requirements for the following conditions:

- Automatic garage door openers and vehicular gates
- Clear height of vehicle and pedestrian traffic areas
- Accessible parking spaces
- Floor surfaces
- Sleeping rooms
- Fuel dispensing
- Electric vehicle charging stations
- Mixed occupancies and separation
- Equipment and appliances
- Elevation of ignition sources

CHANGE TYPE: Addition

CHANGE SUMMARY: Reference is now made to CBC Chapter 27 addressing emergency and standby power systems, as well as NFPA 99, *Health Care Facilities Code*, regarding the design and construction requirements for essential electrical systems for electrical components, equipment, and systems in ambulatory care facilities.

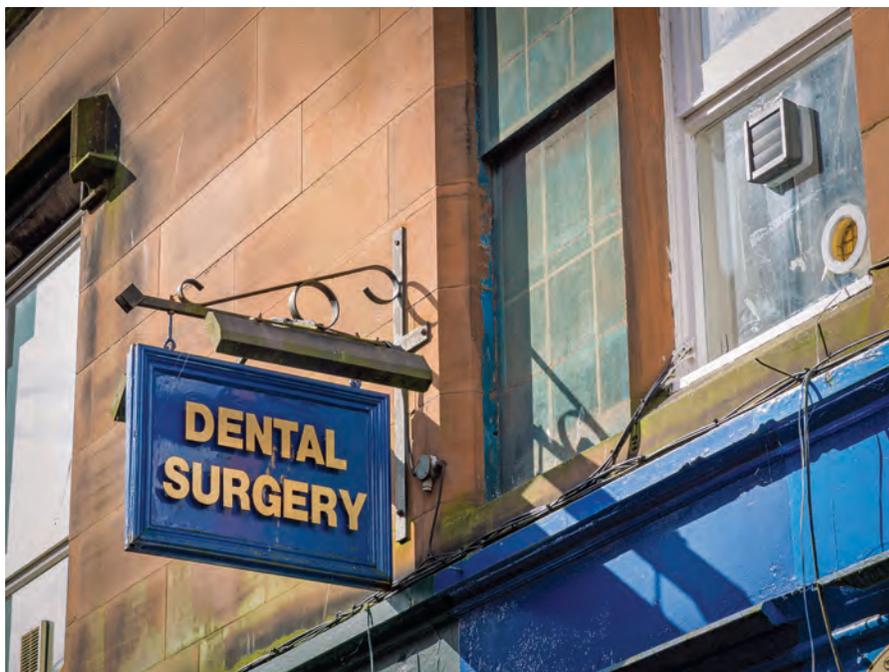
2019 CODE: **422.6 Electrical systems.** In ambulatory care facilities, the essential electrical system for electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of Chapter 27 and NFPA 99.

CHANGE SIGNIFICANCE: Ambulatory care facilities are minor surgery centers, dental surgery centers, and similar facilities where individuals are temporarily rendered incapable of self-preservation during medical, surgical, psychiatric, nursing, or similar care. The period of time under which the individual is under sedation, nerve blocks or anesthesia is typically quite short, and the procedures allow an individual to spend a limited amount of time within the facility. However, during such limited times where self-preservation is not impossible, it is still important that safeguards be in place to address the need for physical assistance in case of an emergency. Reference is now made to CBC Chapter 27 addressing emergency and standby power systems, as well as NFPA 99, *Health Care Facilities Code*, regarding the design and construction requirements for essential electrical systems for electrical components, equipment and systems.

422.6

Electrical Systems in Ambulatory Care Facilities

422.6 continues



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Ambulatory care facility

422.6 continued

The CBC has previously provided no guidance as to whether or not essential electrical systems, such as an emergency generator, are required in ambulatory care facilities. NFPA 99 has now been referenced as the document to be used in such an assessment. The *Health Care Facilities Code* provides a risk-based approach to determine the need for an essential electrical system, the class of system required, and the general design requirements for each type of system.

CHANGE TYPE: Addition

CHANGE SUMMARY: In order to provide a more comprehensive and efficient compilation of construction regulations, those CFC medical gas system requirements related directly to building construction have now been replicated in the CBC.

2019 CODE:

SECTION 427 **MEDICAL GAS SYSTEMS**

427

Medical Gas Systems

427.1 General. Medical gases at health care-related facilities intended for patient or veterinary care shall comply with Sections 427.2 through 427.2.3 in addition to requirements of Chapter 53 of the *California Fire Code*.

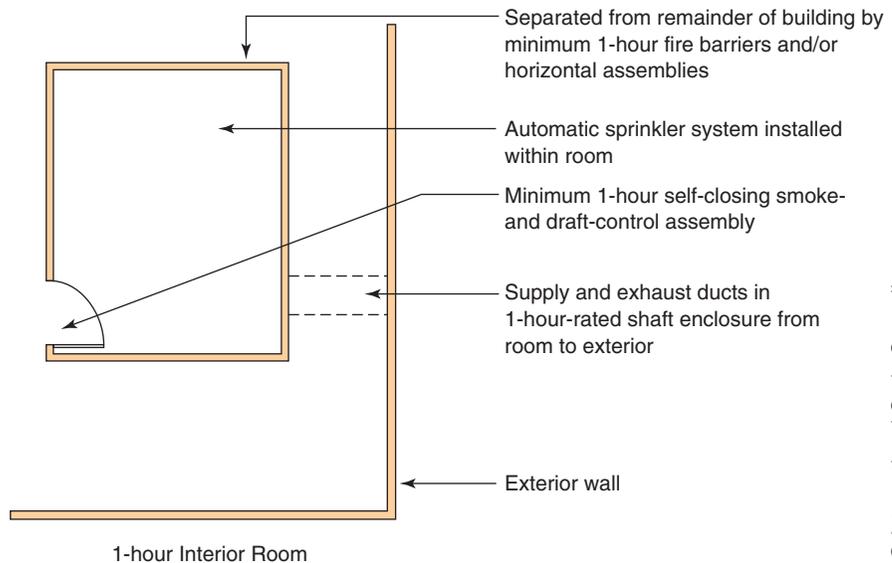
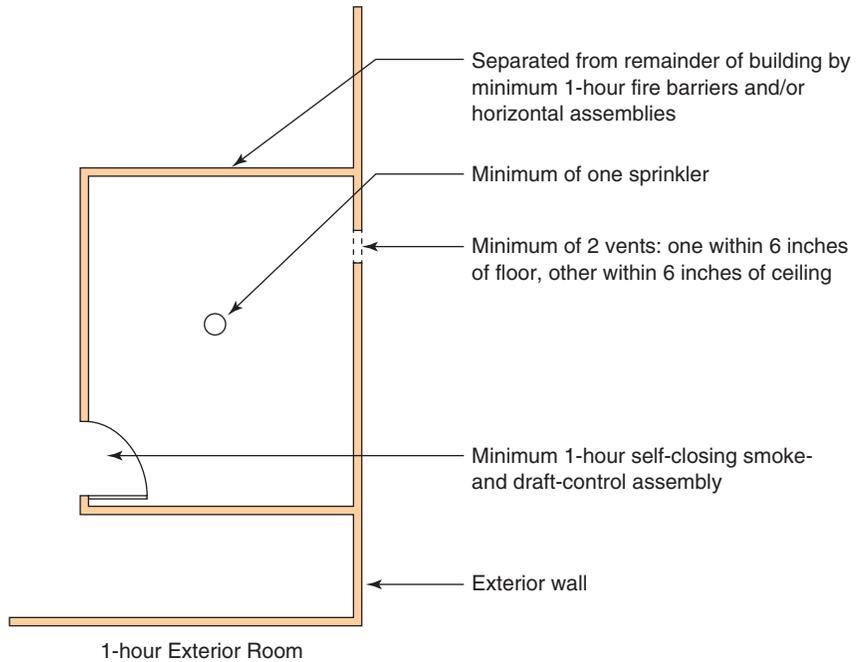
427.2 Interior supply location. Medical gases shall be located in areas dedicated to the storage of such gases without other storage or uses. Where containers of medical gases in quantities greater than the permitted amount are located inside the buildings, they shall be located in a 1-hour exterior room, 1-hour interior room or a gas cabinet in accordance with Sections 427.2.1, 427.2.2 or 427.2.3, respectively. Rooms or areas where medical gases are stored or used in quantities exceeding the maximum allowable quantity per control area as set forth in Tables 307.1(1) and 307.1(2) shall be in accordance with Group H occupancies.

427.2.1 One-hour exterior room. A 1-hour exterior room shall be a room or enclosure separated from the remainder of the building by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, with a fire-resistance rating of not less than 1 hour. Openings between the room or enclosure and interior spaces shall be provided with self-closing smoke- and draft-control assemblies having a fire protection rating of not less than 1 hour. Rooms shall have not less than one exterior wall that is provided with not less than two vents. Each vent shall have a minimum free air opening of not less than 36 square inches (232 cm²) for each 1,000 cubic feet (28 m³) at normal temperature and pressure (NTP) of gas stored in the room and shall be not less than 72 square inches (465 cm²) in aggregate free opening area. One vent shall be within 6 inches (152 mm) of the floor and one shall be within 6 inches (152 mm) of the ceiling. Rooms shall be provided with not fewer than one automatic sprinkler to provide container cooling in case of fire.

427.2.2 One-hour interior room. Where an exterior wall cannot be provided for the room, a 1-hour interior room or enclosure shall be provided and separated from the remainder of the building by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, with a fire resistance rating of not less than 1 hour. Openings between the room

427 continues

427 continued



Medical gas storage rooms

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or enclosure and interior spaces shall be provided with self-closing smoke- and draft-control assemblies having a fire protection rating of not less than 1 hour. Openings between the room or enclosure and interior spaces shall be provided with self-closing smoke- and draft-control assemblies having a fire protection rating of not less than 1 hour. An automatic sprinkler system shall be installed within the room. The room shall be exhausted through a duct to the exterior. Supply and exhaust ducts shall be enclosed in a 1-hour-rated shaft enclosure from the room to the exterior. Approved mechanical ventilation shall comply with the California Mechanical Code and be provided with a minimum rate of 1 cubic foot per minute per square foot (0.00508 m³/s/m²) of the area of the room.

427.2.3 Gas cabinets. Gas cabinets shall be constructed in accordance with Section 5003.8.6 of the *California Fire Code* and shall comply with the following:

1. Cabinets shall be exhausted to the exterior through a dedicated exhaust duct system installed in accordance with Chapter 5 of the *California Mechanical Code*.
2. Supply and exhaust ducts shall be enclosed in a 1-hour-rated shaft enclosure from the cabinet to the exterior. The average velocity of ventilation at the face of access ports or windows shall be not less than 200 feet per minute (1.02 m/s) with a minimum of 150 feet per minute (0.076 m/s) at any point of the access port or window.
3. Cabinets shall be provided with an automatic sprinkler system internal to the cabinet.

CHANGE SIGNIFICANCE: Special construction provisions related to the storage of medical gases have historically been addressed in the *California Fire Code* (CFC). The scope of CFC Section 5306 includes the storage of compressed gases intended for inhalation or sedation, including analgesia systems for dentistry, podiatry, veterinary, and similar uses. Because most of the medical gas construction-related requirements in CFC reference the CBC, it was deemed logical that those requirements should be incorporated into the CBC itself. Therefore, those CFC medical gas system requirements related only to building construction have been replicated in the CBC.

Hospitals and most other healthcare facilities typically require the use of medical gases as a critical component of their functions. Oxygen, nitrous oxide and a variety of other compressed gases are piped into treatment rooms from medical gas storage rooms. These rooms have been regulated by the CFC for fire-resistive separation and ventilation purposes. Provisions address both exterior rooms, which must be located on an exterior wall, and interior rooms, where an exterior wall location cannot be provided. In addition, gas cabinet construction criteria are set forth. These requirements are now also located in Chapter 4 of the CBC in a manner consistent with other CFC provisions that have been replicated in the CBC in order to provide a more comprehensive and efficient set of construction regulations.

CHANGE TYPE: Modification

CHANGE SUMMARY: The use of fire walls is now strictly limited to only the determination of permissible types of construction, based upon allowable building area and height.

2019 CODE: 503.1 General. Unless otherwise specifically modified in Chapter 4 and this chapter, building height, number of stories and building area shall not exceed the limits specified in Sections 504 and 506 based on the type of construction as determined by Section 602 and the occupancies as determined by Section 302 except as modified hereafter. Building height, number of stories and building area provisions shall be applied independently. Each For the purposes of determining area limitations, height limitations and type of construction, each portion of a building separated by one or more fire walls complying with Section 706 shall be considered to be a separate building.

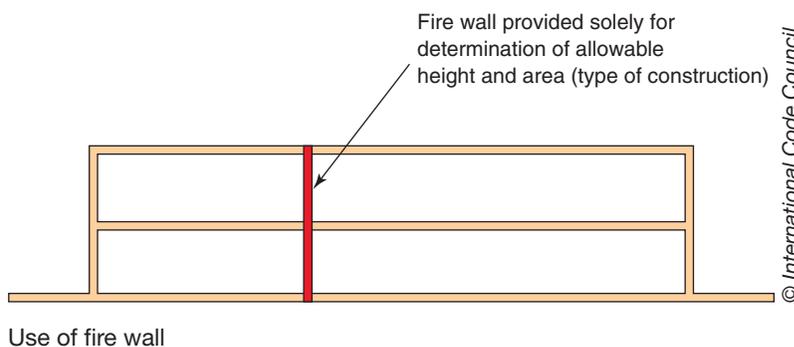
706.1 General. ~~Each portion of a building separated by one or more fire walls that comply with the provisions of this section shall be considered a separate building constructed in accordance with Sections 706.2 through 706.11.~~ The extent and location of such fire walls shall provide a complete separation. Where a fire wall separates occupancies that are required to be separated by a fire barrier wall, the most restrictive requirements of each separation shall apply.

CHANGE SIGNIFICANCE: Fire walls are considered as the most protective of the various fire separation elements set forth in the CBC. The structural stability, materials, fire-resistance, and continuity requirements for fire walls provide for a substantial expectation that the fire separation created by a fire wall is at the highest level. There has always been some confusion as to the extent of a fire wall's use regarding the separation of a single structure into two or more smaller buildings. A fundamental concept of the code is that larger buildings typically have more restrictive requirements than smaller buildings. Therefore, using fire walls to create multiple smaller buildings under the same roof allows each small building to be regulated independently rather than as one large building. An issue was the extent of provisions in the CBC that can be applied to the smaller buildings created by one or more fire walls. The use of fire walls is now strictly limited to only the determination of permissible types of construction, based upon allowable building area and height.

