

CHAPTER 3

BUILDING PLANNING

SECTION R302 FIRE-RESISTANT CONSTRUCTION

R302.3 Two-family dwellings. *Dwelling units* in two-family dwellings shall be separated from each other by wall and floor assemblies having not less than a 1-hour fire-resistance rating where tested in accordance with ASTM E119, UL 263 or Section 703.3 of the *International Building Code*. Fire-resistance-rated floor/ceiling and wall assemblies shall extend to and be tight against the *exterior wall*, and wall assemblies shall extend from the foundation to the underside of the roof sheathing.

Exceptions:

1. A fire-resistance rating of $1/2$ hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13.
2. Wall assemblies need not extend through *attic* spaces where the ceiling is protected by not less than $5/8$ -inch (15.9 mm) Type X gypsum board, an *attic* draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the *dwellings* and the structural framing supporting the ceiling is protected by not less than $1/2$ -inch (12.7 mm) gypsum board or equivalent.

Q: Is a two-family dwelling with a property line separating the dwelling units required to comply with the separation provisions in Section R302.3.

A: No. The code does not address a property line within an attached two-family dwelling. A dwelling is a building that contains one or two dwelling units. A building line or property line is a line established by law beyond which a building shall not extend. An attached two-family dwelling with a property line between the two dwelling units is considered two separate buildings, located on two separate lots. Two individual dwellings must comply with the fire separation distance required in Section R302.1.

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 device.

R302.5.2 Duct penetration. Ducts in the garage and ducts penetrating the walls or ceilings separating the *dwelling* from the garage shall be constructed of a minimum No. 26 gage (0.48 mm) sheet steel or other *approved* material and shall not have openings into the garage.

R302.5.3 Other penetrations. Penetrations through the separation required in Section R302.6 shall be protected as required by Section R302.11, Item 4.

REFERENCED SECTIONS

R302.6 Dwelling-garage fire separation. The garage shall be separated as required by Table R302.6. Openings in garage walls shall comply with Section R302.5. Attachment of gypsum board shall comply with Table R702.3.5. The wall separation provisions of Table R302.6 shall not apply to garage walls that are perpendicular to the adjacent *dwelling unit* wall.

R302.11 Fireblocking. In combustible construction, fireblocking shall be provided to cut off both vertical and horizontal concealed draft openings and to form an effective fire barrier between stories, and between a top *story* and the roof space.

Fireblocking shall be provided in wood-framed construction in the following locations:

1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs, as follows:
 - 1.1. Vertically at the ceiling and floor levels.
 - 1.2. Horizontally at intervals not exceeding 10 feet (3048 mm).
2. At interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R302.7.
4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an *approved* material to resist the free passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM E136 requirements.
5. For the fireblocking of chimneys and fireplaces, see Section R1003.19.
6. Fireblocking of cornices of a two-family *dwelling* is required at the line of *dwelling unit* separation.

Q: Section R302.5 addresses dwelling-garage opening and penetration protection. These include openings directly from a garage into the residence (Section R302.5.1), duct penetrations (Section R302.5.2), and other penetrations (Section R302.5.3) as further described by Section R302.11, Item 4, which addresses through penetrations of vents, pipes, ducts, cables, and wires. Are membrane penetrations other than the ones specifically mentioned in Section R302.11, Item 4 allowed in the ceiling separating the garage from a habitable room above?

A: Yes. Section R302.5.3 requires “all other penetrations” to be protected in accordance with Section R302.11, Item 4. Even though Section R302.11, Item 4 specifically mentions only vents, pipes, ducts, cables, and wires, other penetrations are allowed provided the annular space around “the penetration” is fireblocked with an approved material to resist the free passage of flame and products of combustion. The material filling the annular space is not required to meet the ASTM E136 requirements.

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A: Yes. Section R302.5.3 requires “all other penetrations” to be protected in accordance with Section R302.11, Item 4. Even though Section R302.11, Item 4 specifically mentions only vents, pipes, ducts, cables, and wires, other penetrations are allowed provided the annular space around “the penetration” is fireblocked with an approved material to resist the free passage of flame and products of combustion. The material filling the annular space is not required to meet the ASTM E136 requirements.

