2021 PA UCC Residential Code Update: Part 2

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Pennsylvania Housing Research Center

- The Pennsylvania Housing Research Center (PHRC) provides and facilitates education, training, innovation, research, and dissemination to the residential construction industry for the purpose of improving the quality and affordability of housing.
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Description

Building upon the previous webinar of the 2021 PA UCC Residential Code: Update 1, this session will dive deeper into implications of transitioning to the portions of the 2021 ICC base codes that were approved for adoption. It will dive into some highlights of the new code provisions affecting residential construction.

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Learning Objectives

1. Review the most efficient ways to find out which code provisions have changed between the 2018 and 2021 ICC codes and available ICC resources.
2. Discuss noteworthy and substantial code provision changes that will impact design, cost, and occupant safety.
3. Dive deeper into various code changes that will affect residential construction including increased building envelope airtightness requirements.
4. Understand available resources on best practices that may be impacted by code changes specifically focusing on the building enclosure.

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How Will the Changes Be Presented?

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"Section of Change" – "Provision Modified or Not Adopted"

- Change Type – Addition, Modification or Clarification
- Change Summary – Summary of the significant change
- Code language with changes in RED
- PA UCC RAC amendments in orange

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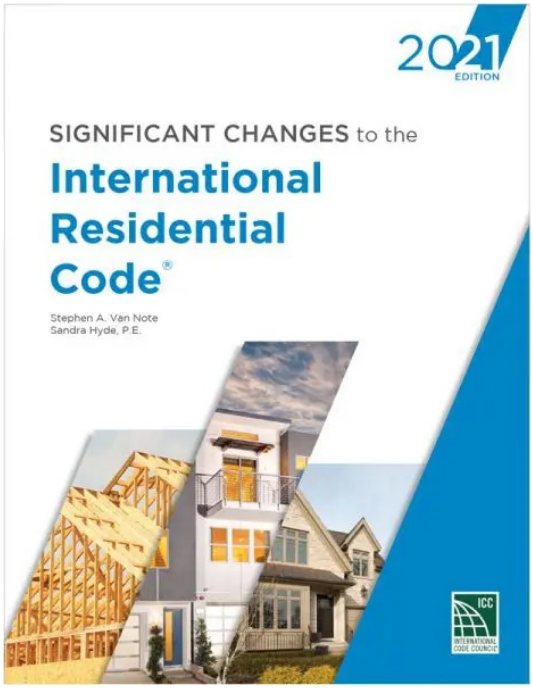
Today's Information

International Code Council. (2021). *2021 Significant Changes to the International Residential Code*, ICC, Country Club Hill, Ill.



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Additional Information

PA UCC 2021 International code adoption

September 14, 2024

Nancy A. Walker, Esq.
Secretary
Pennsylvania Department of Labor & Industry
Room 1700, L&I Building
651 Boas Street
Harrisburg, Pennsylvania 17121

Reference: Uniform Construction Code (UCC)
2021 International Codes Adoption

Dear Secretary Walker:

With the official publication of the 2021 International Codes by the International Code Council (ICC) in January 2021, in accordance with the requirements of Act 45 of 1999 as amended, the Pennsylvania Uniform Construction Code (UCC) Review and Advisory Council (RAC) initiated review of the 2021 International Codes on October 13, 2021. During the October 13, 2021 meeting, which was properly advertised in accordance with the Act and with a quorum present, the RAC voted to include additional sections beyond those that had been modified and published by the ICC national review process and properly posted them on the RAC website. After clarification by vote of the RAC regarding the sections to be reviewed in the 2021 adoption process, a vote of the RAC was taken and passed unanimously to initiate review and adoption of the 2021 International Codes.

As part of the review and adoption of the 2021 International Codes, the following are some key actions that were taken, and the corresponding dates that they occurred:

- January 31, 2021 – ICC publishes the 2021 International Codes
- November 15, 2021 – RAC opens public comment requesting feedback on "Additional Sections"
- February 13, 2022 – RAC closes public comment period on "Additional Sections"
- September 8, 2022 – RAC publishes on the RAC website a list of "Additional Sections"
- October 13, 2022 – RAC initiates the review and adoption process for the 2021 International Codes
- November 12, 2022 – Public comment was opened and remained open for 120 days
- November 12, 2022 – Request for Technical Advisory Committee (TAC) members was opened and remained open for 30 days
- May 1, 2023 – An additional public comment period was opened and remained open for 120 days due to advertisement issues with the first public comment period
- May 1, 2023 – An additional request for Technical Advisory Committee (TAC) members was opened and remained open for 30 days due to advertisement issues with the first Technical Advisory Committee (TAC) request period

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References

International Code Council. (2008). *2009 International Residential Code*, ICC, Country Club Hill, Ill.

International Code Council. (2014). *2015 International Residential Code*, ICC, Country Club Hill, Ill.

International Code Council. (2017). *2018 International Residential Code*, ICC, Country Club Hill, Ill.

International Code Council. (2018). *2018 Significant Changes to the International Residential Code*, ICC, Country Club Hill, Ill.

International Code Council. (2021). *2021 Significant Changes to the International Residential Code*, ICC, Country Club Hill, Ill.

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Sections

- Part 1 Administration
- Part 2 Building Planning
- Part 3 Building Construction
- Part 4 Energy Conservation
- Part 5 Mechanical
- Part 6 Fuel Gas
- Part 7 Plumbing
- Part 8 Electrical

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Administration

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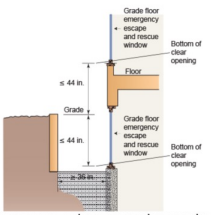
R202 Definition of Emergency Escape and Rescue Opening

Change Type: Clarification

Change Summary: Definitions for emergency escape and rescue openings and grade floor openings have been updated for clarification and to be consistent with the IBC.

EMERGENCY ESCAPE AND RESCUE OPENING. An operable exterior window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency. (See also "Grade floor emergency escape and rescue opening.")

GRADE FLOOR EMERGENCY ESCAPE AND RESCUE OPENING. ~~A window or other~~ emergency escape and rescue opening located such that the ~~sill height~~ bottom of the clear opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening. (See also "Emergency escape and rescue opening.")



Grade floor emergency escape and rescue openings require only 5.0 sq. ft. of clear area.

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R202 Definition of a Townhouse

Change Type: Clarification

Change Summary: A revised definition of townhouse (a building) and a new definition for townhouse unit (a dwelling unit) clarify the appropriate use of the terms.

BUILDING: Any one- or two-family dwelling or townhouse, or portion there of, ~~including townhouse~~ used or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, or any accessory structure. For the definition applicable in Chapter 11, see Section N1101.6.

TOWNHOUSE: A ~~single-family dwelling unit constructed in a group of~~ building that contains three or more attached townhouse units ~~in which each unit extends from foundation to roof and with a yard or public way on not less than two sides.~~

TOWNHOUSE UNIT: A single-family dwelling unit in a townhouse that extends from foundation to roof and that has a yard or public way on not less than two sides.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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Building Planning

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R301.3 Story Height

Change Type: Clarification

Change Summary: Maximum story height for wood wall framing is 13 feet 7 inches when the exception requirements are met.

Story height. The wind and seismic provisions of this code shall apply to buildings with story heights not exceeding the following:

1.For wood wall framing, the story height shall not exceed 11 feet 7 inches (3531 mm) and the laterally unsupported bearing wall stud height permitted by Table R602.3(5).

Exception: A story height not exceeding 13 feet 7 inches (4140 mm) is permitted provided the maximum wall stud clear height does not exceed 12 feet (3658 mm), the wall studs are in accordance with Exception 2 or Exception 3 of Section R602.3.1 or an engineered design is provided for the wall framing members, and wall bracing for the building is in accordance with Section R602.10. Studs shall be laterally supported at the top and bottom plate in accordance with Section R602.3.

2. For cold-formed steel wall framing, the story height shall be not more than 11 feet 7 inches (3531 mm) and the unsupported bearing wall stud height shall be not more than 10 feet (3048 mm).

3. For masonry walls, the story height shall be not more than 13 feet 7 inches (4140 mm) and the bearing wall clear height shall be not more than 12 feet (3658 mm).

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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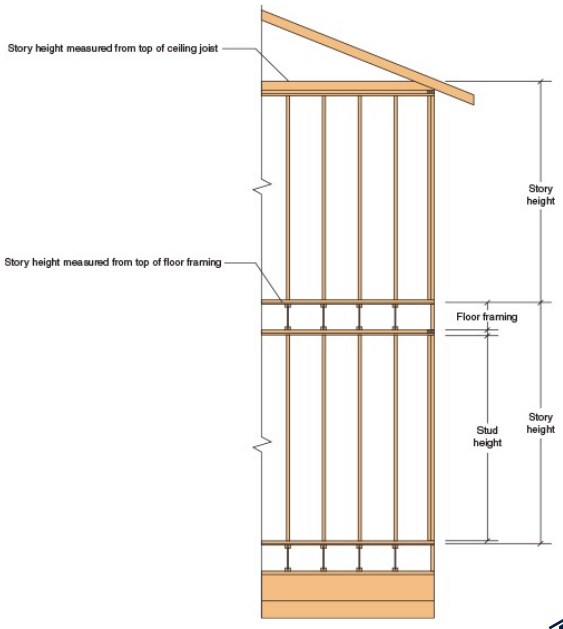
Exception: An additional 8 feet (2438 mm) of bearing wall clear height is permitted for gable end walls.