503.1, 706.1

Scope of Fire Wall Use

503.1, 706.1 continues



503.1, 706.1 continued

Both Sections 503.1 and 706.1 previously indicated that the portions of a structure separated by one or more fire walls were required to be considered as separate buildings. Although it was possible to consider that the requirement located in Section 503.1 was limited in scope due to its inclusion in Chapter 5 addressing general building heights and areas, the statement in Section 706.1 was global in nature and implied that the smaller buildings created by fire walls were to be regulated as unique and individual buildings for all purposes of the code. In addition, there was an often-applied opinion that the various elements and systems on each side of a fire wall must be completely self-contained. The revised provisions now indicate that the use of a fire wall is solely predicated on the determination of the maximum allowable height and area calculations per Chapter 5. Using the provisions to control other building features or elements such as means of egress, fire protection systems, or building utilities is no longer appropriate.

CHANGE TYPE: Clarification

CHANGE SUMMARY: Where both a mezzanine and an equipment platform are located in the same room, the general limitation for mezzanines cannot be exceeded when applying the two-thirds allowance.

2019 CODE: 505.2.1.1 Aggregate area of mezzanines and equipment platforms. Where a room contains both a mezzanine and an equipment platform, the aggregate area of the two raised floor levels shall be not greater than two-thirds of the floor area of that room or space in which they are located. The area of the mezzanine shall not exceed the area determined in accordance with Section 505.2.1.

505.3.1 Area limitation. The aggregate area of all equipment platforms within a room shall not be greater than two-thirds of the area of the room in which they are located. Where an equipment platform is located in the same room as a mezzanine, the area of the mezzanine shall be determined by Section 505.2.1 and the combined aggregate area of the equipment platforms and mezzanines shall be not greater than two-thirds of the room in which they are located. The area of the mezzanine shall not exceed the area determined according to Section 505.2.1.

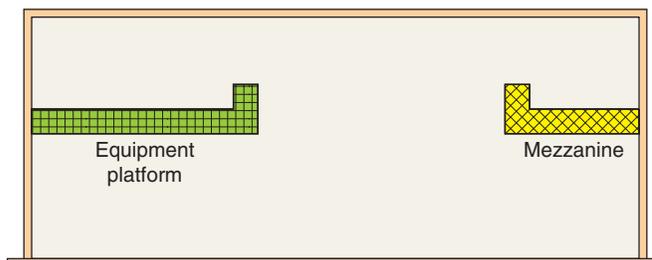
CHANGE SIGNIFICANCE: Where a floor level is relatively small compared to the floor level below, it may be possible to consider the upper floor level as a mezzanine rather than a story. A mezzanine is granted several significant allowances, including that it not be considered as contributing to allowable floor area or number of stories. As a general rule, the aggregate area of mezzanines cannot be larger than one-third the area of the room in which it is located. A greater allowance is available where the elevated areas are equipment platforms, up to two-thirds of the area of the room below. Provisions have been clarified where both a mezzanine and an equipment platform are located in the same room.

Historically, where a mezzanine and an equipment platform are located in the same room, their total floor area is permitted to be up to two-thirds the floor area of the room in which they are located. Where the

505.2.1.1 continues

Example:

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



Permitted aggregate size of equipment platform and mezzanine limited to 16,000 sq. ft. (based on $\frac{2}{3}$ limitation)

Permitted size of mezzanine limited to 8,000 sq. ft. (based on $\frac{1}{3}$ limitation) ©

Mezzanine and equipment platform example

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505.2.1.1 continued equipment platform is relatively small, the mezzanine could be much larger than permitted by the base requirement in the code (one-third the floor area) and still meet the two-thirds limitation. For example, the equipment platform could be 5% of the floor area of the room below, allowing the floor area of the mezzanine to be almost 62% of the area below. This potential result was not the intended application of the two-thirds allowance and the revised code text provides a clarification of the original intent. The reformatting and additional language now clearly indicates that the general limitation for mezzanines cannot be exceeded when applying the two-thirds allowance.

CHANGE TYPE: Clarification

CHANGE SUMMARY: New provisions in Section 508.4.1 and Table 508.4 clarify that the fire separations used for mixed-occupancy purposes and those used for fire area purposes address different concerns, and as such the most restrictive fire-resistance-rated conditions shall apply.

2019 CODE: 508.4.1 Occupancy classification. Separated occupancies shall be individually classified in accordance with Section 302.1. Each separated space shall comply with this code based on the occupancy classification of that portion of the building. The most restrictive provisions of Chapter 9 that apply to the separate occupancies shall apply to the total nonfire-barrier-separated occupancy areas. Occupancy separations that serve to define fire area limits established in Chapter 9 for requiring a fire protection system shall also comply with Section 901.7.

508.4.1, Table 508.4

Separated Occupancies vs. Fire Area Separations

TABLE 508.4 Required Separation of Occupancies (Hours)^h

Notes:

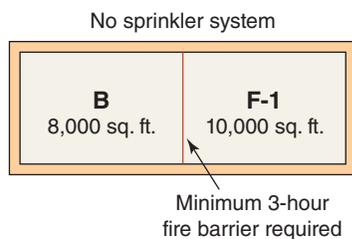
f. Occupancy separations that serve to define fire area limits established in Chapter 9 for requiring fire protection systems shall also comply with Section 707.3.10 and Table 707.3.10 in accordance with Section 901.7.

(No change to Table 508.4 and other notes to table.)

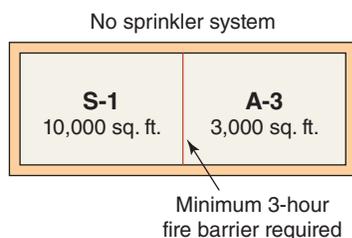
CHANGE SIGNIFICANCE: Where a building contains multiple occupancies, Section 508 requires that at least one of three established methodologies be applied to address the varied hazards. Separated occupancies, one of the three available methods, is based upon the similarities, or dissimilarities, of hazards posed by the occupancies being regulated. Where the hazards are deemed to be sufficiently dissimilar, some degree of fire-resistance-rated separation is required by Table 508.4. However, no fire-resistive separation is required by the table where the occupancies pose hazards that are somewhat similar.

508.4.1, Table 508.4 continues

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



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



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

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Separated occupancies/fire area examples

508.4.1, Table 508.4 continued

Fire area separations, as regulated by Section 901.7, are selectively used to divide a building into limited-size compartments so as to not exceed the limits established in Section 903 for requiring an automatic sprinkler system. The fire area concept is based on a time-tested approach to limiting the spread of fire in a building. The degree of required fire separation, provided by fire barriers, horizontal assemblies, or both, is set forth in Section 707.3.10. New provisions in Section 508.4.1 and Table 508.4 clarify that the fire separations used for mixed-occupancy purposes and those used for fire area purposes address different concerns, and as such the most restrictive fire-resistance-rated conditions shall apply.

As an example, where using the separated occupancies method to address a mixed-occupancy building containing both Group F-1 and Group S-1 occupancies, no fire separation is mandated by Table 508.4 due to the similarity in hazards. However, if the fire area concept is applied to create conditions under which a sprinkler system is not required in the building, Table 707.3.10 would require a separation composed of minimum 3-hour fire barriers and/or horizontal assemblies. Therefore, the most restrictive condition, the minimum 3-hour separation, must be provided.

CHANGE TYPE: Modification

CHANGE SUMMARY: All portions of the roof construction, including primary structural frame members such as girders and beams, are now selectively exempted from fire-resistance requirements based on Table 601 where every portion of the roof construction is at least 20 feet above any floor below.

2019 CODE:

Table 601, Note b

Fire Protection of Structural Roof Members

TABLE 601 (PARTIAL) Fire-Resistance Rating Requirements for Building Elements (Hours)

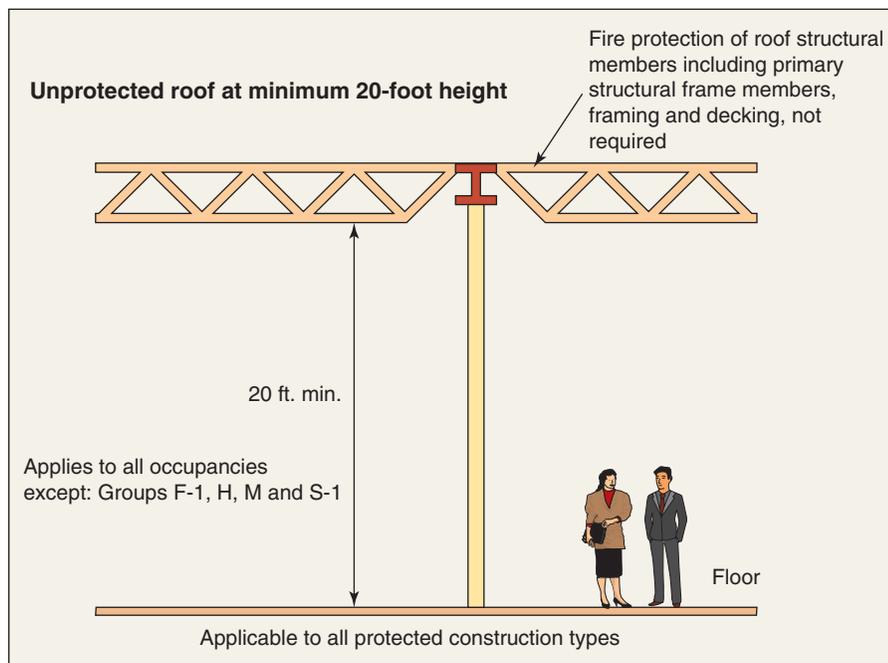
Building Element	Type I		Type II		Type III		Type IV	Type V	
	A	B	A	B	A	B	HT	A	B
Primary structural frame ^f (see Section 202)	3 ^{a,b}	2 ^{a,b}	1 ^b	0	1 ^b	0	HT	1 ^b	0
Roof construction and associated secondary members (see Section 202)	1½ ^b	1 ^{b,c}	1 ^{b,c}	0 ^c	1 ^{b,c}	0	HT	1 ^{b,c}	0

b. 1. Except in Group A, E, F-1, H, I, L, M, R-1, R-2, R-2.1 and S-1 occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, fire protection of structural members in roof construction shall not be required, including protection of primary structural frame members, roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

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

CHANGE SIGNIFICANCE: The provisions of Chapter 6 in regard to fire resistance are intended to address the structural integrity of the building elements under fire conditions. As a building increases in floor area, height and/or fire hazard, the fire-resistive protection of building elements is often required. The basic fire-resistance ratings for the various

Table 601, Note b continues



Unprotected roof allowance

Table 601, Note b continued

types of construction are established in Table 601. Footnote b has historically modified the base requirements in the table, as they relate to the roof construction, by selectively eliminating the requirement for protecting roof structural members where the roof construction is at least 20 feet above the floor below. The reduction, applicable to all occupancies other than Groups F-1, H, M and S-1, recognizes that the temperatures at this elevation during most fire incidents are quite low. Because footnote b was only applicable to the building element “roof construction and associated secondary members,” and was not referenced in the requirements for “primary structural frame,” its use was often not applied to roof girders, beams and similar primary structural members. By expanding the scope of the footnote to primary structural frame elements, as well as specifically mentioning in the footnote its application to primary structural frame members, it is very clear that all portions of the roof construction are exempt from fire-resistance requirements based on Table 601.

CHANGE TYPE: Modification

CHANGE SUMMARY: The minimum required clearance between the edge of a projection and the line used to determine the fire separation distance has been significantly decreased.

2019 CODE:

Table 705.2

Extent of Projections

TABLE 705.2 Minimum Distance of Projection

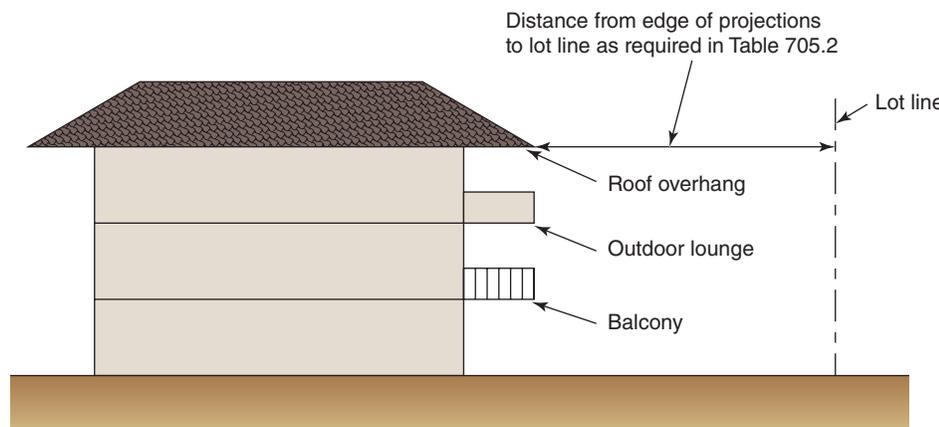
Fire Separation Distance – FSD (FSD) (feet)	Minimum Distance from Line Used to Determine FSD
0 feet to <u>less than</u> 2 feet	Projections not permitted
Greater than 2 feet to <u>less than</u> 3 feet	24 inches
Greater than 3 feet to less than 30 <u>5</u> feet	24 inches plus 8 inches for every foot of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

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

CHANGE SIGNIFICANCE: Where architectural projections such as eave overhangs and balconies extend from walls in close proximity to a lot line, they create problems that are due to trapping the convected heat from a fire in an adjacent building. As this trapped heat increases the hazard for the building under consideration, the code mandates a minimum distance the leading edge of the projecting element must be separated from the line used to determine fire separation distance. The permitted extent of projections is established by Table 705.2 and based solely on the clear distance between the building’s exterior wall and an interior lot line, centerline of a public way or assumed imaginary line between two buildings on the same lot. The minimum required clearance set forth in Table 705.2 between the edge of a projection and the line used to determine the fire separation distance has been greatly decreased from the clearance required by the 2016 CBC.

Projections are allowed to extend beyond the exterior wall, but only for a limited distance. The required clearance changes based on the fire separation distance measured from the exterior wall. The modification

Table 705.2 continues



Fire separation distance at projections

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Table 705.2 continued

occurs where the fire separation distance is between 5 feet and 30 feet, with the change becoming more significant as the distance approaches 30 feet. Where an exterior wall of a building has a fire separation distance of 30 feet, the 2016 CBC requires a minimum clearance fire separation distance of 20 feet measured from the edge of the projection. For that same condition, the 2019 CBC will only require a clearance of 40 inches between the projection's leading edge and the line used to determine the fire separation distance.

Provisions established in the 2016 edition of the CBC were intended to simplify the projection distance provisions by formatting the requirements in a table. The 2016 change attempted to address an identified anomaly within the table. However, that change created a much more restrictive requirement than what was in the 2013 CBC and earlier editions. It was determined that there was no technical justification for this more restrictive requirement. The maximum required separation of 40 inches has been reestablished and the table has been slightly reformatted in a manner that more consistently identifies the distance at which the provisions are to be applied.