R302.6 Dwelling-garage fire separation. The garage shall be separated as required by Table R302.6. Openings in garage walls shall comply with Section R302.5. Attachment of gypsum board shall comply with Table R702.3.5. The wall separation provisions of Table R302.6 shall not apply to garage walls that are perpendicular to the adjacent *dwelling unit* wall.

REFERENCED SECTIONS

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 device.

R302.5.2 Duct penetration. Ducts in the garage and ducts penetrating the walls or ceilings separating the *dwelling* from the garage shall be constructed of a minimum No. 26 gage (0.48 mm) sheet steel or other *approved* material and shall not have openings into the garage.

R302.5.3 Other penetrations. Penetrations through the separation required in Section R302.6 shall be protected as required by Section R302.11, Item 4.

R302.11 Fireblocking. In combustible construction, fireblocking shall be provided to cut off both vertical and horizontal concealed draft openings and to form an effective fire barrier between stories, and between a top *story* and the roof space.

Fireblocking shall be provided in wood-framed construction in the following locations:

1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs, as follows:
 - 1.1. Vertically at the ceiling and floor levels.
 - 1.2. Horizontally at intervals not exceeding 10 feet (3048 mm).
2. At interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R302.7.
4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an *approved* material to resist the free passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM E136 requirements.
5. For the fireblocking of chimneys and fireplaces, see Section R1003.19.
6. Fireblocking of cornices of a two-family *dwelling* is required at the line of *dwelling unit* separation.

Q: The separation from habitable rooms above the garage is to be $\frac{5}{8}$ " Type X gypsum board. Are membrane penetrations through the $\frac{5}{8}$ " Type X gypsum board required to be fire-resistance rated?

A: No. The separation is not a fire-resistance rated assembly. Section R302.6 simply requires a layer of $5/8$ " Type X gypsum board on the garage side.

Openings and penetrations through walls or ceilings separating the dwelling from the garage are to be in accordance with Sections R302.5.1 through R302.5.3. These provisions are also prescriptive requirements.

Section R302.5.1 addresses openings, Section R302.5.3 addresses duct penetrations, and Section R302.5.3 addresses "all other penetrations" of the separation between the garage and dwelling.

Section R302.5.3 requires such "other penetrations" to be protected in accordance with Section R302.11, Item 4. Even though Section R302.11, Item 4 specifically mentions only vents, pipes, ducts, cables, and wires, the intent is that penetrations of the $5/8$ " Type X gypsum board membrane by such items, as well as other similar items, be fireblocked by simply filling the annular space around "the penetration" with an approved material to resist the free passage of flame and products of combustion. The material filling the annular space is not required to meet the ASTM E136 requirements.

SECTION R308 GLAZING

R308.4 Hazardous locations. The locations specified in Sections R308.4.1 through R308.4.7 shall be considered to be specific hazardous locations for the purposes of glazing.

R308.4.1 Glazing in doors. Glazing in fixed and operable panels of swinging, sliding and bifold doors shall be considered to be a hazardous location.

Exceptions:

1. Glazed openings of a size through which a 3-inch-diameter (76 mm) sphere is unable to pass.
2. Decorative glazing.

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 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.

R308.4.3 Glazing in windows. Glazing in an individual fixed or operable panel that meets all of the following conditions shall be considered to be a hazardous location:

1. The exposed area of an individual pane is larger than 9 square feet (0.836 m²).
2. The bottom edge of the glazing is less than 18 inches (457 mm) above the floor.
3. The top edge of the glazing is more than 36 inches (914 mm) above the floor.
4. One or more walking surfaces are within 36 inches (914 mm), measured horizontally and in a straight line, of the glazing.

Exceptions:

1. Decorative glazing.
2. Where glazing is adjacent to a walking surface and a horizontal rail is installed 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/m) without contacting the glass and have a cross-sectional height of not less than $1\frac{1}{2}$ inches (38 mm).
3. Outboard panes in insulating glass units and other multiple glazed panels where the bottom edge of the glass is 25 feet (7620 mm) or more above *grade*, a roof, walking surfaces or other horizontal [within 45 degrees (0.79 rad) of horizontal] surface adjacent to the glass exterior.