1. 4.For insulating concrete form walls, the maximum story height shall not exceed 11 feet 7 inches (3531 mm) and the maximum unsupported wall height per story as permitted by Section R608 tables shall not exceed 10 feet (3048 mm).
2. 5.For structural insulated panel (SIP) walls, the story height shall be not more than 11 feet 7 inches (3531 mm) and the bearing wall height per story as permitted by Section R610 tables shall not exceed 10 feet (3048 mm).

For walls other than wood-framed walls, ~~individual~~ walls or wall studs shall be permitted to exceed these limits as permitted by Chapter 6 ~~provisions~~, provided that the story heights of this section are not exceeded. An engineered design shall be provided for the wall or wall framing members where the limits of Chapter 6 are exceeded. Where the story height limits of this section are exceeded, the design of the building, or the noncompliant portions thereof, to resist wind and seismic loads shall be in accordance with the International Building Code.



16

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R302.2 Townhouses

Change Type: Modification

Change Summary: Common walls separating townhouses are permitted to terminate at the inside of exterior walls where the prescribed fireblocking is provided.

R302.2.1 Double walls. Each townhouse unit shall be separated from other townhouse units by two 1-hour fire-resistance-rated wall assemblies tested in accordance with ASTM E119, UL 263 or Section ~~703.3~~ 703.2.2 of the International Building Code.

R302.2.2 Common walls. Common walls separating ~~townhouses~~ townhouse units shall be assigned a fire-resistance rating in accordance with Item 1 or 2. and shall be rated for fire exposure from both sides. Common walls shall extend to and be tight against the exterior sheathing of the exterior walls, or the inside face of exterior walls without stud cavities, and the underside of the roof sheathing. The common wall shared by two ~~townhouses~~ townhouse units shall be constructed without plumbing or mechanical equipment, ducts or vents, other than water-filled fire sprinkler piping, 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 Chapters 34 through 43. Penetrations of the membrane of common walls for electrical outlet boxes shall be in accordance with Section R302.4.

1.Where an automatic sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than a 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, UL 263 or Section 703.2.2 of the International Building Code.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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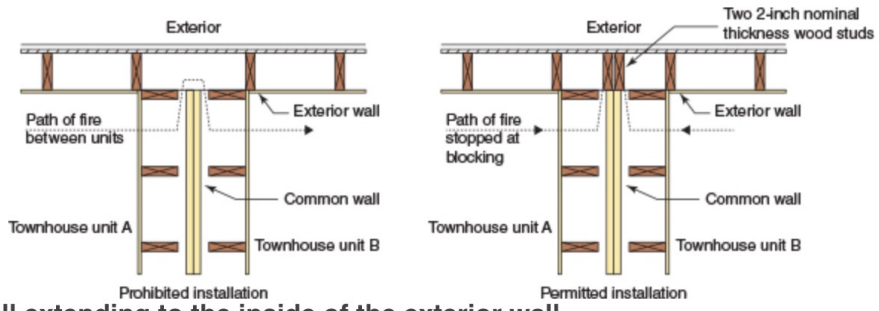
1. Where ~~a fire~~ an automatic sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than a 1-hour fire-resistance- rated wall assembly tested in accordance with ASTM E119, UL 263 or Section ~~703.3~~ 703.2.2 of the International Building Code.
2. Where ~~a fire~~ an automatic sprinkler system in accordance with Section P2904 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, UL 263 or Section ~~703.3~~ 703.2.2 of the International Building Code.

- Exception: Common walls are permitted to extend to and be tight against the inside of the exterior walls if the cavity between the end of the common wall and the exterior sheathing is filled with a minimum of two 2-inch nominal thickness wood studs.



Common wall extending to the inside of the exterior wall.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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302.3 Two-Family Dwelling Separation

CHANGE TYPE: Modification

CHANGE SUMMARY: The prescribed fire-resistance-rated separation between two dwelling units in a single building is not affected by the presence of a lot line between the units.

2021 CODE: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~~ 703.2.2 of the International Building Code. Such separation shall be provided regardless of whether a lot line exists between the two dwelling units or not. 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.

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R302.5 Dwelling-Garage Opening Protection

Change Type: Clarification / Addition to the PA UCC

Change Summary: Doors between the garage and residence must be self-latching.

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 3/8 inches (35 mm) in thickness, solid or honeycomb-core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors. Doors shall be self-latching and equipped with a self-closing or an automatic-closing device.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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303.1 Mechanical Ventilation

CHANGE TYPE: Clarification

CHANGE SUMMARY: A local exhaust system is an acceptable substitute for natural ventilation in kitchens.

2021 CODE:R303.1 Habitable rooms. Habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, skylights, doors, louvers or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The openable area to the outdoors shall be not less than 4 percent of the floor area being ventilated.

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2021 CODE:R303.1 Habitable rooms. Habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, skylights, doors, louvers or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The openable area to the outdoors shall be not less than 4 percent of the floor area being ventilated.

Exceptions:

1. ~~The~~ For habitable rooms other than kitchens, the glazed areas need not be openable where the opening is not required by Section R310 and a whole-house mechanical ventilation system or a mechanical ventilation system capable of producing 0.35 air changes per hour in the habitable rooms is installed in accordance with Section M1505.
2. For kitchens, the glazed areas need not be openable where the opening is not required by Section R310 and a local exhaust system is installed in accordance with Section M1505.
3. The glazed areas need not be installed in rooms where Exception 1 is satisfied and artificial light is provided that is capable of producing an average illumination of 6 footcandles (65 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level

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R305.1 Ceiling Height – RAC Modification

Change Type: Modification

Change Summary: The minimum ceiling height is reduced to 6 feet 6 inches under beams spaced at least 36 inches apart.

R305.1 Minimum height. Habitable space, hallways and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet (2134 mm). Bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6 feet 8 inches (2032 mm).

Exceptions:

1. For rooms with sloped ceilings, the required floor area of the room shall have a ceiling height of not less than 5 feet (1524 mm) and not less than 50 percent of the required floor area shall have a ceiling height of not less than 7 feet (2134 mm).
2. The ceiling height above bathroom and toilet room fixtures shall be such that the fixture is capable of being used for its intended purpose. A shower or tub equipped with a showerhead shall have a ceiling height of not less than 6 feet 8 inches (2032 mm) above an area of not less than 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.
3. Beams, girders, ducts or other obstructions in basements containing habitable space shall be permitted to project to within 6 feet 4 inches (1931 mm) of the finished floor.
4. Beams and girders spaced apart ~~not less than~~ a minimum 36 inches (914 mm) in clear finished width between projections and shall have a minimum clear ceiling heights of 6'6" (1981mm) from the finished floor directly under the beam. ~~Shallow project not more than 78 inches.(1981mm) from the finished floor~~.

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Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

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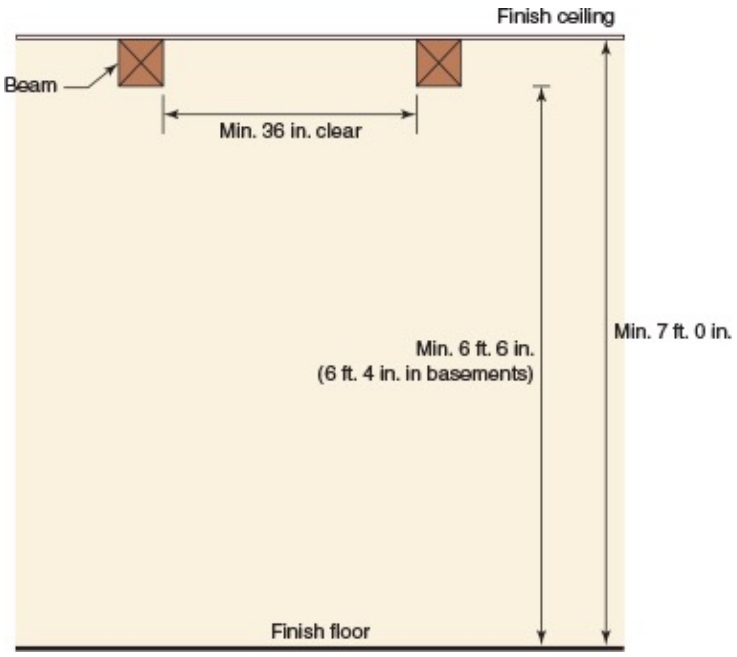

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Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

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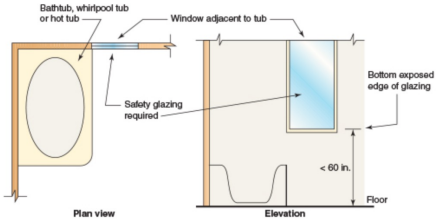
R308.4.5 Glazing in Wet Surfaces

Change Type: Clarification

Change Summary: The language addressing glazing in walls, enclosures or fences near tubs, showers and swimming pools has replaced the word "facing" with the words "adjacent to" for those elements related to wet surfaces.

R308.4.5 Glazing and wet surfaces. Glazing in walls, enclosures or fences containing or ~~facing~~ adjacent to 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.



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Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

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R310.1 Emergency Escape and Rescue Opening Required – RAC Modification

CHANGE TYPE: Clarification

CHANGE SUMMARY: Emergency escape and rescue openings require a clear 36-inch-wide path to a public way. Operation requirements have been clarified.

2021 CODE: 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 having a minimum width of 36 inches (914 mm) 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 m^2).
2. Where the dwelling unit or townhouse unit 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.
3. A yard shall not be required to open directly into a public way where the yard opens to an unobstructed path from the yard to the public way. Such path shall have a width of not less than 36 inches (914 mm).
4. *Properties with in-fill lots that are sprinklered in accordance with Section 2904 and a minimum clear yard size of 80 sq ft (7.43M) shall be allowed to have access to the public way provided by a shared easement that is a minimum of 30in (762mm) wide*.