706.1.1

Party Walls Not Constructed as Fire Walls

CHANGE TYPE: Modification

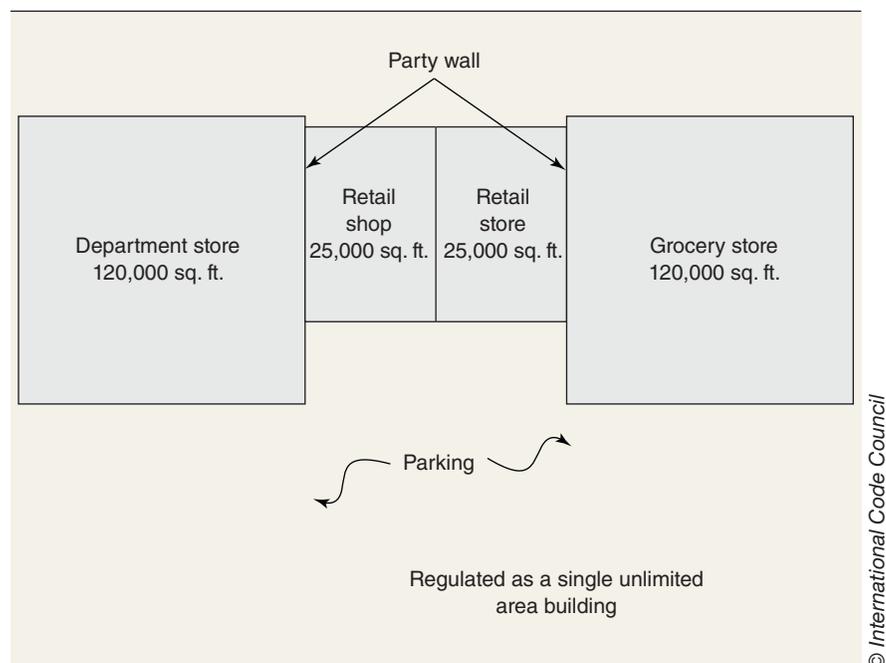
CHANGE SUMMARY: Construction as a fire wall is no longer required for a party wall provided the aggregate height and area of the buildings on each side of the party wall are compliant with Chapter 5 and applicable easements and agreements are established addressing the maintenance of all fire and life safety systems of both buildings.

2019 CODE: 706.1.1 Party walls. Any wall located on a lot line between adjacent buildings, which is used or adapted for joint service between the two buildings, shall be constructed as a fire wall in accordance with Section 706. Party walls shall be constructed without openings and shall create separate buildings.

Exceptions:

1. Openings in a party wall separating an anchor building and a mall shall be in accordance with Section 402.4.2.2.1.
2. Fire walls are not required on lot lines dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the lot line do not exceed the maximum height and area requirements of this code. For the building official's review and approval, he or she shall be provided with copies of dedicated access easements and contractual agreements that permit the owners of the portion of the building located on either side of the lot line access to the other side for purposes of maintaining fire and life safety systems necessary for the operation of the building.

Example:



Use of party walls

CHANGE SIGNIFICANCE: Where two separate structures are each built at a lot line, the opposing exterior walls of each structure are to be regulated individually based upon zero fire separation distance. This will result in each wall having a fire-resistance rating with no openings permitted. As an option, the code recognizes the presence of a joint-use party wall constructed without openings. The party wall is typically required to be regulated as a fire wall. Construction as a fire wall is no longer required for the common wall at the lot line provided the aggregate height and area of the opposing buildings are compliant with Chapter 5 and applicable easements and agreements are established addressing the maintenance of all fire and life safety systems of both buildings.

The new allowance recognizes the increasing frequency of property being subdivided with a lot line for ownership purposes. This concept has historically been acceptable for covered mall buildings, where anchor stores have lot lines specific to the anchor store established for financial purposes along the wall that separates the mall from the anchor store. However, this condition has not previously been addressed for other types of buildings and as a result, designers, building owners, and building officials have been left to deal with the issue on a case-by-case basis outside of the code.

The new exception specifies that where a party wall divides a building for ownership purposes, and the aggregate building height and area complies with the code, then the party wall does not need to be constructed as a fire wall. In other words, if the party wall did not exist, the entire building would comply with the allowable height in feet (Section 504.3), the allowable number of stories (Section 504.4), and the allowable area (Section 506.2).

In order to approve this approach, documents for easements and contracts between the various property owners shall be provided to the building official. These documents would be considered part of the construction documents. It is important that in dealing with fire and life safety issues the two buildings are considered as one, thus requiring access between buildings for the maintenance of all fire and life safety systems.

708.4

Continuity of Fire Partitions

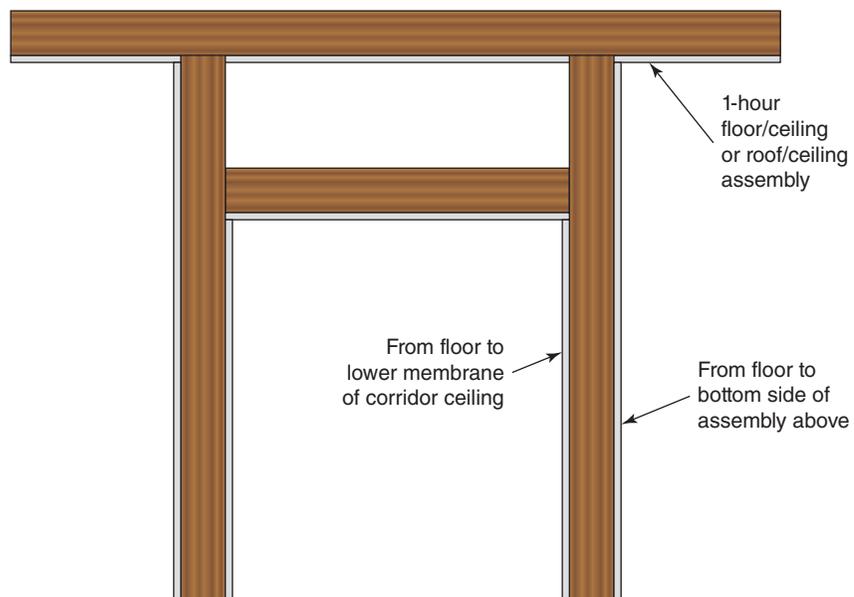
CHANGE TYPE: Clarification

CHANGE SUMMARY: The continuity requirements for fire partitions have been reformatted to provide for increased clarity of their construction requirements.

2019 CODE: 708.4 Continuity. Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. In combustible construction where the fire partitions are not required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fire-blocked or draftstopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the required fire-resistance rating of the wall supported, except for walls separating tenant spaces in covered and open mall buildings, walls separating dwelling units, walls separating sleeping units and corridor walls, in buildings of Type HB, IHB and VB construction.

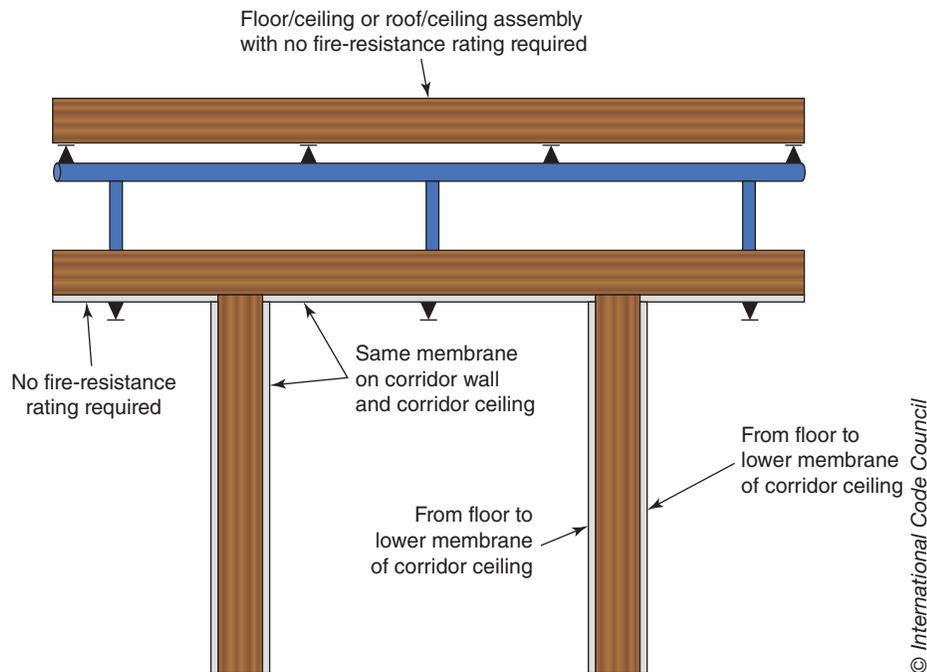
Exceptions:

1. The wall need not be extended into the crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating.
2. Where the room-side fire-resistance-rated membrane of the corridor is carried through to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, the ceiling of the corridor shall be permitted to be protected by the use of ceiling materials as required for a 1-hour fire-resistance-rated floor or roof system.



Room-side membrane extends full height

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Sprinkler protection in above-ceiling space

3. Where the corridor ceiling is constructed as required for the corridor walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly.
4. The fire partitions separating tenant spaces in a covered or open mall building, complying with Section 402.4.2.1, are not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in attic or ceiling spaces above tenant separation walls.
5. Attic fireblocking or draftstopping is not required at the partition line in Group R-2 buildings that do not exceed four stories above grade plane, provided the attic space is subdivided by draftstopping into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units, whichever is smaller.
6. Fireblocking or draftstopping is not required at the partition line in buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.

708.4 Continuity. Fire partitions shall 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.

708.4 continues

708.4 *continued***Exceptions:**

1. Fire partitions shall not be required to extend into a crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating.
2. Fire partitions serving as a corridor wall shall not be required to extend above the lower membrane of a corridor ceiling provided that the corridor ceiling membrane is equivalent to corridor wall membrane, and either of the following conditions is met:
 - 2.1. The room-side membrane of the corridor wall extends to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above.
 - 2.2. The building is equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, including automatic sprinklers installed in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above.
3. Fire partitions serving as a corridor wall shall be permitted to terminate at the upper membrane of the corridor ceiling assembly where the corridor ceiling is constructed as required for the corridor wall.
4. Fire partitions separating tenant spaces in a covered or open mall building complying with Section 402.4.2.1 shall not be required to extend above the underside of a ceiling. Such ceiling shall not be required to be part of a fire-resistance-rated assembly, and the attic or space above the ceiling at tenant separation walls shall not be required to be subdivided by fire partitions.

CHANGE SIGNIFICANCE: Fire partitions provide a limited degree of fire-resistive protection and are only mandated in very specific instances. Such wall assemblies are selectively required when separating dwelling units and sleeping units, separating tenant spaces in mall buildings, creating a fire-resistance-rated corridor, providing an elevator lobby separation and providing egress balcony separation. The continuity requirements for fire partitions have been reformatted to provide for increased clarity of their construction requirements.

The requirements for fire partitions have been reformatted through the splitting of the section into three separate issues. Section 708.4 now only addresses the continuity of fire partitions in regard to their enclosure limits. Section 708.4.1 deals with the construction components supporting fire partitions, while Section 708.4.2 now addresses the fireblocking and draftstopping of fire partitions of combustible construction. All three of these issues were previously addressed in the single section.

The required extent of a fire partition begins at the top of the foundation or floor/ceiling assembly below. The upper terminus of the fire partition is now clearly stated as needing to terminate at either the underside of the floor or sheathing, deck or slab above, or the underside of the fire-resistance-rated floor/ceiling or roof/ceiling assembly, provided the rating is equivalent or greater than required for the fire partition.

As a part of the reformatting effort, the continuity exceptions were reworded to a limited degree. In addition, Exception 2 was expanded to allow another option where the fire partition need not extend above the lower membrane of a corridor ceiling. This vertical extent of the fire partition is now also not required where automatic sprinkler protection is extended to the concealed horizontal space above the top of the fire partition.

708.4.2

Fireblocking and Draftstopping at Fire Partitions

CHANGE TYPE: Clarification

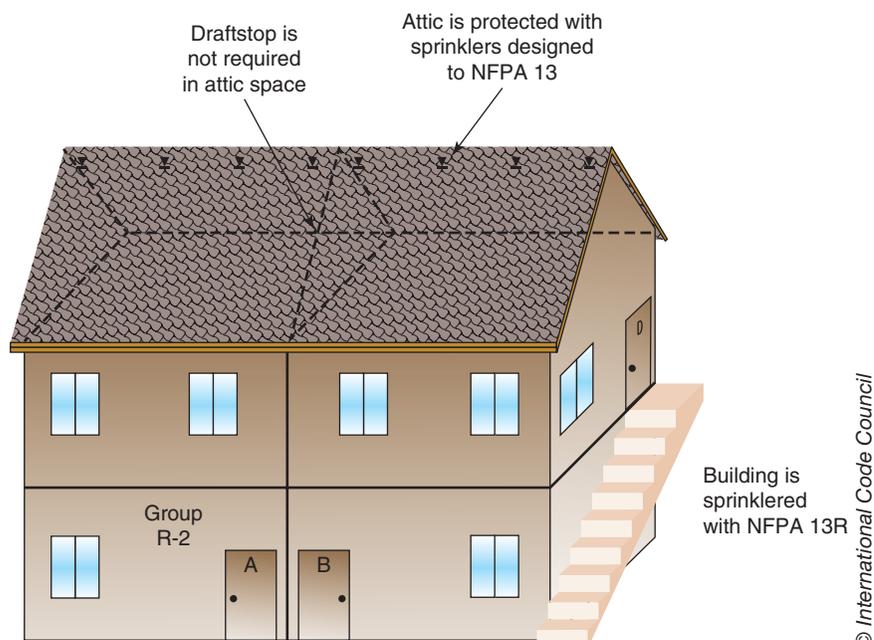
CHANGE SUMMARY: Fireblocking and draftstopping requirements for fire partitions of combustible construction have been consolidated and modified.

2019 CODE: 708.4.2 Fireblocks and draftstops in combustible construction. In combustible construction where fire partitions do not extend to the underside of the floor or roof sheathing, deck or slab above, the space above and along the line of the fire partition shall be provided with one of the following:

1. Fireblocking up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.2.1.
2. Draftstopping up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.3.1 for floors or Section 718.4.1 for attics.

Exceptions:

1. Buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1, or in accordance with Section 903.3.1.2 provided that protection is provided in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above as required for systems complying with Section 903.3.1.1.
2. Where corridor walls provide a sleeping unit or dwelling unit separation, draftstopping shall only be required above one of the corridor walls.



Residential attic protection

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3. In Group R-2 occupancies with fewer than four dwelling units, fireblocking and draftstopping shall not be required.
4. In Group R-2 occupancies up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane, the attic space shall be subdivided by draftstops into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units, whichever is smaller.
5. In Group R-3 occupancies with fewer than three dwelling units, fireblocking and draftstopping shall not be required in floor assemblies.