R308.4.4 Glazing in guards and railings. Glazing in *guards* and railings, including structural baluster panels and nonstructural in-fill panels, regardless of area or height above a walking surface shall be considered to be a hazardous location.

R308.4.4.1 Structural glass baluster panels. Guards with structural glass baluster panels shall be installed with an attached top rail or handrail. The top rail or handrail shall be supported by not less than three glass baluster panels, or shall be otherwise supported to remain in place should one glass baluster panel fail.

Exception: An attached top rail or handrail is not required where the glass baluster panels are laminated glass with two or more glass plies of equal thickness and of the same glass type.

R308.4.5 Glazing and wet surfaces. Glazing in walls, enclosures or fences containing or facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface shall be considered to be a hazardous location. This shall apply to single glazing and each pane in multiple glazing.

Exception: Glazing that is more than 60 inches (1524 mm), measured horizontally and in a straight line, from the water's edge of a bathtub, hot tub, spa, whirlpool or swimming pool or from the edge of a shower, sauna or steam room.

R308.4.6 Glazing adjacent to stairs and ramps. Glazing where the bottom exposed edge of the glazing is less than 36 inches (914 mm) above the plane of the adjacent walking surface of stairways, landings between flights of stairs and ramps shall be considered to be a hazardous location.

Exceptions:

1. Where glazing is adjacent to a walking surface and a horizontal rail is installed at 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/m) without contacting the glass and have a cross-sectional height of not less than 1½ inches (38 mm).
2. Glazing 36 inches (914 mm) or more measured horizontally from the walking surface.

R308.4.7 Glazing adjacent to the bottom stair landing. Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches (914 mm) above the landing and within a 60-inch (1524 mm) horizontal arc less than 180 degrees (3.14 rad) from the bottom tread nosing shall be considered to be a hazardous location. (See Figure R308.4.7.)

Exception: Where the glazing is protected by a *guard* complying with Section R312 and the plane of the glass is more than 18 inches (457 mm) from the *guard*.

Q: Do the hazardous location provisions of Section R308.4.2 apply to sliding door assemblies?

A: Yes. Section R308.4.2 applies to all doors. A sliding door assembly is a "door"; the 24-inch distance (arc) is measured from the vertical edge of both the fixed and sliding panels of sliding door assemblies.

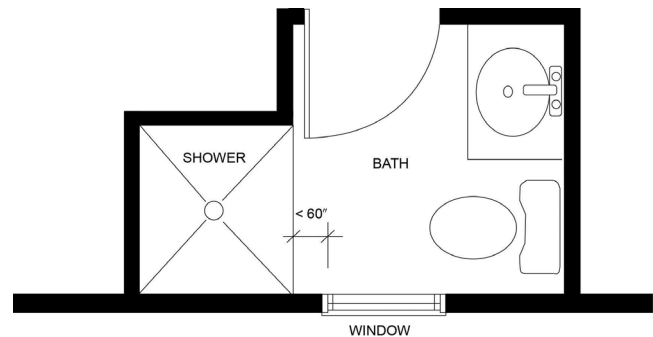
Q: As defined in Section R308.4.5 of the *International Residential Code*® (IRC®), is safety glazing required at glazed openings in building walls adjacent to the enclosure for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers where the glazing is not located within the area of the enclosure?

A: No. The provisions of Section R308.4.5 address only the requirements for safety glazing in the walls that create the enclosure surrounding the listed fixtures, and located within 60 inches vertically of the walking or standing surface within the fixture enclosure. Glazing located outside the area of the enclosing walls is not required to be safety glazing in accordance with the requirements of Section R308.4.5.

Q: In accordance with the provisions of Section R201.3 of the IRC, a stairway, as defined in the *International Building Code*®, is a change in elevation consisting of one or more risers. Is a stairway consisting of a single riser considered a hazardous location for the purposes of glazing and therefore subject to the provisions of Section R308.4.6 of the IRC?

A: Yes. A single riser, by definition, is a stairway. Therefore, glazing adjacent to a single-riser stairway must comply with the applicable provisions for a hazardous location, unless specifically exempt in the code.