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R310.2 Emergency Escape and Rescue Opening

Change Type: Modification

Change Summary: Emergency escape openings under decks, porches and cantilevers require a path not less than 36 inches wide. Opening dimensions have been clarified.

R310.2 Emergency escape and rescue openings. Emergency escape and rescue openings shall have minimum dimensions ~~as specified in this section~~ **in accordance with** Sections R310.2.1 **through** R310.2.4.

R310.2.1 Minimum ~~opening area~~ size. Emergency and escape rescue openings shall have a net clear opening of not less than 5.7 square feet. (0.530 m^2). ~~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).~~

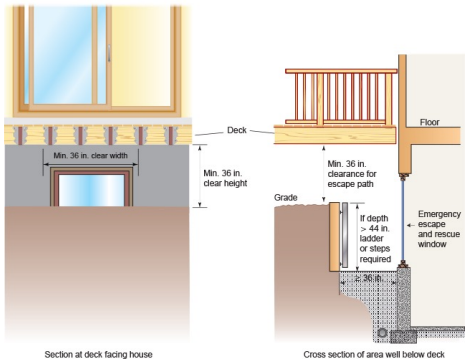
Exception: ~~Grade floor openings or below-grade openings shall have a net clear opening area of not less than~~ The minimum net clear opening for grade-floor emergency escape and rescue openings shall be 5 square feet (0.465 m^2).

Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

R310.2.2 Minimum dimensions. The minimum net clear opening height dimension shall be 24 inches (610 mm). The minimum net clear opening width dimension shall be 20 inches (508 mm). The net clear opening dimensions shall be the result of normal operation of the opening.

~~R310.2~~ R310.2.3 ~~Window sill height~~ Maximum height from floor. ~~Where a window is provided as the emergency~~ Emergency escape and rescue ~~opening,~~ openings ~~it~~ shall have ~~a sill height of not more than~~ the bottom of the clear opening not greater than 44 inches (1118 mm) above the floor.; ~~where the sill height is below grade, it shall be provided with a window well in accordance with Section R310.2.3.~~

R310.2.4 Emergency escape and rescue openings under decks ~~and~~, porches and cantilevers. Emergency escape and rescue openings installed under decks, porches and cantilevers shall be fully openable and provide a path not less than 36 inches (914 mm) in height and 36 inches (914 mm) in width to a yard or court.



Minimum width and height for emergency escape path below a deck or porch.

Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

R310.5 Replacement Windows for Emergency Escape and Rescue Openings

Change Type: Modification

Change Summary: Opening dimensions have been reduced for emergency escape and rescue openings for a basement remodel, basement addition and for a change of occupancy.

R310.5 Replacement windows for emergency escape and rescue openings. Replacement windows installed in buildings meeting the scope of this code shall be exempt from ~~the maximum sill height requirements of Sections R310.2 and the requirements of Section~~ Sections 310.2.1 and R310.4.4, provided that the replacement window meets the following conditions:

1. The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window is of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.
2. The replacement window is not part of a change of occupancy.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R310.6 Dwelling Additions

Change Type: Modification

Change Summary: Opening dimensions have been reduced for emergency escape and rescue openings for a basement remodel, basement addition and for a change of occupancy.

R310.6 Dwelling additions. Where dwelling additions contain sleeping rooms, an emergency escape and rescue opening shall be provided in each new sleeping room. Where dwelling additions have basements, an emergency escape and rescue opening shall be provided in the new basement.

Exceptions:

1. An emergency escape and rescue opening is not required in a new basement that contains a sleeping room with an emergency escape and rescue opening.
2. An emergency escape and rescue opening is not required in a new basement where there is an emergency escape and rescue opening in an existing basement that is accessed from the new basement.
3. An operable window complying with Section 310.7.1 shall be acceptable as an emergency escape and rescue opening.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R310.7 Alterations or Repairs of Existing Basements

Change Type: Modification

Change Summary: Opening dimensions have been reduced for emergency escape and rescue openings for a basement remodel, basement addition and for a change of occupancy.

R310.7 Alterations or repairs of existing basements. New sleeping rooms created in an existing basement shall be provided with emergency escape and rescue openings in accordance with Section R310.1. Other than new sleeping rooms, where existing basements undergo alterations or repairs an emergency escape and rescue opening is not required.

Exception: An operable window complying with Section 310.7.1 shall be acceptable as an emergency escape and rescue opening.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R310.7.1 Existing Emergency Escape and Rescue Openings

Change Type: Modification

Change Summary: Opening dimensions have been reduced for emergency escape and rescue openings for a basement remodel, basement addition and for a change of occupancy.

R310.7.1 Existing emergency escape and rescue openings: Where a change of occupancy would require an emergency escape and rescue opening in accordance with Section 310.1, operable windows serving as the emergency escape and rescue opening shall comply with the following:

1. An existing operable window shall provide a minimum net clear opening of 4 square feet (0.38 m2) with a minimum net clear opening height of 22 inches (559 mm) and a minimum net clear opening width of 20 inches (508 mm).
2. A replacement window where such window complies with both of the following:
   - 2.1 The replacement window meets the size requirements in Item 1.
   - 2.2 The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window shall be permitted to be of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R312.2.1 Window Opening Height

Change Type: Clarification

Change Summary: The revised language clarifies that measurements for determining the need for fall protection are taken to the bottom of the clear opening of the window.

R312.2.1 Window opening height. In dwelling units, where the bottom of the clear opening of an operable window opening is located less than 24 inches (610 mm) above the finished floor and greater than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, the operable window shall comply with one of the following:

1. Operable window openings will not allow a 4-inch-diameter (102 mm) sphere to pass through where the openings are in their largest opened position.
2. Operable windows are provided with window opening control devices or fall prevention devices that comply with ASTM F2090.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R314.3 Smoke Alarm Locations

Change Type: Modification

Change Summary: A new location requirement for smoke alarms addresses high ceilings adjacent to hallways serving bedrooms.

2021 CODE: R314.3 Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
4. ~~Smoke alarms shall be installed not~~ Not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by this section.
5. In the hallway and in the room open to the hallway in dwelling units where the ceiling height of a room open to a hallway serving bedrooms exceeds that of the hallway by 24 inches (610 mm) or more.

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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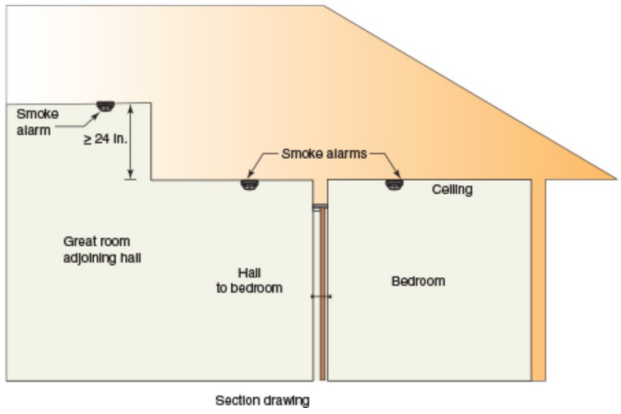
Change Type: Modification

Change Summary: A new location requirement for smoke alarms addresses high ceilings adjacent to hallways serving bedrooms.

R314.3 Location. Smoke alarms shall be installed in the following locations:

5. In the hallway and in the room open to the hallway in dwelling units where the ceiling height of a room open to a hallway serving bedrooms exceeds that of the hallway by 24 inches (610 mm) or more.



35

Smoke alarm locations.

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

35

R315.2.2 Carbon Monoxide Alarms

Change Type: Modification

Change Summary: Repairs to an existing fuel-fired mechanical system now trigger the retroactive requirements for carbon monoxide alarms.

R315.2.2 Alterations, repairs and additions. Where alterations, repairs or additions requiring a permit occur, the individual dwelling unit shall be equipped with carbon monoxide alarms located as required for new dwellings.

Exceptions:

1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck.
2. Installation, alteration or repairs of plumbing ~~or mechanical~~ systems.
3. Installation, alteration or repairs of mechanical systems that are not fuel fired.

36

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

36

R320 Accessibility

CHANGE TYPE: Modification

CHANGE SUMMARY: The accessibility provisions for live/work units and owner-occupied lodging houses constructed under the IRC are clarified.

2021 CODE: R202 DEFINITIONS

LIVE/WORK UNIT. A dwelling unit or sleeping unit in which a significant portion of the space includes a nonresidential use that is operated by the tenant.

SLEEPING UNIT. A single unit that provides rooms or spaces for one or more persons, includes permanent provisions for sleeping and can include provisions for living, eating and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.

SECTION R320
ACCESSIBILITY

R320.1 Scope. Where there are four or more dwelling units or sleeping units in a single structure, the provisions of Chapter 11 of the International Building Code for Group R-3 shall apply.

Exception: Owner-occupied lodging houses with five or fewer guestrooms are not required to be accessible.

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~~**R320.1.1 Guestrooms.** A dwelling with guestrooms shall comply with the provisions of Chapter 11 of the International Building Code for Group R-3. For the purpose of applying the requirements of Chapter 11 of the *International Building Code*, guestrooms shall be considered to be sleeping units.~~

~~**Exception:** Owner-occupied lodging houses with five or fewer guestrooms constructed in accordance with the International Residential Code are not required to be accessible.~~

R320.2 Live/work units. In live/work units, the nonresidential portion shall be accessible in accordance with Sections 508.5.9 and 508.5.11 of the *International Building Code*. In a structure where there are four or more live/work units, the dwelling portion of the live/work unit shall comply with Section 1108.6.2.1 of the *International Building Code*.