708.4 Continuity.—Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. In combustible construction where the fire partitions are not required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fireblocked or draftstopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the required fire-resistance rating of the wall supported, except for walls separating tenant spaces in covered and open mall buildings, walls separating dwelling units, walls separating sleeping units and corridor walls, in buildings of Type IIB, IIIB and VB construction.

Exceptions:

1. The wall need not be extended into the crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating.
2. Where the room-side fire-resistance-rated membrane of the corridor is carried through to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, the ceiling of the corridor shall be permitted to be protected by the use of ceiling materials as required for a 1-hour fire-resistance-rated floor or roof system.
3. Where the corridor ceiling is constructed as required for the corridor walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly.
4. The fire partitions separating tenant spaces in a covered or open mall building, complying with Section 402.4.2.1, are not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in attic or ceiling spaces above tenant separation walls.
5. Attic fireblocking or draftstopping is not required at the partition line in Group R-2 buildings that do not exceed four stories abovegrade plane, provided the attic space is subdivided by draftstopping into areas not exceeding 3,000 square feet (279 m²) or above every two dwellingunits, whichever is smaller.

708.4.2 continues

708.4.2 *continued*

6. Fireblocking or draftstopping is not required at the partition line in buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, provided that automatic sprinklers are installed in combustibile floor/ceiling and roof/ceiling spaces.

718.3.2 Groups R-1, R-2, R-3 and R-4. Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more dwelling units, in Group R-3 buildings with two dwelling units and in Group R-4 buildings. Draftstopping shall be located above and in line with the dwelling unit and sleeping unit separations.

Exceptions:

1. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustibile concealed spaces where the draftstopping is being omitted.

718.4.2 Groups R-1 and R-2. Draftstopping shall be provided in attics, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more dwelling units and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, sleeping unit and dwelling unit separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Where corridor walls provide a sleeping unit or dwelling unit separation, draftstopping shall only be required above one of the corridor walls.
2. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. In occupancies in Group R-2 that do not exceed four stories above grade plane, the attic space shall be subdivided by draftstops into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units, whichever is smaller.
4. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustibile concealed space where the draftstopping is being omitted.

CHANGE SIGNIFICANCE: Fireblocking and draftstopping are required in combustibile construction to cut off concealed draft openings (both vertical and horizontal). Experience has shown that some of the greatest damage occurs to conventional wood-framed buildings during a fire where the fire travels unimpeded through such concealed areas. Both fireblocks and draftstops are selectively required in combustibile construction, including

where fire partitions are provided, in order to limit the spread of fire, smoke and hot gases. The firestopping provisions previously located in Section 708.4 and the draftstopping provisions previously found in Sections 718.3.2 and 718.4.2 have been relocated to Section 708.4.2 as a part of the reformat of Section 708.4. In addition, a number of technical provisions were revised or added.

Section 708.4.2 is a new section which combines and relocates requirements from other sections of the code addressing fireblocking and draftstopping.

The new Exception 1 in Section 708.4.2 is a combination of the previous Exception 6 in Section 708.4, Exceptions 1 and 2 in Section 718.3.2 and Exceptions 2 and 4 in Section 718.4.2. This exception has been revised to specify that where the automatic sprinkler system is designed to NFPA 13R, and sprinklers are provided within the attic space, the sprinkler design in the attic space must comply with NFPA 13 *Standard for the Installation of Sprinkler Systems*. NFPA 13R does not contain criteria for installing sprinklers in the entire attic space, so the designer must go to NFPA 13 for that design.

Note that when Exception 1 is applied, the installation of sprinklers in the attic space when the building is protected with an automatic sprinkler system designed to NFPA 13R *Standard for the Installation of Sprinkler Systems in Low Rise Residential Occupancies* also complies with the new Section 903.3.1.2.3 regarding attic protection in Group R occupancies over 55 feet in height (Section 903.3.1.2.3, Item 3) and all Group R-4, Condition 2 occupancies (Section 903.3.1.2.3, Item 4).

The new Exception 2 in Section 708.4.2 was Exception 1 in Section 718.4.2.

The new Exception 3 in Section 708.4.2 comes from the charging language in previous Sections 718.3.2 and 718.4.2. This exception has also been revised. Previously, draftstopping or fireblocking was required in Group R-2 occupancies with three or more units. The new exception removes the draftstopping and fireblocking requirement from Group R-2 occupancies with three units or less.

The new Exception 4 in Section 708.4.2 was previously located in Section 708.4, Exception 5 and Section 718.4.2, Exception 3. This new exception has also been revised to include the limitation of 60 feet in height. This revision correlates with the scope of NFPA 13R. The standard is limited to application in buildings not exceeding four stories or 60 feet in height. As previously written, Section 718.4.2, Exception 3 could be applied to buildings that are taller than 60 feet, which was not intended.

The new Exception 5 in Section 708.4.2 comes from the charging language in previous Sections 718.3.2 and 718.4.2. This exception has also been revised. Previously, floor/ceiling assemblies were required to be protected in Group R-3 occupancies with two or more units. The new exception requires draftstopping and fireblocking for floor/ceiling assemblies in Group R-3 occupancies with three or more units.

903.2.1

Sprinklers Required in Group A Occupancies

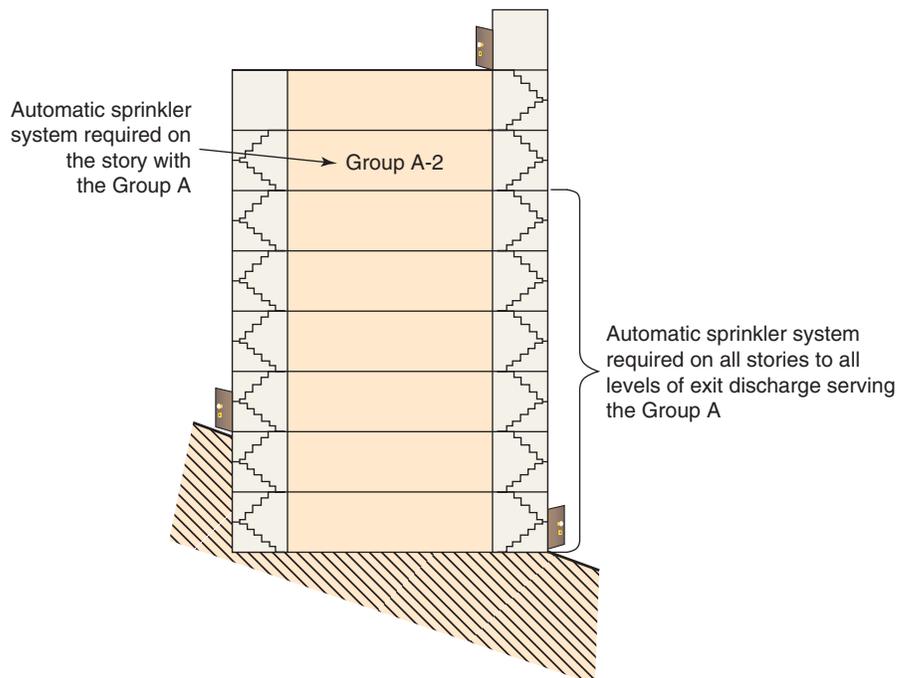
CHANGE TYPE: Clarification

CHANGE SUMMARY: The extent to which automatic sprinkler systems are required in multistory Group A occupancies has been clarified.

2019 CODE: 903.2.1 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section. ~~For Group A-1, A-2, A-3 and A-4 occupancies, the automatic sprinkler system shall be provided throughout the story where the fire area containing the Group A-1, A-2, A-3 or A-4 occupancy is located, and throughout all stories from the Group A occupancy to, and including, the levels of exit discharge serving the Group A occupancy. For Group A-5 occupancies, the automatic sprinkler system shall be provided in the spaces indicated in Section 903.2.1.5.~~

903.2.1.1 Group A-1. An automatic sprinkler system shall be provided for ~~fire areas throughout stories~~ containing Group A-1 occupancies and ~~intervening floors throughout all stories from the Group A-1 occupancy to and including the levels of the building exit discharge serving that occupancy~~ where one of the following conditions exists:

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



Extent of Group A sprinkler protection

903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for ~~fire areas throughout stories~~ containing Group A-2 occupancies and ~~intervening floors throughout all stories from the Group A-2 occupancy to and including the levels of the building exit discharge serving that occupancy~~ where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464 m²).
2. The fire area has an occupant load of 100 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. *The structure exceeds 5,000 square feet (465 m²), contains more than one fire area containing a Group A-2 occupancy, and is separated into two or more buildings by fire walls of less than four-hour fire-resistance rating without openings.*

903.2.1.3 Group A-3. An automatic sprinkler system shall be provided for ~~fire areas throughout stories~~ containing Group A-3 occupancies and ~~intervening floors throughout all stories from the Group A-3 occupancy to and including the levels of the building exit discharge serving that occupancy~~ where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m²).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. *The structure exceeds 12,000 square feet (1155 m²), contains more than one fire area containing exhibition and display rooms, and is separated into two or more buildings by fire walls of less than four-hour fire-resistance rating without openings.*

903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for ~~fire areas throughout stories~~ containing Group A-4 occupancies and ~~intervening floors throughout all stories from the Group A-4 occupancy to and including the levels of the building exit discharge serving that occupancy~~ where one of the following conditions exists:

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

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

903.2.1.5.1 Spaces under grandstands or bleachers. ~~Enclosed spaces under grandstands or bleachers shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 where either of the following exist:~~

1. ~~The enclosed area is 1,000 square feet (93 m²) or less and is not constructed in accordance with Section 1029.1.1.1.~~
2. ~~The enclosed area exceeds 1,000 square feet (93 m²).~~

903.2.1 continues

903.2.1 continued

CHANGE SIGNIFICANCE: Assembly occupancies with sizable occupant loads or floor areas, as well as those located above or below the discharge level, require sprinkler protection due to the additional time needed for occupant egress. In addition, conditions such as low light levels, overcrowding and multiple instances of potential obstructions can lead a hazardous environment that can be effectively addressed through the presence of an automatic sprinkler system. In order to provide further clarity as to the extent of such sprinkler protection, the conditions under which automatic sprinkler systems are required in Group A occupancies have been clarified. Furthermore, revised language details requirements for the fire sprinkler system used to protect spaces on the level of exit discharge.

Previous code language created an inconsistency among Sections 903.2.1 through 903.2.1.4. Section 903.2.1 stated sprinklers were required on the story with the Group A occupancy and on all stories to, and including, the level of exit discharge serving the Group A occupancy. Sections 903.2.1.1 through 903.2.1.4 use the term “intervening” floors when referring to the same requirement. However, the definition of “intervene” is “to occur or be between two things.” Stories “intervening” or “between” the Group A occupancy and the level of exit discharge did not include the level of exit discharge. The conflicting provisions were revised to correct that inconsistency and relocate this key code provision into each section where it applies.

Section 903.2.1.5.1 was also added to clarify that the general sprinkler provisions of Section 903.2.1.5 include enclosed accessory spaces under grandstands and bleachers requirements. In addition, reference is made to Section 1029.1.1.1 regarding the protection methods available where the enclosed space beneath the grandstand or bleacher does not exceed 1,000 square feet. In such cases, all spaces under bleachers or grandstands, except toilet rooms and ticket booths less than 100 square feet, must be separated from the assembly seating areas by minimum 1-hour fire barriers and/or horizontal assemblies.

Section 903.2.1.5.1 Item 1 provides an alternative of fire sprinkler protection in lieu of the required fire-resistance-rated construction if the enclosed area does not exceed 1,000 square feet. In concert with Section 903.2.1.5, Item 2 of Section 903.2.1.5.1 requires enclosed spaces more than 1,000 square feet to be equipped with automatic sprinklers.

As a companion change, Section 1029.1.1.1 was revised to read as follows:

1029.1.1.1 Spaces under grandstands and bleachers. Spaces under grandstands or bleachers shall be separated by fire barriers complying with Section 707 and horizontal assemblies complying with Section 711 with not less than 1-hour fire-resistance-rated construction.

Exceptions:

1. Ticket booths less than 100 square feet (9.29 m²) in area.
2. Toilet rooms.
3. Other accessory use areas 1,000 square feet (92.9 m²) or less in area and equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

CHANGE TYPE: Modification

CHANGE SUMMARY: The method of calculating occupant load in business areas has been revised, which will typically result in reduced design occupant loads. However, higher design occupant loads can now be assigned to concentrated business areas such as telephone call centers and similar uses.

2019 CODE:

TABLE 1004.1-2 1004.5 (PARTIAL) Maximum Floor Area Allowances Per Occupant

Function of Space	Occupant Load Factor ^a
Business areas	100/150 gross
Concentrated business use areas	See Section 1004.8

(No changes to other portions of table.)

1004.8 Concentrated business use areas. The occupant load factor for concentrated business use shall be applied to telephone call centers, trading floors, electronic data processing centers and similar business use areas with a higher density of occupants than would normally be expected in a typical business occupancy environment. Where approved by the building official, the occupant load for concentrated business use areas shall be the actual occupant load, but not less than one occupant per 50 square feet (4.65 m²) of gross occupiable floor space.

CHANGE SIGNIFICANCE: Business uses have historically been viewed as having a density level of one person per 100 square feet when used in the calculation of design occupant load. It seems likely that this occupant load factor is the result of a National Bureau of Standards (NBS) [now referred to as National Institute of Standards and Technology (NIST)] study published in 1935. The occupant load factor of 100 square feet per occupant was specified for office, factory and workroom areas. All occupant load factors were based on the gross floor area of the building, such that no deduction was permitted for corridors, closets, restrooms or other areas of the building. Since the initial NBS study in 1935, several other studies have been conducted to determine occupant load factors for various occupancies. One common finding was that all of the subsequent studies have concluded that the factor of 100 square feet per occupant for business occupancies is conservative. Studies conducted between 1966 and 1992 have indicated that occupant load factors in business occupancies ranged from 150 to 278 square feet per occupant. A more recent project to study the appropriateness of the 100-square-feet-per-occupant factor was undertaken by the NFPA Fire Protection Research Foundation. The study was conducted by WPI undergraduate students. The recommendations of this study also supported an increase to the occupant load factor in business occupancies. Based on this information, it was deemed appropriate that the factor be increased to 150 square feet per occupant.