Q: A window is located in the wall perpendicular to the opening into the shower enclosure, not facing the shower enclosure. The bottom edge of the glazing is less than 60 inches measured vertically above the standing surface and less than 60 inches measured horizontally from the shower enclosure. Is the glazing considered a hazardous location?



A: No. This section is applicable only to the glazing in walls and enclosures enclosing the shower and to glazing in walls facing the shower.

Since the glazing is not within the shower enclosure or in a wall facing the shower enclosure, it would not be considered a hazardous location in accordance with Section R308.4.5.

Section R308.4.3 may also be applicable based on the end use configuration of the glazing.

SECTION R310 EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 Emergency escape and rescue opening required.

Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where *basements* contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a *yard* or court that opens to a public way.

Exceptions:

1. Storm shelters and *basements* used only to house mechanical *equipment* not exceeding a total floor area of 200 square feet (18.58 m²).
2. Where the *dwelling* or *townhouse* is equipped with an automatic sprinkler system installed in accordance with Section P2904, sleeping rooms in *basements* shall not be required to have emergency escape and rescue openings provided that the *basement* has one of the following:
 - 2.1. One means of egress complying with Section R311 and one emergency escape and rescue opening.
 - 2.2. Two means of egress complying with Section R311.

Q: A detached single-family dwelling contains a basement with both nonhabitable space and habitable space. The habitable space is not a sleeping room. The nonhabitable space is adjacent to and has access from the habitable space. In accordance with the provisions of Section 310.1 of the IRC, can the emergency escape and rescue opening be located in the nonhabitable space?

A: Yes. The provisions in Section R310.1 stipulate that at least one openable emergency escape and rescue opening must be provided in basements. There is no provision that requires the emergency escape and rescue opening to be located in habitable space. The language very specifically requires an emergency escape and rescue opening in every sleeping room; however, emergency escape and rescue openings are not required in areas, habitable or nonhabitable, adjoining sleeping rooms. Therefore, in other than sleeping rooms, access to the emergency escape and rescue opening can be from any area in a basement.

Q: In question are existing detached one- and two-family dwellings and townhouses containing basements without emergency escape and rescue openings. The dwellings in question were legally constructed and occupied prior to jurisdictional adoption and enforcement of the IRC.

Do the technical provisions for emergency escape and rescue openings, as provided in Section R310.1 of

the IRC, apply to additions and alterations to change an existing nonhabitable basement to habitable space in a legally occupied dwelling that is subject to the provisions of the IRC at the time the additions and alterations are made to the existing dwelling?

A: Yes. Additions and alterations to existing dwellings must be made to comply with the technical provisions of the appropriate codes being enforced at the time the work is done. The provisions in Section R310.1 of the IRC require basements and sleeping rooms to be provided with emergency escape and rescue openings. When the construction of additions and alterations changes the use of the existing basement, emergency escape and rescue openings must be provided; regardless of the requirements in place when the dwelling was originally constructed.

The provisions of the IRC, as defined in Section R101.2, apply to all aspects of construction for detached one- and two-family dwellings, multiple single-family dwellings defined as townhouses and all structures accessory to the dwellings and townhouses. The provisions address all aspects of constructing, altering, repairing, maintaining, using, occupying, enlarging, locating, removing or demolishing any one-family dwelling, two-family dwelling, townhouse or accessory structure. The code regulates any and all activities that modify the dwellings as well as any structures that are incidental to the main dwelling and are located on the same lot.

Existing dwellings that are legally occupied, in accordance with Section R102.7, at the time the IRC is adopted, and remain unchanged, are not subject retroactively to the provisions of the code. However, in accordance with the provisions in Section R102.7.1, any new construction, additions, alterations or repairs made to the existing dwelling after the adoption of the IRC are required to conform to the requirements of the code for new construction.

Although new construction, additions, alterations or repairs made to the existing dwelling must comply with provisions for new construction, those portions of the existing dwelling not affected are not required to comply with all of the provisions for new construction. However, new construction shall not create an unsafe condition in the existing dwelling. Changing a nonhabitable basement to an occupied space without emergency escape and rescue openings creates an unsafe condition that is in conflict with the provisions of the code intended to ensure a safe and usable living environment for the occupants of the dwelling.