38

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R323 Storm Shelters

Change Type: Addition

Change Summary: Added guidance on the design of storm shelters is placed in Section R323.

R202 DEFINITIONS: STORM SHELTER. A building, structure or portion thereof, constructed in accordance with ICC 500 and designated for use during a severe windstorm event, such as a hurricane or tornado.

R323.1 General. This section applies to storm shelters where constructed as separate detached buildings or where constructed as safe rooms within buildings for the purpose of providing refuge from storms that produce high winds, such as tornados and hurricanes. In addition to other applicable requirements in this code, storm shelters shall be constructed in accordance with ICC-500.

R323.1.1 Sealed documentation. The construction documents for all structural components and impact protective systems of the storm shelter shall be prepared and sealed by a registered design professional indicating that the design meets the criteria of ICC-500.

- Exception: Storm shelters, structural components and impact-protective systems that are listed and labeled to indicate compliance with ICC-500.

39

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

39

R403.1(1) Footings Below Light-Frame Construction

CHANGE TYPE: Modification

CHANGE SUMMARY: Tables R403.1(1), (2) and (3) are revised to more accurately reflect current practice.

40

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Ground Snow Load or Roof Live Load	Story and Type of Structure with Light Frame	Load Bearing Value of Soil (psf)					
		1500	2000	2500	3000	3500	4000
20 psf Roof Live Load or 25 psf Ground Snow Load	1 story - slab on grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - with crawl space	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story - plus basement	16 × 6 ~~18 × 6~~	12 × 6 ~~14 × 6~~	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - slab on grade	13 × 6 ~~12 × 6~~	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - with crawl space	15 × 6 ~~16 × 6~~	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story - plus basement	19 × 6 ~~22 × 6~~	14 × 6 ~~16 × 6~~	12 × 6 ~~13 × 6~~	12 × 6	12 × 6	12 × 6
	3 story - slab on grade	16 × 6 ~~14 × 6~~	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	3 story - with crawl space	18 × 6	14 ×	12 ×	12 ×	12 ×	12 ×

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R406.2 Foundation Waterproofing

CHANGE TYPE: Deletion

CHANGE SUMMARY: Six-mil polyvinyl chloride and polyethylene fabrics are removed from the list of approved waterproofing materials.

2021 CODE:R406.2 Concrete and masonry foundation waterproofing.

In areas where a high-water table or other severe soil-water conditions are known to exist, exterior foundation walls that retain earth and enclose interior spaces and floors below grade shall be waterproofed from the higher of (a) the top of the footing or (b) 6 inches (152 mm) below the top of the basement floor, to the finished grade. Walls shall be waterproofed in accordance with one of the following:

1. **Two-ply hot-mopped felts.**
2. **Fifty-five-pound (25 kg) roll roofing.**
3. ~~**Six-mil (0.15 mm) polyvinyl chloride.**~~
4. ~~**Six-mil (0.15 mm) polyethylene.**~~
5. **Forty-mil (1 mm) polymer-modified asphalt.**
6. **Sixty-mil (1.5 mm) flexible polymer cement.**

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R506.2.3 Vapor Retarders Under Concrete Slabs RAC Modification

Change Type: Modification

Change Summary: Thicker vapor retarders are now required below slabs-on-grade.

R506.2.3 Vapor retarder. A minimum ~~10 mil~~ 6mil polyethylene or approved vapor retarder with joint lapped not less than 6 inches shall be place between the concrete floor slab and the base course of the prepared subgrade were a base course does not

Exception: The vapor retarder is not required for the following:

1. Garages, utility buildings and other unheated accessory structures.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m) and carports.
3. Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
4. Where approved by the building official, based on local site conditions.

43

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

43

R507 Deck Loads

Change Type: Modification

Change Summary: Deck design is now based on live and snow loads.

R507.1 Decks. Wood-framed decks shall be in accordance with this section. Decks shall be designed for the live load required in Section R301.5 or the ground snow load indicated in Table R301.2, whichever is greater. For decks using materials and conditions not prescribed in this section, refer to Section R301.

44

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

44

R507.3 Deck Footings

Change Type: Modification

Change Summary: Clarifications are made for freestanding deck footing exceptions and a tributary area of 5 psf is added to the deck footing size table.

R507.3 Footings. Decks shall be supported on concrete footings or other approved structural systems designed to accommodate all loads in accordance with Section R301. Deck footings shall be sized to carry the imposed loads from the deck structure to the ground as shown in Figure R507.3. ~~**The footing depth shall be in accordance with Section R403.1.4.**~~

Exceptions:

1. Footings shall not be required for free-standing decks consisting of joists directly supported on grade over their entire length.
2. Footings shall not be required for freestanding decks that meet all of the following criteria:
   2.1. The joists bear directly on precast concrete pier blocks at grade without support by beams or posts,
   2.2. The area of the deck does not exceed 200 square feet (18.6 m2),
   2.3. The walking surface is not more than 20 inches (508 mm) above grade at any point within 36 inches (914 mm) measured horizontally from the edge.

45

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

45

R507.4 Deck Posts

Change Type: Modification

Change Summary: The deck post height table is expanded by adding the tributary area supported by a post and the wood species for determination of maximum post height.

R507.4 Deck posts. For single-level wood-framed decks ~~with beams sized in accordance with table R507.5 deck~~ wood post size shall be in accordance with Table R507.4.

TABLE R507.4 Deck Post Height

			Tributary Area[g,h] (sq/ft.)							
			20	40	60	80	100	120	140	160
Loads[b] (psf)	Post Species[c]	Post Size[d]	Maximum Deck Post Height[a] (feet-inches)							
40 Live Load	Southern Pine	4 × 4	14-0	13-8	11-0	9-5	8-4	7-5	6-9	6-2
		4 × 6	14-0	14-0	13-11	12-0	10-8	9-8	8-10	8-2
		6 × 6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		8 × 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0

46

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

46

R507.5 Deck Beams

Change Type: Modification

Change Summary: The deck beam span table is split into multiple tables providing spans for given deck live or snow loads. Single and multi-ply spans as well as options for support of cantilevered deck joists are listed.

R507.5 Deck Beams. Maximum allowable spans for wood deck beams, as shown in Figure R507.5, shall be in accordance with Table ~~R507.5~~Tables R507.5(1) through R507(4). Beam plies shall be fastened together with two rows of 10d (3-inch 3 0.128-inch) nails minimum at 16 inches (406 mm) on center along each edge. Beams shall be permitted to cantilever at each end up to one-fourth of the ~~allowable~~ actual beam span. Deck beams of other materials shall be permitted where designed in accordance with accepted engineering practices.

47

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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TABLE R507.5(2) Maximum Deck Beam Span - 50 PSF Ground Snow Load[c]

		Effective Deck Joist Span Length[a,i,j] (feet)						
		6	8	10	12	14	16	18
Beam Species[d]	Beam Size[e]	Maximum Beam Span[a,b,f] (feet-inches)						
Southern Pine	1-2 × 6	4-6	3-11	3-6	3-2	2-11	2-9	2-7
	1-2 × 8	5-9	4-11	4-5	4-0	3-9	3-6	3-3
	1-2 × 10	6-9	5-10	5-3	4-9	4-5	4-2	3-11
	1-2 × 12	8-0	6-11	6-2	5-8	5-3	4-11	4-7
	2-2 × 6	6-8	5-9	5-2	4-9	4-4	4-1	3-10
	2-2 × 8	8-6	7-4	6-7	6-0	5-7	5-2	4-11
	2-2 × 10	10-1	8-9	7-10	7-1	6-7	6-2	5-10
	2-2 × 12	11-11	10-3	9-2	8-5	7-9	7-3	6-10
	3-2 × 6	7-11	7-2	6-6	5-11	5-6	5-1	4-10
	3-2 × 8	10-5	9-3	8-3	7-6	6-11	6-6	6-2
	3-2 × 10	12-8	10-11	9-9	8-11	8-3	7-9	[illegible]
	3-2 × 12	14-11	12-11	11-6	10-6	9-9	9-1	[illegible]

For SI:1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation allowed. Extrapolation is not allowed.
b. Beams supporting a single span of joists with or without cantilever.
c. Dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever. Snow load not assumed to be concurrent with live load.
d. No. 2 grade, wet service factor included.
e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.
f. Beam cantilevers are limited to the adjacent beam's span divided by 4.
g. Includes incising factor.
h. Incising factor not included.
i. Deck joist span as shown in Figure R507.5
j. For calculation of effective deck joist span, the actual joist span length shall be multiplied by the joist span factor in accordance with R507.5(5).