The NFPRF study also recommended creating a new occupant load sub-category for concentrated business use areas. New Section 1004.8 cites examples of these occupancies, including telephone call centers,

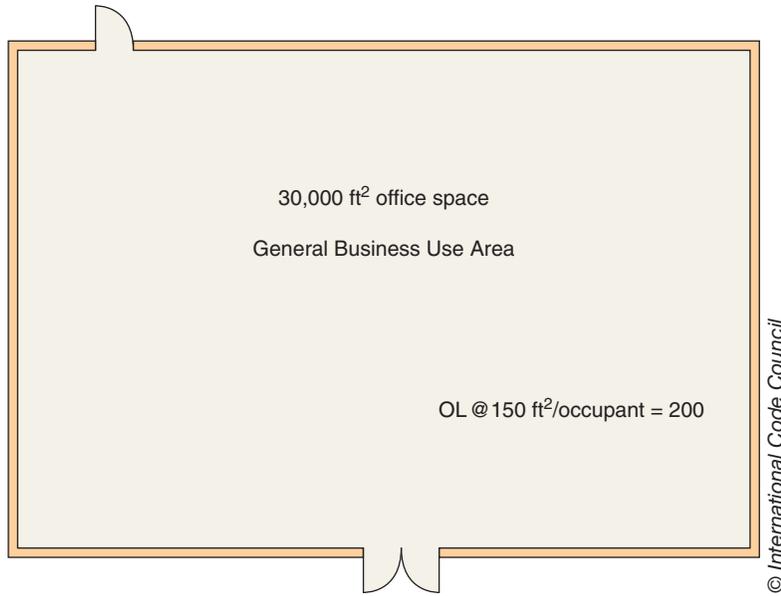
Table 1004.5, 1004.8 continues

Table 1004.5, 1004.8

Occupant Load Calculation in Business Use Areas

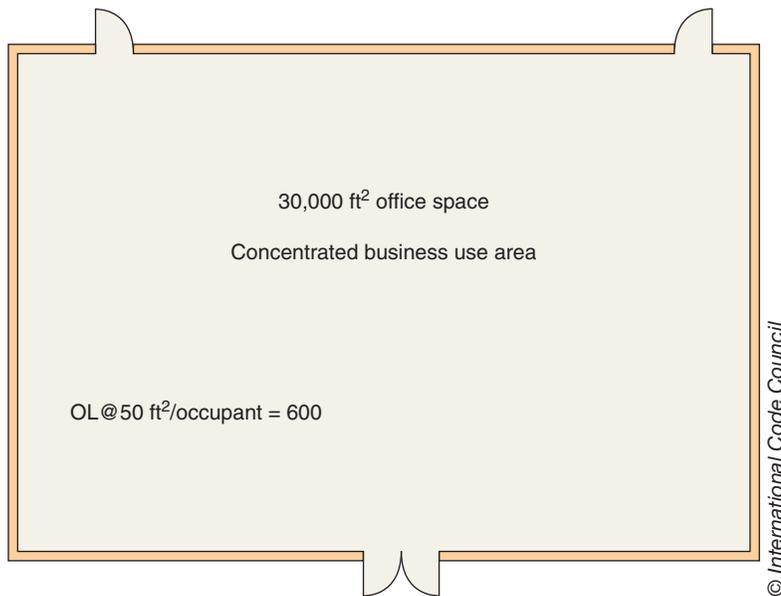
Table 1004.5, 1004.8 continued

Example:



General business use occupant load determination

Example:



Concentrated business use occupant load determination

trading floors and electronic data processing centers. Essentially, the reduced factor is applicable to those business areas where a higher density of occupants would normally be expected. The actual number can be used when approved by the building official; however, the occupant load must be established at a minimum of one occupant for each 50 square feet.

For both applications of the business area occupant load calculations, the gross floor areas shall be used. Gross floor area is defined in Chapter 2 as the entire floor area, other than vent shafts and courts, within the exterior perimeter walls of the building under consideration.

1008.2.3

Illumination of the Exit Discharge

CHANGE TYPE: Clarification

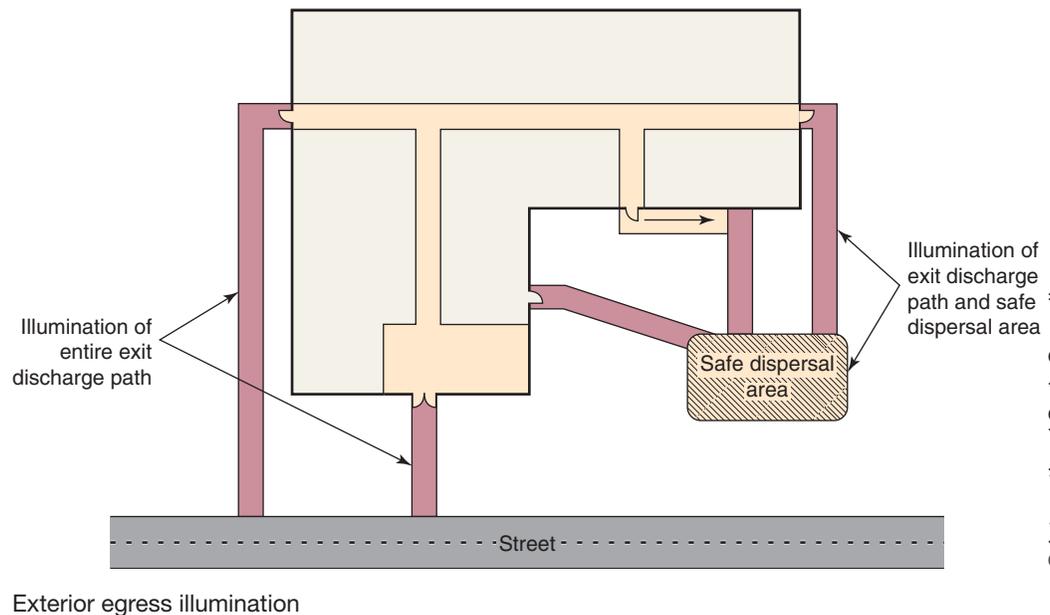
CHANGE SUMMARY: The introduction of illumination provisions specific to the exit discharge portion of the means of egress clarifies the extent of the illumination requirement. In addition, new language recognizes a long-held allowance for the use of safe dispersal areas and the necessary illumination where such areas are provided.

2019 CODE: 1008.2.3 Exit discharge. Illumination shall be provided along the path of travel for the exit discharge from each exit to the public way.

Exception: Illumination shall not be required where the path of the exit discharge meets both of the following requirements:

1. The path of exit discharge is illuminated from the exit to a safe dispersal area complying with Section 1028.5.
2. A dispersal area shall be illuminated to a level not less than 1 footcandle (11 lux) at the walking surface.

CHANGE SIGNIFICANCE: In order for the egress system to afford a safe path of travel and for the building occupant to be able to negotiate the system efficiently, it is necessary that the entire egress system be provided with a certain minimum amount of illumination. Without such lighting, it would be impossible for building occupants to identify and follow the appropriate path of travel. The lack of adequate illumination would also be the cause of various other concerns, such as an increase in evacuation time, a greater potential for injuries during the egress process, and most probably an increased level of panic to those individuals trying to exit the building. General illumination has always been required throughout the means of egress system, which would include the exit discharge portion. This requirement has been further emphasized through the introduction



of illumination provisions specific to the exit discharge portion of the means of egress. In addition, new language recognizes a long-held allowance for the use of safe dispersal areas and the necessary illumination where such areas are provided.

Section 1008.1 mandates that illumination throughout the means of egress. Although the exit discharge is considered as a portion of the means of egress, the new provisions clearly specify that the required illumination must be provided for the entire exit discharge path to the public way. There are conditions under which the exit discharge is extensive and the use of a safe dispersal area is an acceptable alternative. Through a reference to Section 1028.5, a safe dispersal area must be located at least 50 feet from the building and provide adequate area to accommodate the anticipated occupant load. A minimum level of 1 footcandle is required to, and within, the safe dispersal area.

Note that this section does not require emergency illumination be provided for the exit discharge path or the safe dispersal area. Exterior emergency illumination is only required at exterior landings at exit doors as stated in Section 1008.3.2.

CHANGE TYPE: Modification

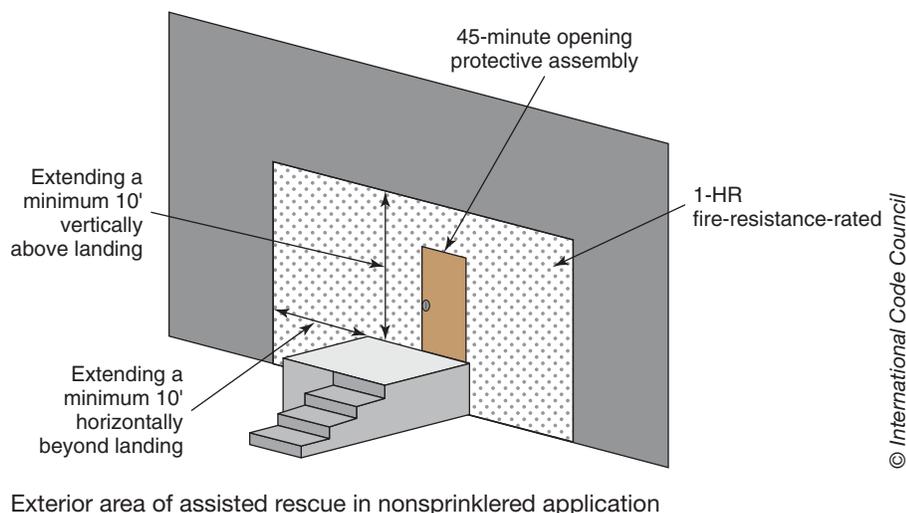
CHANGE SUMMARY: The fire-resistance-rated exterior wall with protected openings separation between a required exterior area of assisted rescue and the interior of the building is no longer mandated, provided the building is protected with an automatic sprinkler system.

2019 CODE: 1009.7.2 Separation. Exterior walls separating the exterior area of assisted rescue from the interior of the building shall have a minimum fire-resistance rating of 1 hour, rated for exposure to fire from the inside. The fire-resistance-rated exterior wall construction shall extend horizontally not less than 10 feet (3048 mm) beyond the landing on either side of the landing or equivalent fire-resistance-rated construction is permitted to extend out perpendicular to the exterior wall not less than 4 feet (1220 mm) ~~minimum~~ on the side of the landing. The fire-resistance-rated construction shall extend vertically from the ground to a point 10 feet (3048 mm) above the floor level of the area for assisted rescue or to the roof line, whichever is lower. Openings within such fire-resistance-rated exterior walls shall be protected in accordance with Section 716.

Exception: The fire-resistance rating and opening protectives are not required in the exterior wall 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.

CHANGE SIGNIFICANCE: An exterior area of assisted rescue must be provided where the exit discharge path does not consist of an accessible path from an exit at the level of exit discharge completely to a public way. The exterior area of assisted rescue provides a location for the mobility-impaired person to wait for assistance. As a general requirement, an area of assisted rescue is to be protected from the interior of the building by a minimum 1-hour fire-resistance-rated exterior wall with opening protectives. If the building is equipped with an automatic sprinkler system designed to NFPA 13 or 13R, the required fire separation and opening protection are no longer required.

1009.7.2 continues



1009.7.2 continued

Section 1009.3.3, Exception 2 allows for the elimination of areas of refuge in stairways and, where applicable, at elevators if the building is fully sprinklered. The new exception to Section 1009.7.2 is based on the area of refuge concept in that if the person is adequately protected inside the building because it was sprinklered, now that the person is outside the building, the level of protection should be equivalent at the least.

This exception only allows the elimination of the fire-resistance-rated separation if the building is fully sprinklered. It does not eliminate the need to provide the exterior area of assisted rescue. The exterior area of assisted rescue must still be sized to provide one wheelchair space for every 200 occupants, or portion thereof. It must also continue to be at least 50 percent open to the outside air.

CHANGE TYPE: Modification

CHANGE SUMMARY: Staples in preservative-treated wood and fire-retardant-treated wood are now required to be made of stainless steel.

2019 CODE: **2304.10.5 Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood.** Fasteners, including nuts and washers, and connectors in contact with preservative-treated and fire-retardant-treated wood shall be in accordance with Sections 2304.10.5.1 through 2304.10.5.4. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A153. Stainless steel driven fasteners shall be in accordance with the material requirements of ASTM F1667.

2304.10.5.1 Fasteners and connectors for preservative-treated wood. Fasteners, including nuts and washers, in contact with preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Fasteners other than nails, staples, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, Class 55 minimum. Connectors that are used in exterior applications and in contact with preservative-treated wood shall have coating types and weights in accordance with the treated wood or connector manufacturer's recommendations. In the absence of manufacturer's recommendations, ~~a minimum of~~ not less than ASTM A653, Type G185 zinc-coated galvanized steel, or equivalent, shall be used.

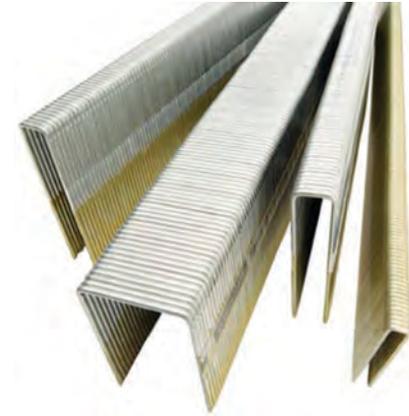
Exception: Plain carbon steel fasteners, including nuts and washers, in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall be permitted.

2304.10.5.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners, including nuts and washers, for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Fasteners other than nails, staples, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, Class 55 minimum.

CHANGE SIGNIFICANCE: During the last two code cycles, staples have been added as an alternative fastener for use in various types of wood-to-wood connections. The phrase "other than nails and timber rivets" has now been rewritten to include staples as a code-accepted solution. Staples are also now specifically limited to stainless steel where exposed to corrosive environments. The thin wire gages used in staple fasteners (16ga–14ga) are much thinner than those used in nails, and are consequentially more susceptible to corrosion. Due to the thin gage, stainless steel staples are currently the only option in installations requiring increased corrosion resistance.

2304.10.5

Fasteners in Treated Wood



Stainless steel staples

© International Code Council

CHANGE TYPE: Modification

CHANGE SUMMARY: The provisions for permeable floors and roofs have been modified to require positive drainage of water and ventilation below the floor or roof to protect supporting wood construction.

2019 CODE: 2304.12.2.5 Supporting members for permeable floors and roofs. Wood structural members that support moisture permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.

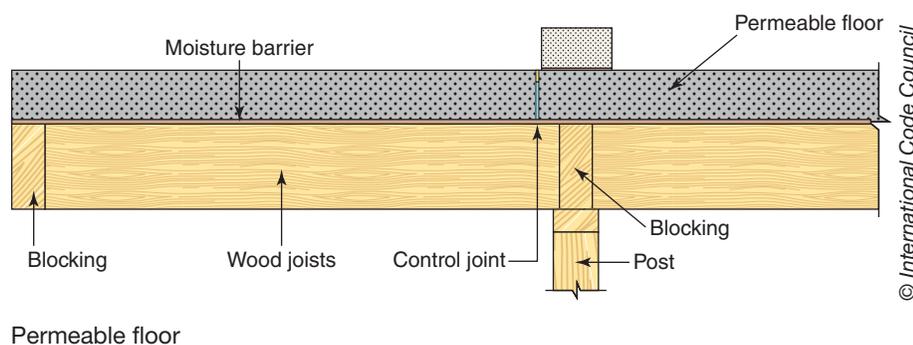
2304.12.2.6 Ventilation beneath balcony or elevated walking surfaces. Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow or drainage from irrigation shall be provided with openings that provide a net free cross-ventilation area not less than $\frac{1}{150}$ of the area of each separate space.