R310.2 Emergency escape and rescue openings. Emergency escape and rescue openings shall have minimum dimensions as specified in this section.

R310.2.1 Minimum opening area. Emergency escape and rescue openings shall have a net clear opening of not less than 5.7 square feet (0.530 m²). The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. The net clear height of the opening shall be not less than 24 inches (610 mm) and the net clear width shall be not less than 20 inches (508 mm).

Exception: *Grade floor openings* or *below-grade openings* shall have a net clear opening area of not less than 5 square feet (0.465 m²).

Q: In a second-story sleeping room, are emergency escape and rescue windows permitted if removal of both the bottom and top sash is required to achieve the minimum net clear opening of 5.7 square feet?

A: No. The required opening size must be achieved through normal operation of the window without the removal of the top or bottom sash. Section R310.2.1 specifically states, "The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside." While most occupants are familiar with the normal operation by which to open the window, children and guests are frequently unfamiliar with special procedures necessary to remove the sashes. The time spent comprehending the special operation unnecessarily delays egress from the bedroom and could lead to panic and further confusion. Thus, windows that achieve the required opening dimensions only by having a special sequence of operations performed upon them, such as the removal of sashes or mullions, are not permitted.

SECTION R311 MEANS OF EGRESS

R311.3.1 Floor elevations at the required egress doors. Landings or finished floors at the required egress door shall be not more than 1½ inches (38 mm) lower than the top of the threshold.

Exception: The landing or floor on the exterior side shall be not more than 7¾ inches (196 mm) below the top of the threshold provided that the door does not swing over the landing or floor.

Where exterior landings or floors serving the required egress door are not at *grade*, they shall be provided with access to *grade* by means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7.

Q: Does the exception in Section R311.3.1, which permits the landing to be 7¾ inches below the top of the threshold, apply to all exterior doors, including the required exit door?

A: Yes. The required exit door is classified as an exterior door. The provisions of the exception in Section R311.3.1 permit a landing to be placed a maximum of 7¾ inches below the top of the threshold at any exterior door-way, which does include the required exit door.

R311.7.5.2.1 Winder treads. Winder treads shall have a tread depth of not less than 10 inches (254 mm) measured between the vertical planes of the foremost projection of adjacent treads at the intersections with the walkline. Winder treads shall have a tread depth of not less than 6 inches (152 mm) at any point within the clear width of the stair. Within any flight of stairs, the largest winder tread depth at the walkline shall not exceed the smallest winder tread by more than ¾ inch (9.5 mm). Consistently shaped winders at the walkline shall be allowed within the same flight of stairs as rectangular treads and shall not be required to be within ¾ inch (9.5 mm) of the rectangular tread depth.

Exception: The tread depth at spiral stairways shall be in accordance with Section R311.7.10.1.

Q: The provisions in Section R311.7.5.2.1 of the IRC require winder treads to be a minimum depth of 10 inches.

Within a flight of stairs that includes straight treads and winder treads, are the winder treads required to be the same depth as the straight treads at the prescribed 12-inch walkline?

A: No. The depth of a winder tread at the walkline, the prescribed 12-inch walkline, is not required to be the same depth as straight treads within the same flight of stairs. The provisions in Section R311.7.5.2.1 require a minimum depth of 10 inches at the walkline. There is no requirement for a maximum depth of a winder tread. Where multiple winder treads are grouped together within a flight of stairs, all winder treads within that group must be the same depth at the 12-inch walkline.

R311.7.6 Landings for stairways. There shall be a floor or landing at the top and bottom of each stairway. The width perpendicular to the direction of travel shall be not less than the width of the flight served. For landings of shapes other than square or rectangular, the depth at the walk line and the total area shall be not less than that of a quarter circle with a radius equal to the required landing width. Where the stairway has a straight run, the depth in the direction of travel shall be not less than 36 inches (914 mm).

Exception: A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided that a door does not swing over the stairs.

R311.7.7 Stairway walking surface. The walking surface of treads and landings of stairways shall be sloped not steeper