48

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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TABLE R507.5(2) Maximum Deck Beam Span - 50 PSF Ground Snow Load[c]

		Effective Deck Joist Span Length[a,i,j] (feet)						
		6	8	10	12	14	16	18
Beam Species[d]	Beam Size[e]	Maximum Beam Span[a,b,f] (feet-inches)						
Southern Pine	1-2 × 6	4-6	3-11	3-6	3-2	2-11	2-9	2-7
	1-2 × 8	5-9	4-11	4-5	4-0	3-9	3-6	3-3
	1-2 × 10	6-9	5-10	5-3	4-9	4-5	4-2	3-11
	1-2 × 12	8-0	6-11	6-2	5-8	5-3	4-11	4-7
	2-2 × 6	6-8	5-9	5-2	4-9	4-4	4-1	3-10
	2-2 × 8	8-6	7-4	6-7	6-0	5-7	5-2	4-11
	2-2 × 10	10-1	8-9	7-10	7-1	6-7	6-2	5-10
	2-2 × 12	11-11	10-3	9-2	8-5	7-9	7-3	6-10
	3-2 × 6	7-11	7-2	6-6	5-11	5-6	5-1	4-10
	3-2 × 8	10-5	9-3	8-3	7-6	6-11	6-6	6-2
	3-2 × 10	12-8	10-11	9-9	8-11	8-3	7-9	[illegible]
	3-2 × 12	14-11	12-11	11-6	10-6	9-9	9-1	[illegible]

TABLE R507.5(5)
Joist Span Factors for Calculating Effective Deck Joist Span [for use with footnote j in Tables R507.5(1), R507.5(2), R507.5(3) and R507.5(4)]

C/J[a]	Joist Span Factor	0 (no cantilever)	0.66
1/12 (0.87)	0.72		
1/10 (0.10)	0.80		
1/8 (0.125)	0.84		
1/6 (0.167)	0.90		
1/4 (0.250)	1.00		

a. C = actual joist cantilever length (feet) J = actual joist span length (feet)
(Deleted table text not shown for clarity; to see Tables R507.5(1), (3) or (4) refer to the 2021 IRC.)

49

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

49

Example 1:

A deck with a ground snow load of 50 psf is designed using two plies of Southern Pine 2 × 10.

Joist span is 12 feet and there is no cantilever.

- C – cantilever, J – joist
- C = 0 feet
- J = 12 feet
- Without footnote j, Table R507.5(2) limits the beam to a maximum span of 7'-1".

Applying the adjustment factor from footnote j and Table R507.5(5):

- C / J = 0 and the joist span factor is 0.66.
- An effective joist span can be calculated as 0.66 × 12' = 8".
- The maximum beam span is 8'-9" per Table R507.5(2) because there is no cantilever.

Note: The beam span is not reduced by 0.66, rather the joist span is reduced by 0.66 to determine an effective joist span.

50

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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Example 2:

A deck with a ground snow load of 50 psf is designed using two plies of Southern Pine 2 × 10.

Joist span is 12 feet and there is a 12-inch cantilever.

- C – cantilever, J – joist
- C = 1 feet
- J = 12 feet
- Without footnote j, Table R507.5(2) limits the beam to a maximum span of 7'-1".

Applying the adjustment factor from footnote j and Table R507.5(5):

- $$C/J = 1/12$$

therefore the joist span factor is 0.72.

- An effective joist span can be calculated as 0.72 × 12' = 8'-8" .
- A maximum beam span can be determined from Table R507.5(2) for a 10' effective joist span = 7'-10".
- Or by interpolating per footnote a, a beam span of 8'-5" is achieved as follows:

51

Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

R507.6 Deck Joists

Change Type: Modification

CHANGE SUMMARY: Deck joist options are added for decks with large ground snow loads. Cantilever spans are now specifically based on maximum joist spans.

R507.6 Deck joists. Maximum allowable spans for wood deck joists, as shown in Figure R507.6, shall be in accordance with Table R507.6. The maximum joist spacing shall be limited by the decking materials in accordance with Table R507.7.

LOAD[a] (psf)	JOIST SPECIES[b]	JOIST SIZE	ALLOWABLE JOIST SPAN [b, c] (feet-inches)			MAXIMUM CANTILEVER[d,f] (feet-inches)							
			Joist spacing (inches)			Joist back span[g] (feet)							
			12	16	24	4	6	8	10	12	14	16	18
40 live load	Southern pine	2 × 6	9-11	9-0	7-7	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	13-1	11-10	9-8	1-0	1-6	2-0	2-6	2-3	NP	NP	NP
		2 × 10	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-4	3-4	NP
		2 × 12	18-0	16-6	13-6	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-1

52

Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

R507.7 Decking

Change Type: Modification

Change Summary: The wood decking table is updated to show maximum on-center joist spacing for single- and multi-span configurations.

R507.7 Decking. Maximum allowable spacing for joists supporting wood decking, excluding stairways, shall be in accordance with Table R507.7. Wood decking shall be attached to each supporting member with not less than two 8d threaded nails or two No. 8 wood screws. Maximum allowable spacing for joists supporting plastic composite decking shall be in accordance with Section R507.2. Other approved decking or fastener systems shall be installed in accordance with the manufacturer's installation requirements.

TABLE R507.7 MAXIMUM JOIST SPACING FOR WOOD DECKING

DECKING MATERIAL TYPE AND NOMINAL SIZE	DECKING PERPENDICULAR TO JOIST		DECKING DIAGONAL TO JOIST[a]	
	Single span[c]	Multiple span[c]	Single span[c]	Multiple span[c]
	Maximum on-center joist spacing (inches)			
$1^1/_4$-inch-thick wood[b]	12	16	8	12
2-inch-thick wood	24	24	18	24

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.

a. Maximum angle of 45 degrees from perpendicular for wood deck boards.

b. Other maximum span provided by an accredited lumber grading or inspection agency also allowed.

c. Individual wood deck boards supported by two joists shall be considered single span and three or more joists shall be considered multiple span.

53

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

53

R507.10 Exterior Guards

Change Type: Addition

Change Summary: Specific requirements for deck guards are added.

R507.10 Exterior guards. Guards shall be constructed to meet the requirements of Sections R301.5 and R312 and this section.

R507.10.1 Support of guards. Where guards are supported on deck framing, guard loads shall be transferred to the deck framing with a continuous load path to the deck joists.

R507.10.1.1 Guards supported by side of deck framing. Where guards are connected to the interior or exterior side of a deck joist or beam, the joist or beam shall be connected to the adjacent joists to prevent rotation of the joist or beam. Connections relying only on fasteners in end grain withdrawal are not permitted.

R507.10.1.2 Guards supported on top of deck framing. Where guards are mounted on top of the decking, the guards shall be connected to the deck framing or blocking and installed in accordance with manufacturer's instructions to transfer the guard loads to the adjacent joists.

R507.10.2 Wood posts at deck guards. Where 4-inch by 4-inch (102 mm by 102 mm) wood posts support guard loads applied to the top of the guard, such posts shall not be notched at the connection to the supporting structure.

R507.10.3 Plastic composite guards. Plastic composite guards shall comply with the provisions of Section R507.2.2.

R507.10.4 Other guards. Other guards shall be in accordance with manufacturer's instructions or in accordance with accepted engineering principles.

54

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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R609.4.1 Garage Doors

Change Type: Addition

Change Summary: All garage doors must have a permanent label identifying wind pressure ratings among other information.

R609.4.1 Garage door labeling. Garage doors shall be labeled with a permanent label provided by the garage door manufacturer. The label shall identify the garage door manufacturer, the garage door model/series number, the positive and negative design wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.

55

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

55

R702.7 Vapor Retarders

Change Type: Modification

Change Summary: The vapor retarder section is reorganized for clarity and ease of use.

2021 CODE: R702.7 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table R702.7(1). A vapor retarder shall be provided on the interior side of frame walls of the class indicated in Table R702.7(2), including compliance with Table R702.7(3) or Table R702.7(4) where applicable. An approved design using accepted engineering practice for hygrothermal analysis shall be permitted as an alternative. The climate zone shall be determined in accordance with Section N1101.7.

Exceptions:

1. Basement walls.

2. Below-grade portion of any wall.

3. Construction where accumulation, condensation, or freezing of moisture will not damage the materials.

4.A vapor retarder shall not be required in Climate Zones 1, 2, and 3.

56

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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TABLE R702.7(1) VAPOR RETARDER MATERIALS AND CLASSES

CLASS	ACCEPTABLE MATERIALS
I	Sheet polyethylene, nonperforated aluminum foil or other approved materials with a perm rating less than or equal to 0.1.
II	Kraft-faced fiberglass batts, vapor retarder paint or other approved materials applied in accordance with the manufacturer's installation instructions for a perm rating greater than 0.1 and less than or equal to 1.0.
III	Latex paint, enamel paint or other approved materials applied in accordance with the manufacturer's installation instructions for a perm rating greater than 1.0 and less than or equal to 10.0.

TABLE R702.7(2) VAPOR RETARDER OPTIONS

CLIMATE ZONE	VAPOR RETARDER CLASS		
	CLASS I[a]	CLASS II[a]	CLASS III
1, 2	Not Permitted	Not Permitted	Permitted
3, 4 (except Marine 4)	Not Permitted	Permitted[c]	Permitted
Marine 4, 5, 6, 7, 8	Permitted[b]	Permitted[c]	See Table R702.7(3)

a. Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.
b. Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.
c. Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table R702.7(4) and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B).

57

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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TABLE R702.7(3) CLASS III VAPOR RETARDERS

CLIMATE ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[a, b]
Marine 4	Vented cladding over wood structural panels.
	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Continuous insulation with *R*-value ≥ 2.5 over 2 × 4 wall.
	Continuous insulation with *R*-value ≥ 3.75 over 2 × 6 wall.
5	Vented cladding over wood structural panels.
	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Continuous insulation with *R*-value ≥ 5 over 2 × 4 wall.
	Continuous insulation with *R*-value ≥ 7.5 over 2 × 6 wall.

TABLE R702.7(4) CONTINUOUS INSULATION WITH CLASS II VAPOR RETARDER

CLIMATE ZONE	CLASS II VAPOR RETARDERS PERMITTED FOR:[a]
3	Continuous insulation with *R*-value ≥ 2.
4, 5 and 6	Continuous insulation with *R*-value ≥ 3 over 2 × 4 wall. Continuous insulation with *R*-value ≥ 5 over 2 × 6 wall.