CHANGE SIGNIFICANCE: A key requirement of impervious moisture barrier systems installed under permeable floor systems exposed to water are elements that provide for drainage of water passed through the permeable floor system. Without a properly functioning method to transport this water out, the floor assembly can stay saturated for long periods of time, potentially contributing to failure of the supporting wood structure.

2016 CBC Section 2304.12.2.5 requires an impervious moisture barrier when wood that is not preservative-treated or naturally durable supports moisture-permeable floors or roofs exposed to weather such as concrete and masonry slabs. When such assemblies are a roof, and there is a leak in the impervious barrier, the occupants typically know about it and repairs are made. When the assembly supports a walking surface such as a balcony, there may be no early warning of a leak or decay because leaks can be located over unoccupied areas outside of the structure's building envelope.

The 2016 CBC requirement called for separation of the floor and supporting walls by an impervious moisture barrier when the supporting wood is not preservative-treated or naturally durable. The 2019 CBC

2304.12.2.5, 2304.12.2.6 continues



2304.12.2.5, 2304.12.2.6

Supporting Members for Permeable Floors and Roofs

2304.12.2.5, 2304.12.2.6
continued

further requires that the impervious moisture barrier system protect the substructure supporting a floor by providing a positive drainage mechanism for water.

Section 1203 of the 2016 CBC is generally applied by many to require ventilation where wood supports a balcony and is enclosed. The key word is *enclosed*. Whenever the wood framing supporting such structures is enclosed it is more difficult for water in the assembly to depart regardless of the source of the water. It is critical to provide ventilation to enclosed areas, especially to the wood substructure supporting an elevated balcony exposed to the weather.

For the 2019 CBC, the concept in Chapter 12 is duplicated Chapter 23 to emphasize that the requirement for ventilation applies to wood construction and specifically to enclosed balconies. Additionally, the provision clarifies that when a balcony or elevated walking surface serves as a weather-resistant barrier and the joist spaces below are enclosed, cross ventilation is required similar to enclosed rafter spaces in roofs.

3314

Fire Watch During Construction

CHANGE TYPE: Addition

CHANGE SUMMARY: In order to protect adjacent properties from fire in a building of considerable height when under construction, new provisions have been established to give authority to the fire code official to require a fire watch during those hours where no construction work is being done.

2019 CODE:

SECTION 3314 **FIRE WATCH DURING CONSTRUCTION**

3314.1 Fire watch during construction. Where required by the fire code official, a fire watch shall be provided during nonworking hours for construction that exceeds 40 feet in height above the lowest adjacent grade.

CHANGE SIGNIFICANCE: Some of the most hazardous conditions related to buildings often are present during the construction process. Recent fires that have occurred at construction sites during times of no activity have demonstrated the need for early notification that can only be provided by fire watch personnel. The lack of fire alarm and detection devices during the construction process requires an alternative approach to identifying and communicating the presence of a fire event. In order to protect adjacent properties from fire in a building of considerable height when under construction, new provisions have been established to give authority to the fire code official to require a fire watch during those hours where no construction work is being done.

Fires in sizable buildings under construction have the potential for significant heat release due to the fire loading created by building components and other materials used in the building's construction. For this



Building under construction

reason, when required by the fire code official, a fire watch is to be provided where the height of construction exceeds 40 feet above the lowest adjacent grade. The 40-foot threshold is consistent with other fire and life safety requirements for buildings under construction, such as the provisions for standpipes and means of egress stairways.

It is expected that the new requirement will apply only to new construction. It is not intended for the provisions to be applied to alterations and other types of minor construction activity. Existing buildings would be regulated by a comprehensive fire safety plan. Although the potential for a sizable fire load requiring implementation of a fire watch program would be more probable for a building of combustible construction, there are no conditions based on the building's construction type. All new buildings, regardless of occupancy or type of construction, that exceed the 40-foot threshold are subject to the fire watch requirement if mandated by the fire code official.

Although the primary benefit of identifying a fire early in its development will typically be the protection of adjoining properties and neighboring buildings, the reduction in property loss and protection of fire personnel are also important aspects of a fire watch activity.

SIGNIFICANT CHANGES TO THE

2019 CALIFORNIA RESIDENTIAL CODE

2019 CALIFORNIA RESIDENTIAL CODE

CALIFORNIA CODE OF REGULATIONS | TITLE 24, PART 2.5

Based on the 2018 International Residential Code®
California Building Standards Commission



Definition Chapter 2

- R202 Definition of Crawl Space
- R202 Definition of Carbon Monoxide Alarm
- R202 Definition of Fenestration
- R202 Definition of Solar Energy System

Building Planning Chapter 3

- R301.2.2.1 Seismic Design Category
- R301.2.2.6 Irregular Buildings
- R301.5 Balcony and Deck Live Loads
- 302.1 Mixed Occupancy Buildings
- R302.1 Exterior Walls
- R302.2 Townhouse Separation
- R302.3 Two-Family Dwelling Separation
- R302.4.2 Membrane Penetrations
- R302.5 Dwelling-Garage Opening Protection
- R302.10 Insulation Flame Spread
- R302.13 Fire Protection of Floors above Crawl Spaces
- R308.4.2 Glazing Adjacent to Doors
- R308.4.4 Glazing in Guards and Railings
- R308.4.7 Glazing Adjacent to the Bottom Stair Landing
- R310.1 Emergency Escape and Rescue Openings
- R310.3 Area Wells for Emergency Escape and Rescue Doors
- R311.7.1, R311.7.8 Handrail Projection
- R311.7.3 Maximum Stair Rise between Landings
- R311.7.5.3 Stair Nosings
- R311.7.11, R311.7.12 Alternating Tread Devices and Ships Ladders
- R312.1 Guards

- R314 Smoke Alarms
- R315 Carbon Monoxide Alarms
- R315.5 Carbon Monoxide Alarm Exceptions
- R317.1 Balcony or Elevated Surface Moisture Protection
- R317.3 Fasteners in Treated Wood
- R322.3 Coastal High-Hazard Flood Zones
- R324.4 Rooftop-Mounted Photovoltaic Systems
- R324.6 Roof Access for Photovoltaic Solar Energy Systems
- R324.6.2.2 Solar Panels near Emergency Escape and Rescue Openings
- R325.3 Mezzanine Area Limitation
- R325.6, R202 Habitable Attics
- R337.1.3 Group C Special Buildings
- R337.7.3 Heavy Timber
- R337.8.2.2 Operable Skylights
- R337.8.4 Garage Door Perimeter
- R337.10.2 Roof or Wall Top Cornices

Building Construction Chapters 4 through 10

- Table R403.3(1) Insulation Requirements for Frost-Protected Footings
- Table R403.4 Crushed Stone Footings
- R408.3 Unvented Crawl Spaces
- Table R505.3.2 Cold-Formed Steel Joist Spans
- R507 Decks
- R507.2 Deck Materials
- R507.3 Deck Footings
- R507.4 Deck Posts
- R507.5 Deck Beams
- R507.6 Deck Joists
- R507.7, R507.8, R507.9 Decking, Vertical and Lateral Support
- Table R602.3(6) Alternate Stud Height

- Tables R602.7(1), R602.7(2) Girder and Header Spans
- Table R602.7.5 Lateral Support for Headers
- Table R602.10.3(4) Seismic Adjustment Factors
- R602.10.4.1 Mixing Bracing Methods
- R602.10.6.4 Method CS-PF—Continuously Sheathed Portal Frame
- R602.10.6.5 Method BV-WSP
- Tables R603.3.1 and R603.3.1.1(2) Cold-Formed Steel Wall Construction
- Section R610 Structural Insulated Panels
- R702 Vapor Retarders 165 ■ R703.2 Water-Resistive Barrier
- R703.3.1 Soffit Installation
- R703.8.4 Veneer Anchorage through Insulation
- Table R703.8.4(1) Airspace Requirements
- R703.11.2 Vinyl Siding Installation Over Foam Plastic Sheathing
- R802 Roof Framing
- R802.1.5.4 Labeling
- R806.2 Minimum Vent Area
- R806.5 Unvented Attics
- Tables R905.1.1(1) and R905.1.1(2) Underlayment Requirements for Photovoltaic Shingles
- R905.17 Building Integrated Photovoltaic Panels
- R1005.8 Chimney Insulation Shield

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CHANGE TYPE: Modification

CHANGE SUMMARY: Aligns the exterior balcony criteria with the CBC.

2019 CODE: ***R106.1.5 Exterior balconies and elevated walking surfaces.*** *Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer's installation instructions.*

R109.1.5.3 Weather-exposed balcony and walking surface waterproofing. *Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall not be concealed until inspected and approved.*

Exception: *Where special inspections are provided in accordance with California Building Code Section 1705.1.1, Item 3.*

CHANGE SIGNIFICANCE: This code modification deals with exterior balconies and elevated walking surfaces and proposes to include the language from the 2018 IBC as amended into the 2019 CRC. This amendment will align with the requirements in the 2019 CBC.



Courtesy of Jeff & Anya Armstrong

Exterior balconies

R106.1.5

Exterior Balconies and Elevated Walking Surfaces

R301.5

Balcony and Deck Live Loads

CHANGE TYPE: Modification

CHANGE SUMMARY: The live load on balconies and decks in the CRC are now to be designed using 60 psf loading.

2019 CODE:

TABLE R301.5 Minimum Uniformly Distributed Live Loads (in pounds per square foot)

Use	Live Load
Uninhabitable attics without storage	10
Uninhabitable attics with limited storage ^{b, g}	20
Habitable attics and attics served with fixed stairs	30
Balconies (exterior) and decks ^e	40 60
Fire escapes	40
Guards and handrails ^d	200 ^h
Guard in-fill components ^f	50 ^h
Passenger vehicle garages ^a	50 ^a
Rooms other than sleeping rooms	40
Sleeping rooms	30
Stairs	40 ^c

CHANGE SIGNIFICANCE: This table deals with the minimum uniformly distributed live loads. The modification deals with the fact that this information is not applicable to one- and two-family dwellings built under the CRC. As a result HCD included language from the 2017 Emergency Rule-making as new amendments in the 2019 CRC.

CHANGE TYPE: Modification

CHANGE SUMMARY: Two paths for achieving the fire-resistant separation between townhouse dwelling units—two 1-hour walls or a common wall—are spelled out in the townhouse provisions.

2019 CODE: R302.2 Townhouses. Walls separating townhouse units shall be constructed in accordance with Section R302.2.1 or Section R302.2.2.

R302.2.1 Double walls. Each townhouse shall be separated by two 1-hour fire-resistance-rated wall assemblies tested in accordance with ASTM E119, UL 263 or Section 703.3 of the *California Building Code*.

R302.2.2 Common walls. Common walls separating townhouses shall be assigned a fire-resistance rating in accordance with Section R302.2 Item 1 or 2. The common wall shared by two townhouses shall be constructed without plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be in accordance with the *California Electrical Code*. Penetrations of the membrane of common walls for electrical outlet boxes shall be in accordance with Section R302.4.

1. Where a fire sprinkler system in accordance with Section R313 is provided, the common wall shall be not less than a 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, or UL 263 or Section 703.3 of the *California Building Code*.

R302.2 continues

R302.2

Townhouse Separation



Townhouses

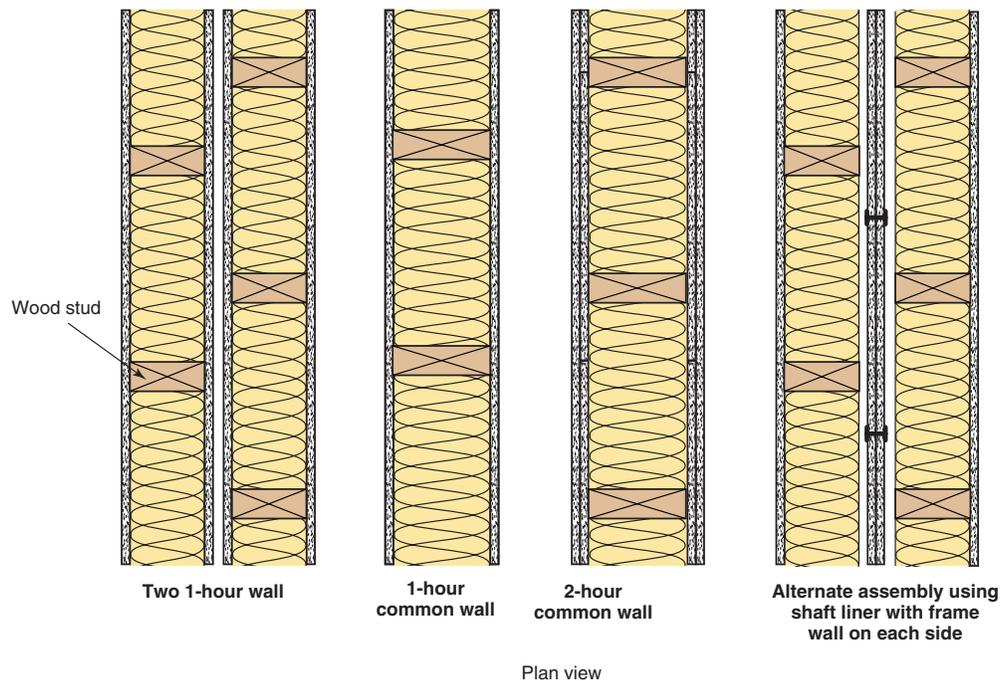
R302.2 continued

- Where a fire sprinkler system in accordance with Section *R313* is not provided, the common wall shall be not less than a 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, or UL 263 or Section 703.3 of the *California Building Code*.

R302.2.2 R302.2.4 Parapets for townhouses. Parapets constructed in accordance with Section ~~R302.2.3~~ **R302.2.5** shall be constructed for townhouses as an extension of exterior walls or common walls in accordance with the following:

- Where roof surfaces adjacent to the wall or walls are at the same elevation, the parapet shall extend not less than 30 inches (762 mm) above the roof surfaces.
- Where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is not more than 30 inches (762 mm) above the lower roof, the parapet shall extend not less than 30 inches (762 mm) above the lower roof surface.

Exception: A parapet is not required in the preceding two cases where the roof covering complies with a minimum Class C rating as tested in accordance with ASTM E108 or UL 790 and the roof decking or sheathing is of noncombustible materials or approved fire-retardant-treated wood for a distance of 4 feet (1219 mm) on each side of the wall or walls, or one layer of $\frac{5}{8}$ -inch (15.9 mm) Type X gypsum board is installed directly beneath the roof decking or sheathing, supported by not less



Note: Gypsum wallboard and wood stud assemblies must meet all materials, dimensions, spacing, installation and fastening requirements of the specific tested assembly

Typical fire-resistant-rated wall assemblies for separating townhouse dwelling units

than nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members, for a distance of not less than 4 feet (1219 mm) on each side of the wall or walls and any openings or penetrations in the roof are not within 4 feet (1219 mm) of the common walls. Fire-retardant-treated wood shall meet the requirements of Sections R802.1.5 and R803.2.1.2.

3. A parapet is not required where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is more than 30 inches (762 mm) above the lower roof. The common wall construction from the lower roof to the underside of the higher roof deck shall have not less than a 1-hour fire-resistance rating. The wall shall be rated for exposure from both sides.

R302.2.4 R302.2.6 Structural independence. Each individual townhouse shall be structurally independent.

Exceptions:

1. Foundations supporting exterior walls or common walls.
2. Structural roof and wall sheathing from each unit fastened to the common wall framing.
3. Nonstructural wall and roof coverings.
4. Flashing at termination of roof covering over common wall.
5. Townhouses separated by a common wall as provided in Section R302.2 R302.2.2, Item 1 or 2.

CHANGE SIGNIFICANCE: Townhouses, by definition, are three or more connected dwelling units. The total number of townhouse dwelling units in a single building is unlimited. It follows that a priority of the code has always been to separate townhouse dwelling units with fire-resistant wall assemblies to limit the spread of fire in the structure and to provide some protection to occupants from events that occur in the neighboring unit. Prior to the 2016 edition of the CRC, the general rule required townhouses to be considered separate buildings and referenced Section R302.1 regarding fire resistance for exterior walls. For some code users, reference to a section about exterior walls created a somewhat tenuous link to the fire-resistance requirement. However, most building officials and builders accepted that the fire separation provisions of Section R302.1 dictated that each townhouse dwelling unit required a 1-hour fire-resistant-rated wall to separate it from the adjoining townhouse. This created two separate 1-hour rated walls, and this has been common practice for many years across the country. The code further required that each individual townhouse be structurally independent, meaning that a collapse of the structural wall, floor, ceiling or roof components of one townhouse in a fire incident would not impair the structural integrity of the adjoining townhouse. As an exception, the code allowed a fire-resistant common wall between dwelling units without structural independence and limited installations in the wall to electrical components to limit membrane penetrations and preserve structural integrity.

R302.2 continues

R302.2 continued

In the 2016 CRC, the language in Section R302.2 related to separate buildings and reference to the exterior wall provisions in Section R302.1 was removed. In practice, based on a history of good performance, the options for constructing two separate rated walls or one common separation wall continued as approved practices in most communities, the former often approved as an alternative method. To resolve these issues and clarify the application of the code, the fire separation requirements have been placed in the townhouse provisions of Section R302.2. The code now clearly describes the two paths for compliance—two separate fire-resistant-rated walls or a common wall.

For clarification, a link is provided between the common wall provisions of new Section R302.2.2 and Exception 5 of Section R302.2.6 related to structural independence. Structural independence is not required for common separation walls. The other townhouse provisions have not changed substantially. For example, when using the common wall method, the minimum required fire-resistance rating of the wall is still based on the presence of an automatic fire sprinkler system.

Determining compliance with the fire-resistance rating of wall assemblies previously required that the assembly be tested in accordance with either ASTM E119 or UL 263. In addition to those referenced standards, the CRC now specifically recognizes all of the options in Chapter 7 of the *California Building Code* (CBC) for determining the fire-resistance rating. This change is reflected in all of the rated assembly provisions in Section R302—fire resistance of exterior walls, townhouse separations and two-family dwelling separations. The referenced CBC Section 703.3 states that any of the methods in the list must be based on the acceptance criteria specified in ASTM E119 or UL 263. By reference, the CRC now accepts those proven methods that have been used successfully in the CBC for many years. Some methods require a determination by the building official, either approval in accordance with the alternative methods provisions in CRC Section R104.11 or acceptance of designs from approved sources or agencies. The CBC also offers prescriptive methods in Section 721 or methods for calculating equivalent fire-resistance ratings in Section 722. Certainly any of these methods could have previously been used subject to approval by the building official in accordance with Section R104.11. However, the references to the various methods in the CBC leave no doubt that there are multiple solutions available to satisfy the fire-resistance-rating requirements of this section in the CRC.

In a minor editorial change, the language in the exception to the parapet provisions clarifies the fire-retardant-treated (FRT) wood requirements by inserting references to the applicable sections in Chapter 8. The word “approved” has been removed because it suggested that each FRT product required review and approval by the building official. Referenced Section R802.1.5 describes the process for treatment, manufacturing, testing and labeling of FRT wood products.

CHANGE TYPE: Modification

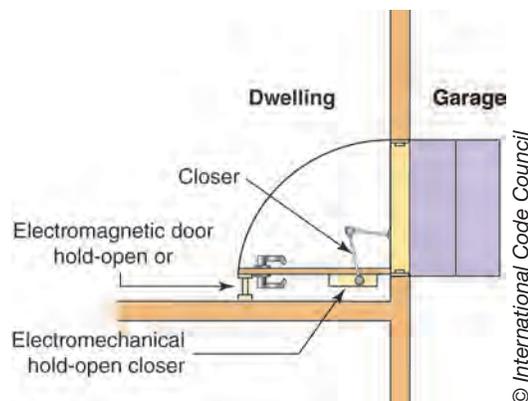
CHANGE SUMMARY: An automatic-closing device is now permitted as an alternative to a self-closing device for the door between the garage and dwelling.

2019 CODE: R302.5 Dwelling-garage opening and penetration protection. Openings and penetrations through the walls or ceilings separating the dwelling from the garage shall be in accordance with Sections R302.5.1 through R302.5.3.

R302.5.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 $\frac{3}{8}$ inches (35 mm) in thickness, solid or honeycomb-core steel doors not less than 1 $\frac{3}{8}$ inches (35 mm) thick, or 20-minute fire-rated doors, equipped with a self-closing *or automatic-closing and self-latching device*.

CHANGE SIGNIFICANCE: To provide some minimum protection against the spread of a fire that originates in the attached garage, the CRC has always required some fire resistance for the separation between the garage and dwelling unit. Typically, this requirement is satisfied with the application of regular ½-inch gypsum board on the garage side of the separation. This separation is not a fire-resistant-rated assembly, but simply a layer of approved material installed on the garage side to provide some resistance to fire. Similarly, the code does not require a fire-resistant-rated door assembly for the opening between the garage and residence. Instead, the CRC prescribes the type and thickness of the door, or requires a 20-minute rating for the door slab only. The requirement for self-closing devices introduced in the 2013 CRC intended that the door returned to a closed position after opening to address concerns related to increased fuel loads in garages, and the potential for fire and the related toxic combustion byproducts migrating into the dwelling unit. Although Sections R302.5 and R302.6 are primarily concerned with fire resistance, the decision to

R302.5 continues



Automatic closing door between house and garage

R302.5

Dwelling-Garage Opening Protection

R302.5 continued

place self-closing devices in the code was also intended to prevent carbon monoxide from the exhaust of vehicles operating in a garage from entering the dwelling unit. Maintaining a closed door between the garage and residence has been in place to supplement the safeguards of required smoke alarms and carbon monoxide alarms. Self-closing devices are typically spring-loaded hinges or door closers.

The addition of automatic-closing devices intends to provide additional options for ensuring the door is closed in a fire event. Provided that they are functioning properly and not disabled, self-closing devices return the door to a closed position each time it is opened. On the other hand, an automatic-closing device can hold the door in an open position, when desired, until released automatically in the event of a fire. Such devices are typically used in commercial occupancies for doors in fire-resistant-rated assemblies. The door is held open to provide easy passage for occupants under normal conditions. The most common configuration uses an electro-magnet to hold the door open. Power to the electro-magnet is disconnected upon activation of a fire alarm system, smoke alarm system or by some other means, thereby deactivating the electro-magnet. Once released, the door swings shut by means of a closer. Other combination hold-open and closer devices are available that contain integral smoke or heat detectors that initiate release of the door upon activation. Rather than an electro-magnet hold open, electro-mechanical closers are also available. Any of these hold-open devices also allow the door to be closed manually if so desired. The code does not stipulate the method for activation of the automatic-closing device. For residential buildings regulated by the CRC, activation in most cases will be accomplished by detection of smoke, either through a nearby smoke alarm or an integral smoke detection device.

The provision for dwelling-garage opening protection is consistent with the premise that closed doors limit the spread and impact of residential fires and addresses the increased fire hazard in garages. Introduction of automatic-closing devices to protect the opening between the house and garage intends to provide reliable options and to recognize new technology that is available in the marketplace. This alternative addresses a concern by many that self-closing devices are sometimes disabled or removed by the homeowner because of the inconvenience. Given the flexibility to have the door closed or held open, advocates for this change contended that the automatic devices are less likely to be disabled by the occupants.

CHANGE TYPE: Modification

CHANGE SUMMARY: Glazing within 24 inches of the hinge side of an in-swinging door now requires safety glazing where the glazing is at an angle less than 180 degrees from the plane of the door.

R308.4.2

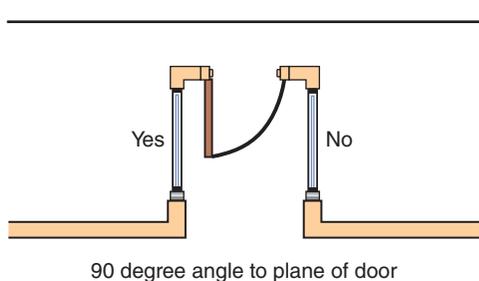
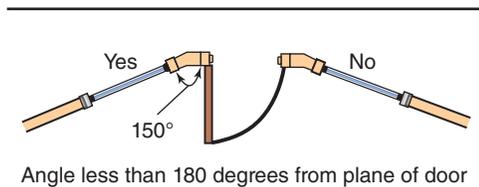
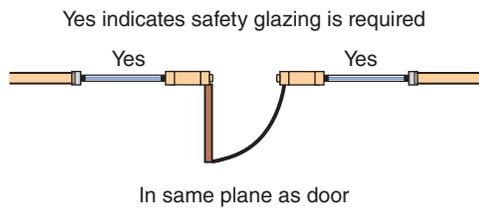
Glazing Adjacent to Doors

2019 CODE: R308.4.2 Glazing adjacent to doors. Glazing in an individual fixed or operable panel adjacent to a door shall be considered to be a hazardous location where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above the floor or walking surface and it meets either of the following conditions:

1. Where the glazing is within 24 inches (610 mm) of either side of the door in the plane of the door in a closed position.
2. Where the glazing is on a wall perpendicular to less than 180 degrees (3.14 rad) from the plane of the door in a closed position and within 24 inches (610 mm) of the hinge side of an in-swinging door.

Exceptions:

1. Decorative glazing.
2. Where there is an intervening wall or other permanent barrier between the door and the glazing.
3. Where access through the door is to a closet or storage area 3 feet (914 mm) or less in depth. Glazing in this application shall comply with Section R308.4.3.
4. Glazing that is adjacent to the fixed panel of patio doors.



Glazing adjacent to doors

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R308.4.2 continues

R308.4.2 continued

CHANGE SIGNIFICANCE: In general, the CRC has always regulated glazing installed less than 24 inches from the edge of a door as a hazardous location requiring safety glazing, provided the lowest edge of the glazing was less than 60 inches above the floor. This intends to address the hazard of a person approaching a door slipping or tripping and falling into the glass, or perhaps mistaking a large window as a door or opening. A window installed in the same wall and therefore in the same plane as the door is a common occurrence. In the context of safety glazing, reference to the plane of the door always indicates that the door is in a closed position for making a determination. For windows that are not at an angle to the door position, the application of the code is straightforward and well understood. Prior to the 2016 CRC, the requirement also applied to glazing installed at an angle to the door, such as a bay installation with windows on each side at a 45-degree angle. An exception addressed windows installed perpendicular to the plane of the door that exempted glazing on the latch side of and perpendicular to the door.

In the 2016 edition, windows installed perpendicular to the door only required safety glazing on the hinge side where the door swung against the window. This intended to address a person being pinned and pushed into the glass by someone coming through the door from the other side. The code section was reorganized to describe two separate conditions creating a hazardous location: 1) glazing in the same plane (same wall) as the door and 2) glazing that was perpendicular to the plane of the door. This inadvertently did not address windows installed at an angle—say, 45 degrees from the plane of the door. This change to the code intends to address that oversight. The first condition remains the same—that is, windows installed in the plane of the door and within 24 inches require safety glazing no matter the swing of the door. For windows installed at an angle less than 180 degrees, safety glazing is only required where the window is located on the hinge side and the door swings in the direction of the glazing. Glazing installed greater than 180 degrees from the plane of the in-swinging door poses no hazard of a person being pushed into the glass by the door.



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Windows at an angle to adjacent door

CHANGE TYPE: Modification

CHANGE SUMMARY: A new exception to the handrail projection limitation provides for adequate clearance behind the handrail when it passes a projection of a floor, landing or tread return.

2019 CODE: R311.7.1 Width. Stairways shall be not less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. ~~Handrails shall not project more than 4 ½ inches (114 mm) on either side of the stairway and the~~ The clear width of the stairways at and below the handrail height, including treads and landings, shall be not less than 31½ inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are ~~provided~~ installed on both sides.

Exception: The width of spiral stairways shall be in accordance with Section R311.7.10.1.

R311.7.8.2 Handrail Projection. Handrails shall not project more than 4 ½ inches (114 mm) on either side of the stairway.

Exception: Where nosings of landings, floors, or passing flights project into the stairway reducing the clearance at passing handrails, handrails shall project not more than 6 ½ inches (165 mm) into the stairway, provided that the stair width and handrail clearance are not reduced to less than that required.

R311.7.8.3 Handrail Clearance. Handrails adjacent to a wall shall have a space of not less than 1 ½ inches (38 mm) between the wall and the handrails.

R311.7.1, R311.7.8 continues



A passing handrail at a tread projection

R311.7.1, R311.7.8 Handrail Projection

R311.7.1, R311.7.8 continued

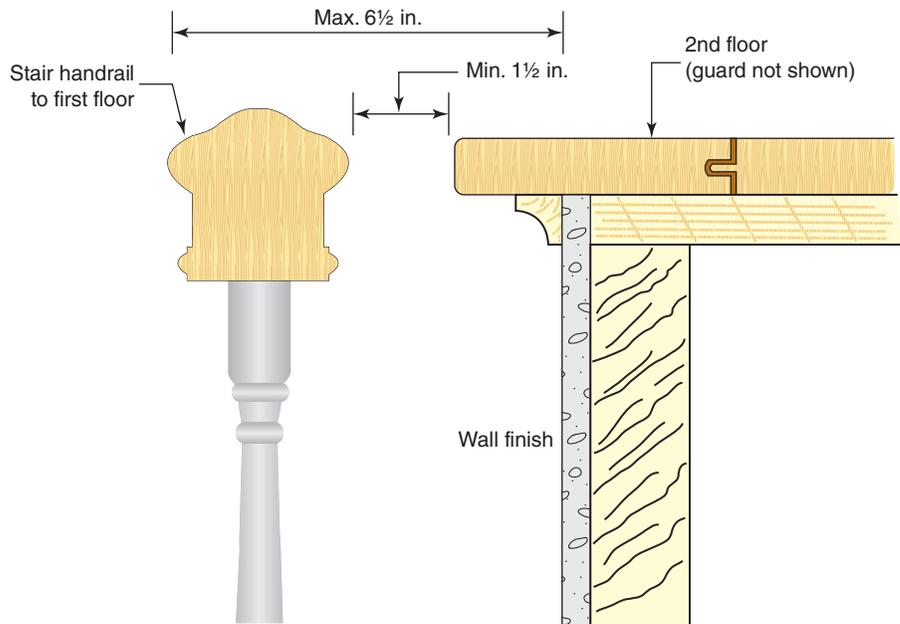
R311.7.8.2 R311.7.8.4 Continuity. Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1 ½ inches (38 mm) between the wall and the handrails.