58

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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For purposes of compliance with Tables R702.7(3) and R702.7(4), spray foam with a maximum permeance of 1.5 “Classs III” perms at the installed thickness applied to the interior side of wood structural panels, fiberboard, insulating sheathing or gypsum shall be deemed to meet the continuous insulation moisture control requirement in accordance with one of the following conditions:

1.The spray foam R-value is equal to or greater than the specified continuous insulation R-value.

2.The combined R-value of the spray foam and continuous insulation is equal to or greater than the specified continuous insulation R-value.

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R703.2 Water-Resistive Barriers RAC Modification

Change Type: Modification

Change Summary: RAC modification; language similar to the 2024 IRC.

R703.2 Water-resistive barrier. Not fewer than one layer of water-resistive barrier shall be applied over studs or sheathing of all exterior walls with flashing as indicated in Section R703.4, in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer. The water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1. Where the water-resistive barrier also functions as a component of a continuous air barrier, the water-resistive barrier shall be installed as an air barrier in accordance with Section N1102.5.1.1.

Water-resistive barrier materials shall comply with one of the following:

1. No. 15 felt complying with ASTM D226, Type 1.
2. ASTM E2556, Type 1 or 2.
3. Foam plastic insulating sheathing water resistant barrier systems complying with section R70 3.1.1 and installed in accordance with the manufacturers installation instructions
4. ASTM E331 in accordance with Section R703.1.1.
5. Other approved materials in accordance with the manufacturer’s installation instructions.

60

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

60

No.15 asphalt felt and water-resistive barriers complying with ASTM E2556 shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and where joints occur, shall be lapped not less than 6 inches (152 mm).

Exception: A water-resistive barrier shall not be required in unconditioned detached tool sheds, playhouses, and other similar accessory structures provided all of the following requirements are met:

1. Exterior wall covering is limited to siding that is attached directly to the studs.
2. Exterior walls are uninsulated.
3. Interior side of exterior walls has no wall covering or wall finishes.

61

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R704 Soffits – RAC Modification

CHANGE TYPE: Addition

CHANGE SUMMARY: Requirements for soffit material and installation are expanded.

2021 CODE: R703.3.1 Soffit installation. Soffits shall comply with Section R704.~~R703.3.1.1, Section R703.3.1.2 or the manufacturer's installation instructions.~~

SECTION R704 SOFFITS

R704.1 General wind limitations. Where the design wind pressure is 30 pounds per square foot (1.44 kPa) or less, exterior soffits shall comply with Section R704.2. Where the design wind pressure exceeds 30 pounds per square foot (1.44 kPa), exterior soffits shall comply with Section R704.3. The design wind pressure on exterior soffits shall be determined using the component and cladding loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet (0.93 m2) and adjusted for height and exposure in accordance with Table R301.2.1(2).

62

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

62

R704.2 Exterior soffit installation where the design wind pressure is 30 psf or less. Where the design wind pressure is 30 pounds per square foot (1.44 kPa) or less, exterior soffit installation shall comply with Section R704.2.1, R704.2.2, R704.2.3 or R704.2.4. Soffit materials not addressed in Sections R704.2.1 through R704.2.4 shall be in accordance with the manufacturer's installation instructions.

R704.2.1 Vinyl and aluminum exterior soffit panels. Vinyl and aluminum ~~exterior~~ soffit panels shall be installed using aluminum, galvanized, stainless steel or rust-preventative coated nails or staples or other approved corrosion-resistant fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or subfascia component in accordance with Figure R704.2.1(1). Where the unsupported span of exterior soffit panels is greater than 16 inches (406 mm), intermediate nailing strips shall be provided in accordance with Figure R704.2.1(2). Vinyl and aluminum exterior soffit panels shall be installed in accordance with the manufacturer's installation instructions. Fascia covers shall be installed in accordance with the manufacturer's installation instructions.

63

Source: International Code Council (ICC). (2024). *2024 International Residential Code*, Country Club Hill, Ill.

63

RAC modification; language similar to the 2021 IRC

Figure R704.2.1(1)

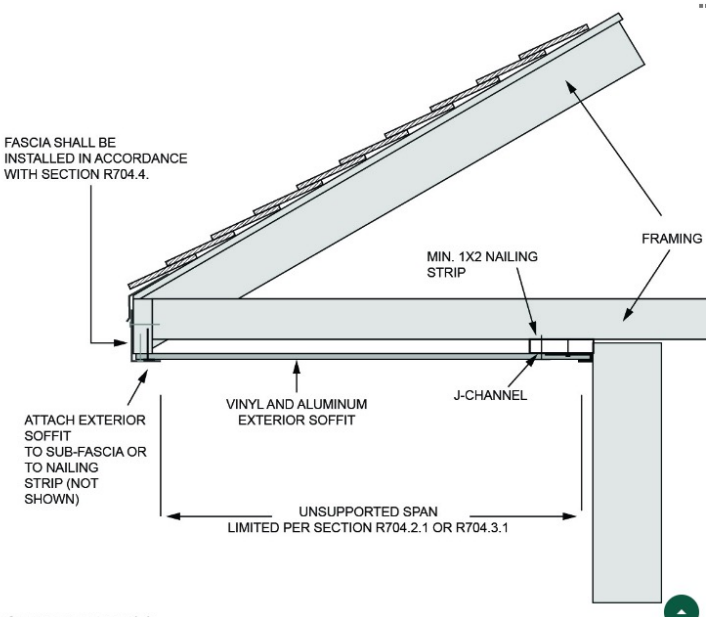

FIGURE R704.2.1(1)
TYPICAL SINGLE-SPAN VINYL AND ALUMINUM EXTERIOR SOFFIT PANEL SUPPORT

64

Source: International Code Council (ICC). (2024). *2024 International Residential Code*, Country Club Hill, Ill.

64

R802 Wood Roof Framing – RAC Modification

Change Type: Modification

Change Summary: Revised provisions clarify ridge beam and ceiling joist requirements.

R802.3 Ridge. A ridge board used to connect opposing rafters shall be not less than 1 inch (25 mm) nominal thickness and not less in depth than the cut end of the rafter. Where ceiling joist or rafter ties do not provide continuous ties across the structure as required by Section R802.5.2, the ridge shall be supported by a wall or ridge beam designed in accordance with accepted engineering practice ~~shall be provided~~ provided and supported on each end by a wall or column or girder.

R802.5 Ceiling joists. Ceiling joists shall be continuous across the structure or securely joined where they meet over interior partitions in accordance with Section R802.5.2.1. Ceiling joists shall be fastened to the top plate in accordance with Table R602.3(1).

R802.5.2 Ceiling joist and rafter connections. Where ceiling joists run parallel to rafters, and are located ~~they shall be connected to rafters at the top wall plate in accordance with table R80 2.5.2. Where the ceiling joys are not connected to the rafters at the top of the wall plate, they shall be installe~~ in the bottom third of the rafter height, they shall be installed in accordance with Figure R802.4.5 and fastened to rafters in accordance with Table R802.5.2(1). Where the ceiling joists are installed above the bottom third of the rafter height, the ridge shall be designed as a beam i~~n accordance with R802.3. Where ceiling joists do not run parallel to rafters, the ceiling Joyce shall be connected to top plates in accordance with table R602.3(1). Each~~ rafters shall be tied across the structure with a rafter tie in accordance with R802.5.2.2, or the ridge shall be designed as a beam in accordance with R802.3. ~~or a 2" x 4" kicker connected to the ceiling diagram with nails equivalent in capacity to table R80 2.5.2~~

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Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

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R802.5.2.1 Ceiling joists lapped. End of ceiling joist shall be lapped, not less than 3 inches or butted over bearing partitions or beams and toenail to the bearing member. We're sealing Joists are used to provide the continuous tie across the building ~~resistance to rafter thrust~~, lapped joists shall be nailed together in accordance with table R802.5.2(1) and butted joists shall be tied together with a connection of equivalent capacity ~~in a manner to resist such thrust~~. Laps and Joists that do not ~~resist thrust~~ provide the continuous tie across the building shall be permitted to be nailed in accordance with table or 602.3. ~~Wood structural panel roof sheathing, in accordance with table R50 3.2.1.1, shall not cancel more than 9 inches beyond the gable and wall, unless supported by gable overhead framing~~

R802.5.2.2 Rafter ties. Wood rafter ties shall be not less than 2 inches by 4 inches (51 mm × 102 mm) installed in accordance with Table R802.5.2(1)~~at each rafter~~ a maximum of 24 inches (610 mm) on center. Other approved rafter tie methods shall be permitted.

R802.5.2.3 Blocking. Blocking shall be not less than utility grade lumber.

66

Source: International Code Council (ICC). (2021). *2021 Significant Changes to the International Residential Code*, Country Club Hill, Ill.

66

R802.6 Rafter and Ceiling Joist Bearing

CHANGE TYPE: Modification

CHANGE SUMMARY: Text is added to clarify when a ridge board connection is sufficient for bearing.

2021 CODE: R802.6 Bearing. The ends of each rafter or ceiling joist shall have not less than 1½ inches (38 mm) of bearing on wood or metal and not less than 3 inches (76 mm) on masonry or concrete. The bearing on masonry or concrete shall be direct, or a sill plate of 2-inch (51 mm) minimum nominal thickness shall be provided under the rafter or ceiling joist. The sill plate shall provide a minimum nominal bearing area of 48 square inches (30 865 mm^2). Where the roof pitch is greater than or equal to 3 units vertical in 12 units horizontal (25-percent slope), and ceiling joists or rafter ties are connected to rafters to provide a continuous tension tie in accordance with Section R802.5.2, vertical bearing of the top of the rafter against the ridge board shall satisfy this bearing requirement.