Exceptions:

1. Handrails continuity shall be permitted to be interrupted by a newel post at a the turn in a flight with winders, at a landing, or over the lowest tread.
2. The use of a A volute, turnout; or starting easing or starting newel shall be allowed to terminate over the lowest tread.

CHANGE SIGNIFICANCE: The section on stairway width prescribes the minimum clear width of 36 inches for the portion of the stair above the handrails and below the required headroom height of 6 feet 8 inches. A lesser clear width is required at and below the handrail location and is determined based on the presence of one handrail or two handrails. Previously, the maximum handrail projection was located in the same section of the code. The maximum projection of one or two handrails subtracted from the net clear width of 36 inches corresponded to the minimum width requirement at and below the handrail height. To clarify the provisions, the handrail projection dimensions have been placed in a new section within the handrail requirements and separate from the stairway width requirements. There was concern expressed that code users might be missing the projection limitations. While not changing the width requirements, the change intends to provide for better understanding and compliance with the handrail provisions.

A new exception to the maximum handrail projection dimensions intends to address situations where a handrail passes by some other projecting elements that would reduce the necessary clearance for grasping



Greater projection allowed where handrail passes a floor nosing

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the handrail. For a handrail adjacent to a wall, the code requires a minimum space of 1½ inches between the wall and the handrail. It may not be possible to maintain the desired clearance of 1½ inches where the handrail passes the projection of a landing or floor above, as an example. Clearance issues also may occur at switchback stairs where the skirt-board and tread return of the flight above project into the stair space below by as much as 2 inches. Where the handrail of the lower flight passes the projection, there is often no space or a very small space between the handrail and the projecting element. The new exception allows a maximum handrail projection of 6½ inches (an increase of 2 inches) under these conditions to provide the necessary clearance for grasping the handrail. However, there is no corresponding reduction in the stairway width requirements. The clear width of 36 inches above the handrail still must be maintained. At and below the handrail height, the minimum clear width is 31½ inches with one handrail and 27 inches where handrails are installed on both sides. The new exception intends to provide additional options for optimizing stairway designs. It may also enable the installation of code-compliant handrails on both sides of the stairway as is recommended for an aging population and a philosophy of “aging in place.”

CHANGE TYPE: Clarification

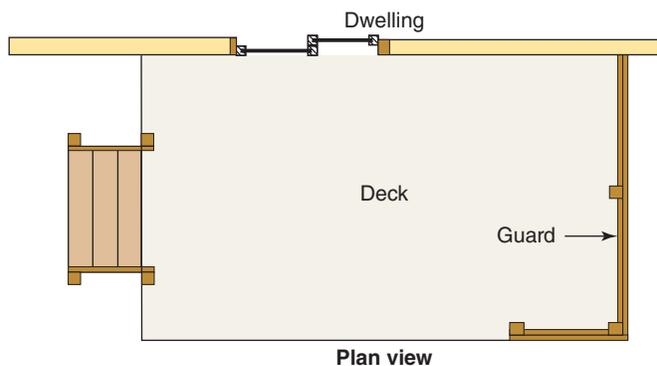
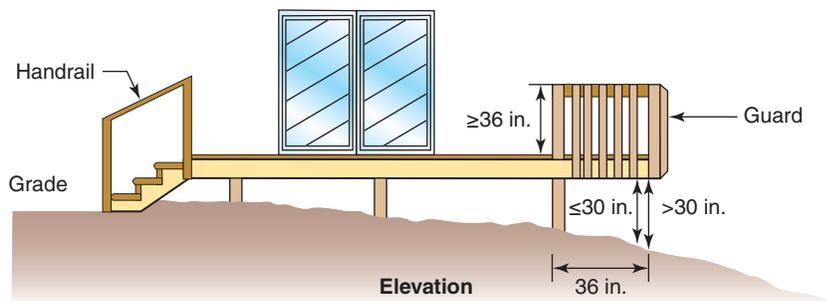
CHANGE SUMMARY: The guard requirements only apply to the specific portion of a walking surface that exceeds 30 inches above grade.

2019 CODE: R312.1 Guards. Guards shall be provided in accordance with Sections R312.1.1 through R312.1.4.

R312.1.1 Where required. Guards shall be ~~located along~~ provided for those portions of open-sided walking surfaces, including stairs, ramps and landings, that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a guard.

CHANGE SIGNIFICANCE: The code requires guards at prescribed locations to reduce the hazard related to falls from open-sided walking surfaces, particularly when that walking surface reaches a certain height where a fall is more likely to cause injury. From the beginning, the CRC has established that trigger point as a height of anything greater than 30 inches above a floor or grade below. Beginning with the 2010 edition of the CRC, the code has prescribed the method for determining that vertical distance in an objective and consistent way. Under previous editions of the code, in the case of a deck, this measurement was often taken to the grade directly below the edge of the decking surface. However, a sloped site or sudden drop-off adjacent to a deck or porch caused concern that such a measurement did not accurately reflect the level of hazard. The

R312.1 continues



Guard required at portions of deck greater than 30 inches above grade

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R312.1

Guards

R312.1 continued code has since required that the height of the walking surface above grade or floor below is measured from the lowest point within 3 feet horizontally from the edge of the deck, porch or other element.

Although the code has given specific direction on the method for determining the height above grade, it has been less specific as to the extent that guard protection is required for the perimeter of the walking surface. That is, if one end of a deck is greater than 30 inches above grade, but the other edges are 30 inches or less, is a guard required only on the one end or the entire deck? The intent of the code has been that the guard is only required where the hazard exists—in this example, on the one end of the deck. However, interpretation has varied among jurisdictions, with some of the opinion that only the portion of a deck with the stated level of hazard requires a guard and others saying that once any portion of a deck requires a guard, the entire perimeter requires the same level of protection. The 2019 CRC settles the question by specifically requiring a guard only on those portions of a walking surface that exceed the prescribed height of 30 inches above grade.

CHANGE TYPE: Modification

CHANGE SUMMARY: The exemption for interconnection of alarms during alterations based on feasibility has been removed from the code.

2019 CODE: R314.2.2 Alterations, repairs and additions. Where alterations, repairs or additions requiring a permit occur, ~~or where one or more sleeping rooms are added or created in existing dwellings,~~ the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings.

Exception: See Section R314.6.

R314.4 Interconnection. *Where more than one smoke alarm is required to be installed within an individual dwelling unit in accordance with Section R314.3, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual dwelling unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.*

Exception: ~~Interconnection of smoke alarms in existing areas shall not be required where alterations or repairs do not result in removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available that could provide access for interconnection without the removal of interior finishes.~~

R314 continues



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Interconnection is required for smoke alarms installed in existing buildings undergoing remodeling requiring a permit.

R314 continued

CHANGE SIGNIFICANCE: The code has long recognized the importance of smoke alarms in protecting occupants from the hazards of fire by providing early warning and time to escape from the dwelling—so important, in fact, that this is one of the few provisions of the code that is retroactive when certain construction activity occurs, even in areas that are not being altered. Battery-operated smoke alarms are relatively inexpensive and easy to install and are considered a reasonable requirement to place on existing buildings. This retroactive requirement is triggered by construction work requiring a permit, with the exception of exterior work such as siding, roofing and window replacement. Installation, alteration or repairs of plumbing or mechanical systems are also exempt. Alarms are required in the same locations as for new dwellings. Prior to the 2016 edition of the CRC, the building official had the responsibility to determine if it was reasonable and feasible to provide electrical power to these smoke alarms in addition to battery power, or if only battery-operated smoke alarms could be installed in existing areas. The code gave some direction in making the determination based on the removal of interior finishes as part of the work or access for wiring being provided by a crawl space or attic. In the 2016 edition, that provision was removed in favor of accepting battery-operated alarms in existing buildings undergoing alterations. However, the interconnection requirements remained the same as in previous codes, and matched the power requirements for alterations to existing buildings. Requiring interconnection of the devices was based on feasibility and required a determination by the building official. The exemption for interconnection of the smoke alarms under these circumstances has been removed.

A smoke alarm is required in each sleeping room, outside each sleeping area and on each story, including basements and habitable attics. Interconnection of the alarms—so all alarms sound when any one is activated—is necessary to alert occupants in all parts of the dwelling, even though the alarm detecting the fire is remote from the occupant's location. This is especially important for occupants in sleeping rooms who may not be fully alert or awake. In the past, interconnection was achieved with a wire connecting all alarms physically. That is easily accomplished in new construction but not always feasible in existing buildings without removing drywall or other finishes. With increasing availability of wireless smoke alarms in the marketplace, the difficulty of interconnection during alterations has gone away. With that barrier removed, the code now requires interconnection of smoke alarms, for new construction and in existing buildings when installation of smoke alarms is triggered by alterations, repairs or additions requiring a permit. In discussion of the change, there was consensus that wireless technology makes interconnection affordable for improving life safety.

Other changes to Section 314 are editorial and remove unnecessary language. For example, when setting the criteria for retroactively installing smoke alarms in existing buildings, the CRC states that alterations, repairs or additions requiring a permit trigger the requirement. It is not necessary to include reference to adding sleeping rooms because that is covered by the initial statement. Likewise, stating that the listed exceptions are exempt from the requirements of the section is redundant. Exceptions are exempt from the section preceding them. The redundant language has been removed.

R317.1

Balcony or Elevated Surface Moisture Protection

CHANGE TYPE: Modification

CHANGE SUMMARY: Enclosed balconies are required to provide natural ventilation to mitigate moisture damage.

2019 CODE: R317.1 Location required. Protection of wood and woodbased products from decay shall be provided in the following locations by the use of naturally durable wood or wood that is preservative-treated in accordance with AWPA U1.

1. Wood joists or the bottom of a wood structural floor when closer than 18 inches (457 mm) or wood girders when closer than 12 inches (305 mm) to the exposed ground in crawl spaces or unexcavated area located within the periphery of the building foundation.
2. Wood framing members that rest on concrete or masonry exterior foundation walls and are less than 8 inches (203 mm) from the exposed ground.
3. Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier.
4. The ends of wood girders entering exterior masonry or concrete walls having clearances of less than ½ inch (12.7 mm) on tops, sides and ends.
5. Wood siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches (152 mm) from the ground or less than 2 inches (51 mm) measured vertically from concrete steps, porch slabs, patio slabs and similar horizontal surfaces exposed to the weather.
6. Wood structural members supporting moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier. *The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.*
7. Wood furring strips or other wood framing members attached directly to the interior of exterior masonry walls or concrete walls below grade except where an approved vapor retarder is applied between the wall and the furring strips or framing members.

R317.1.6 Ventilation required beneath balcony or elevated walking surfaces. *Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow or drainage from irrigation shall be provided with openings that provide a net free cross-ventilation area not less than 1/150 of the area of each separate space.*

CHANGE SIGNIFICANCE: The first part of this modification clarifies the requirements for positive drainage for any water that could infiltrate moisture-permeable floors. The previous language of this code is not applicable to one- and two-family dwellings built in accordance with the CRC. As a result, the HCD included language from the 2017 Emergency Rulemaking as a new amendment to the 2019 CRC.

The second part deals with the language change regarding ventilation beneath balcony or elevated walking surfaces from the 2017 Emergency Rulemaking for the CBC into the 2019 CRC. HCD has included this language change to have this amendment align with the 2019 CBC requirements



Courtesy of Jeff & Anya Armstrong

Enclosed exterior balcony

R317.3

Fasteners in Treated Wood

CHANGE TYPE: Modification

CHANGE SUMMARY: Staples in preservative-treated wood and fire-retardant-treated wood are now required to be made of stainless steel.

2018 CODE: R317.3.1 Fasteners for preservative-treated wood. Fasteners, including nuts and washers, for preservative-treated wood shall be of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Coating types and weights for connectors in contact with preservative-treated wood shall be in accordance with the connector manufacturer's recommendations. In the absence of manufacturer's recommendations, a minimum of not less than ASTM A653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

Exceptions:

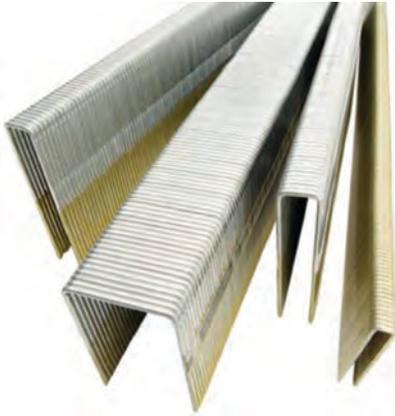
1. ½-inch-diameter (12.7 mm) or greater steel bolts.
2. Fasteners other than nails, staples, and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, Class 55 minimum.
3. Plain carbon steel fasteners in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall be permitted.

R317.3.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners, including nuts and washers, for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails, staples, and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, Class 55 minimum.

CHANGE SIGNIFICANCE: In the CRC, Table R602.3(1) lists fastener options for wood-to-wood connections. As an alternative, Table R602.3(2) Alternate Attachments to Table R602.3(1) lists additional connection options. Staples have been included in both tables as a fastener option for some connections. Fastener requirements for preservative-treated and fire-retardant-treated lumber are found in Sections R602.3 and R507 with additional requirements for the fasteners found in Section R317. Nails, nuts, washers, screws, bolts and timber rivets may be made of stainless steel, hot-dipped galvanized steel, silicon bronze or copper materials.

In the 2019 CRC, stainless steel staples are added as an additional code accepted solution. This addition specifically limits staples to stainless steel when installed in preservative-treated lumber.

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Stainless steel staples

The thin wire gages used in staples are much thinner than those used in nails, and are consequently more susceptible to corrosion. While currently stainless steel staples are the only available option for staples meeting increased corrosion-resistance requirements, if a manufacturer has a nonstainless steel staple solution for preservative-treated lumber, evaluation reports based on testing can be used to show equivalence to the minimum requirements in Section R317.3.1.

Staples in fire-retardant-treated wood are required to be made of the same materials as nails and timber rivets—stainless steel, hot-dipped galvanized steel, silicon bronze or copper materials.