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Energy, Mechanical, Electrical Plumbing Significant Changes

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R1102.4.6 – (R402.4.6)Electrical and communication outlet boxes (air-sealed boxes)

CHANGE TYPE: Addition

CHANGE SUMMARY: Electrical and communication outlet boxes installed in the building thermal envelope must be sealed, tested and marked for compliance with the referenced standards.

2021 CODE:N1102.4.6 (R402.4.6) Electrical and communication outlet boxes (air-sealed boxes). Electrical and communication outlet boxes installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. Electrical and communication outlet boxes shall be tested in accordance with NEMA OS 4, Requirements for Air-Sealed Boxes for Electrical and Communication Applications, and shall have an air leakage rate of not greater than 2.0 cubic feet per minute (0.944 L/s) at a pressure differential of 1.57 psf (75 Pa). Electrical and communication outlet boxes shall be marked "NEMA OS 4" or "OS 4" in accordance with NEMA OS 4. Electrical and communication outlet boxes shall be installed per the manufacturer's instructions and with any supplied components required to achieve compliance with NEMA OS 4.

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N1104.1 Lighting - Not Adopted per RAC Report

- **Change Type:** Addition
- **Change Summary:** High-efficacy lighting is now required in all permanent lighting fixtures. New provisions regulate lighting controls for interior and exterior lighting2021 Code: N1104.1 (R404.1) Lighting equipment.
- N1104.1 (R404.1) Lighting equipment. All permanently installed lighting fixtures, excluding kitchen appliance lighting fixtures, shall contain only high-efficacy lighting sources.
- **PA Amendment:**
  - Exclude 2021 IRC Section N1104.1
  - Adopt 2018 IRC Section N1104.1
- **2018 IRC N1104.1 Lighting equipment (Mandatory). Not less than 90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.**

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Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code, Country Club Hill, Ill.

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N1106 and N1106.2 Energy Rating Index

CHANGE TYPE: Modification

CHANGE SUMMARY: New Table N1106.2 lists the requirements associated with the Energy Rating Index (ERI) compliance path. ERI values have been lowered to improve energy efficiency.

SECTION N1106 (R406)
ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

N1106.1 (R406.1) Scope. This section establishes criteria for compliance using an Energy Rating Index (ERI) analysis.

N1106.2 (R406.2) ~~b~~

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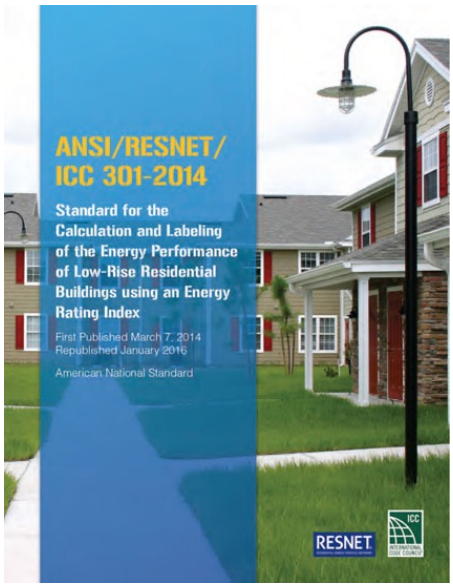
N1106.2(R406.2) ERI Compliance. Compliance based on the Energy Rating Index (ERI) requires that the rated design meets all of the following:

1. The requirements of the sections indicated within Table N1106.2
2. Maximum energy rating index of Table N1106.5



The Energy Rating Index is determined in accordance with RESNET/ICC 301.

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N1101.13.5 Additional Energy Efficiency - Not Adopted per RAC Report

- This section was not adopted during the RAC process.
  - RAC Report: Section N1101.13.5 (R401.2.5) Additional energy efficiency, was not adopted as part of the current Pennsylvania adoption of the 2021 IRC/IECC
  - Along with all references

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N1108.1 Scope - RAC Modification

- Section N1108.1 - **Scope.** This section establishes additional efficiency package options to achieve additional energy efficiency. ~~in accordance with Section N1101.13.5.~~
  - This modified language removes the compliance reference to N1101.13.5.

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N1108.2 Additional Efficiency Package Options - RAC Modification

- Section N1108.2 - Additional efficiency package options, is adopted as follows:
  - N1108.2 (R408.2) Additional efficiency package options: Additional efficiency package options ~~for compliance with Section N1101.13.5~~ are set forth in Sections N1108.2.1 (R408.2.1) through N1108.2.5 (R408.2.5).
  - This modified language leaves the provisions in the code but are no longer mandatory. They can now be a guide for increased energy efficiency.

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Mechanical

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M1505 Balanced Ventilation System Credit

CHANGE TYPE: Modification

CHANGE SUMMARY: The code now allows a 30 percent reduction to the mechanical ventilation airflow rate for balanced ventilation systems.

2021 CODE:R202 Definitions.

BALANCED VENTILATION SYSTEM. A ventilation system where the total supply airflow and total exhaust airflow are simultaneously within 10 percent of their average. The balanced ventilation system airflow is the average of the supply and exhaust airflows.

M1505.1 General. Where local exhaust or whole-house mechanical ventilation is provided, the equipment ventilation system shall be designed in accordance with this section.

M1505.3 Exhaust equipment. Exhaust ~~equipment serving single-dwelling units~~ fans and whole-house mechanical ventilation fans shall be listed and labeled as providing the minimum required airflow in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.

M1505.4.2 System controls. The whole-house mechanical ventilation system shall be provided with controls that enable manual override. Controls shall include text or a symbol indicating their function.

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M1505.4.2 System controls. The whole-house mechanical ventilation system shall be provided with controls that enable manual override. Controls shall include text or a symbol indicating their function

M1505.4.3 Mechanical ventilation rate. The whole house mechanical ventilation system shall provide outdoor air at a continuous ~~rate~~ not less than that determined in accordance with Table M1505.4.3(1) or not less than that determined by Equation 15-1.

[Equation 15-1]

Ventilation rate in cubic feet per minute = (0.01 x total square foot area of house) + [7.5 x (number of bedrooms + 1)]).

78

Source: International Code Council (ICC). (2021). 2021 Significant Changes to the International Residential Code. Country Club Hill, Ill.

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Exceptions:
1.Ventilation rate credit. The minimum mechanical ventilation rate determined in accordance with Table M1505.4.3(1) or Equation 15-1 shall be reduced by 30%, provided that both of the following conditions apply:
- 1.1. A ducted system supplies ventilation air directly to each bedroom and to one or more of the following rooms:
  - 1.1.1. Living room
  - 1.1.2. Dining room
  - 1.1.3. Kitchen
- 1.2. The whole-house ventilation system is a balanced ventilation system.

2.Programmed intermittent operation. The whole-house mechanical ventilation system is permitted to operate intermittently where the system has controls that enable operation for not less than 25 percent of each 4-hour segment and the ventilation rate prescribed in Table M1505.4.3(1), by Equation 15-1, or by Exception 1 is multiplied by the factor determined in accordance with Table M1505.4.3(2)

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M1802.4 Blocked Vent Switch for Oil-fired Appliances

CHANGE TYPE: Addition

CHANGE SUMMARY: An additional safety device for oil-fired appliances has been added to be consistent with what is required for some gas-fired appliances.

2021 CODE:M1802.4 Blocked vent switch. Oil-fired appliances shall be equipped with a device that will stop burner operation in the event that the venting system is obstructed. Such device shall have a manual reset and shall be installed in accordance with the manufacturer's instructions.

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Fuel Gas

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G2403 Definitions of Point of Delivery and Service Meter Assembly

CHANGE TYPE: Modification

CHANGE SUMMARY: Revisions to definitions clarify the portions of the gas piping system regulated by the serving utility and the portions regulated by the IRC fuel gas provisions downstream of the point of delivery.

Section G2403 (202)
General Definitions

Point of Delivery. For natural gas systems, the point of delivery is the outlet of the service meter assembly or the outlet of the service regulator or service shutoff valve where a meter is not provided. Where a system shutoff valve is provided at after the outlet of the service meter assembly, such valve shall be considered to be downstream of the point of delivery. For undiluted liquefied petroleum gas systems, the point of delivery shall be considered to be the outlet of the service pressure regulator, exclusive of line gas regulators, in the system.

Service Meter Assembly. The meter, valve, regulator, piping, fittings and equipment installed by the service gas supplier before the point of delivery.

System Shutoff. A valve installed after the point of delivery to shut off the entire piping system.

Valve. A device used in piping to control the gas supply to any section of a system of piping or to an appliance.

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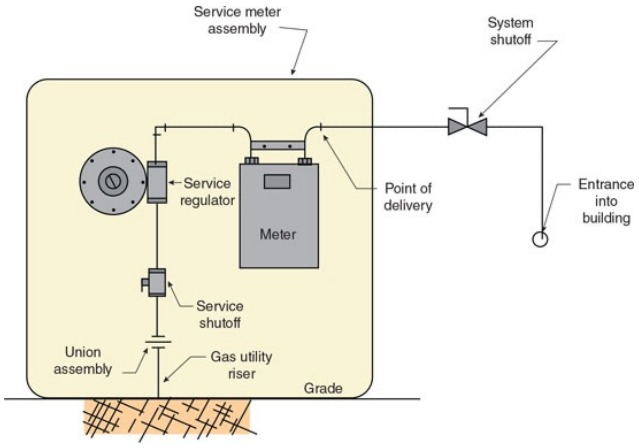

Service Meter Assemble and Point of Delivery

Service Shutoff. A valve, installed by the serving gas supplier between the ~~service meter or~~ source of supply and the ~~customer piping system~~ point of delivery, to shut off the entire piping system.

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G2414.8.3 Threaded Joint Sealant

CHANGE TYPE: Modification

CHANGE SUMMARY: Thread joint sealants are now required for assembling threaded joints in gas piping.

2021 CODE: ~~**G2414.9.3 (403.9.3)**~~ **G2414.8.3 (403.8.3)** Threaded joint ~~compounds~~ sealing.Threaded joints shall be made using a thread joint sealing material. Thread joint sealing materials ~~compounds~~ shall be nonhardening and shall be resistant to the action of liquefied petroleum gas or to any other chemical constituents of the gases to be conducted conveyed through the piping. Thread joint sealing materials shall be compatible with the pipe and fitting materials on which the sealing materials are used.

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G2439.5 Make Up Air for Dryer Installed in Closet

CHANGE TYPE: Clarification

CHANGE SUMMARY: The requirement for a transfer opening for supplying makeup air to a closet designed for a gas dryer has been moved into a separate section.

- **2021 CODE:G2439.5 (614.7)** Makeup air. Installations exhausting more than 200 cfm (0.09 m^3/s) shall be provided with makeup air. ~~Where a closet is designed for the installation of a clothes dryer, an opening having an area of not less than 100 square inches (645 mm2) for makeup air shall be provided in the closet enclosure, or makeup air shall be provided by other approved means.~~
- **G2439.5.1 (614.7.1) Closet Installation.** Where a closet is designed for the installation of a clothes dryer, an opening having an area of not less than 100 square inches (645 mm^2) for makeup air shall be provided in the closet enclosure, or makeup air shall be provided by other approved means.

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G2447.2 Commercial Cooking Appliances, Prohibited

CHANGE TYPE: Modification

CHANGE SUMMARY: The exception allowing a commercial cooking appliance in a dwelling unit when the installation is designed by an engineer has been removed from the code.

2021 CODE:G2447.2 (623.2) Prohibited location. Cooking appliances designed, tested, listed and labeled for use in commercial occupancies shall not be installed within dwelling units or within any area where domestic cooking operations occur.

Exceptions:

1. Appliances that are also listed as domestic cooking appliances.

~~2.Where the installation is designed by a licensed Professional Engineer, in compliance with the manufacturer's installation instructions.~~

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Plumbing

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P2503.5.1 Drain, Waste and Vent Systems Testing

CHANGE TYPE: Modification

CHANGE SUMMARY: The head pressure for a water test of drain, waste and vent (DWV) systems has increased from 5 feet to 10 feet. Air vacuum testing is now permitted for plastic piping DWV systems.

2021 Code: P2503.5.1 Rough Plumbing Rough plumbing. DWV systems shall be tested on completion of the rough piping installation by water ~~or~~, by air for piping systems other than plastic, ~~by air~~, or by a vacuum of air for plastic piping systems, without evidence of leakage. Either The test shall be applied to the drainage system in its entirety or in sections after rough-in piping has been installed, as follows:

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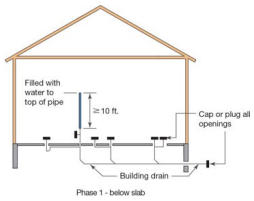
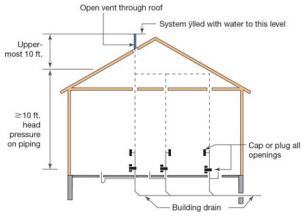
1. Water test. Each section shall be filled with water to a point not less than ~~5~~ 10 feet (~~1524~~ 3048 mm) above the highest fitting connection in that section, or to the highest point in the completed system. Water shall be held in the section under test for a period of 15 minutes. The system shall prove leak free by visual inspection.
Water test on DWV system.
2. Air test. The portion under test shall be maintained at a gauge pressure of 5 pounds per square inch (psi) (34 kPa) or 10 inches of mercury column (34 kPa). This pressure shall be held without introduction of additional air for a period of 15 minutes.
3. Vacuum Test. The portion under test shall be evacuated of air by a vacuum type pump to achieve a uniform gauge pressure of -5 pounds per square inch or a negative 10 inches of mercury column (- 34 kPa). This pressure shall be held without the removal of additional air for a period of 15 minutes.



Phase 1 - below slab



Phase 2 - above ground

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P2708.4, P2713.3 Shower and Bathtub Control Valves

CHANGE TYPE: Clarification

CHANGE SUMMARY: The code now addresses field adjustment and access to shower control valves. Lower flow shower heads need to be compatible with the shower control mixing valve.

2021 CODE:P2708.4 Shower control valves. Individual shower and tub/shower combination valves ~~shall be equipped with control valves of the pressure balance~~ balanced-pressure, thermostatic ~~mixing~~ or combination ~~balanced pressurebalance/thermostatic mixing valve types with a high limit stop in accordance with~~ /thermostatic valves that conform to the requirements of ASSE 1016/ASME A112.1016/CSA B125.16. ~~The high limit stop shall be set to limit the water temperature to not greater than 120°F (49°C).~~ or ASME A112.18.1/CSA B125.1. Shower control valves shall be rated for the flow rate of the installed showerhead. Such valves shall be installed at the point of use. Shower and tub/shower combination valves required by this section shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions to provide water at a temperature not to exceed 120°F. In-line thermostatic valves shall not be ~~used~~ utilized for compliance with this section.

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P2713.3 Bathtub and whirlpool bathtub valves. ~~Hot water supplied to bathtubs~~ Bathtub and whirlpool ~~bathtubs~~ bathtub valves shall ~~be limited to a temperature of not greater than 120°F (49°C)~~ have or be supplied by a water-temperature limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 ~~or CSA B125.3~~, except where such ~~protection is otherwise provided by a~~ valves are combination tub/shower valves in accordance with Section P2708.4. The water temperature limiting device required by this section shall be equipped with a means to limit the maximum setting of the device to 120°F (49°C), and, where adjustable, shall be field adjusted in accordance with the manufacturer's instructions to provide hot water at a temperature not to exceed 120°F (49°C). Access shall be provided to water temperature limiting devices that conform to ASSE 1070/ASME A112.1070/CSA B125.70.

Exception: Access is not required for non-adjustable water temperature limiting devices that conform to ASSE 1070/ASME A112.1070/ CSA B125.70 and are integral with a fixture fitting, provided that the fixture fitting itself can be accessed for replacement.

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P2905.3 Length of Hot Water Piping to Fixtures - Not Adopted per RAC Report

CHANGE TYPE: Addition

CHANGE SUMMARY: The code now limits the length of hot water piping serving fixtures.

2021 CODE:P2905.3 Hot water supply to fixtures. The developed length of hot water piping, from the source of hot water to the fixtures that require hot water, shall not exceed 100 feet (30 480 mm). Water heaters and recirculating system piping shall be considered to be sources of hot water.

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Electrical

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E3601.8 Emergency Services Disconnects

CHANGE TYPE: Addition

CHANGE SUMMARY: An emergency service disconnect is required in a readily accessible outdoor location.

2021 CODE:E3601.8 Emergency disconnects. For one- and two- family **Detatched** dwelling units, all service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater than the available fault current, installed in a readily accessible outdoor location. If more than one disconnect is provided, they shall be grouped. Each disconnect shall be one of the following.

1. Service disconnects marked as follows: EMERGENCY DISCONNECT, SERVICE DISCONNECT

2. Meter disconnect switches that have a short-circuit current rating equal to or greater than the available fault current and all metal housings and service enclosures are grounded in accordance with Section E3908.7 and bonded in accordance with Section E3609.

Note: The word “Detached” was added as a modification in the 2021 PA UCC RAC Report

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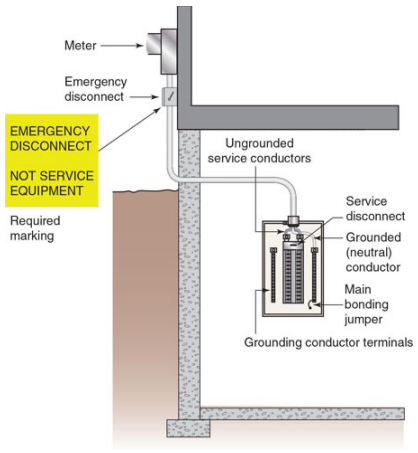

A meter disconnect switch shall be capable of interrupting the load served and shall be marked as follows: EMERGENCY DISCONNECT, METER DISCONNECT, NOT SERVICE EQUIPMENT

3. Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are suitable for use as service equipment and marked as follows: EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT

Markings shall comply with Section E3404.12. [230.82(3), 230.85]

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E3606.5 Service Surge-Protective Device

CHANGE TYPE: Addition

CHANGE SUMMARY: A surge-protective device (SPD) is now required at the service panel.

2021 CODE:E3606.5 Surge protection. All services supplying oneand two-family dwelling units shall be provided with a surge-protective device (SPD) installed in accordance with Sections E3606.5.1 through E3606.5.3.

E3606.5.1 Location. The SPD shall be an integral part of the service equipment or shall be located immediately adjacent thereto.

Exception: The SPD shall not be required to be located in the service equipment if located at each next-level distribution equipment downstream toward the load.

E3606.5.2 Type. The SPD shall be a Type 1 or Type 2 SPD.

E3606.5.3 Replacement. Where service equipment is replaced, all of the requirements of this section shall apply. [230.67]

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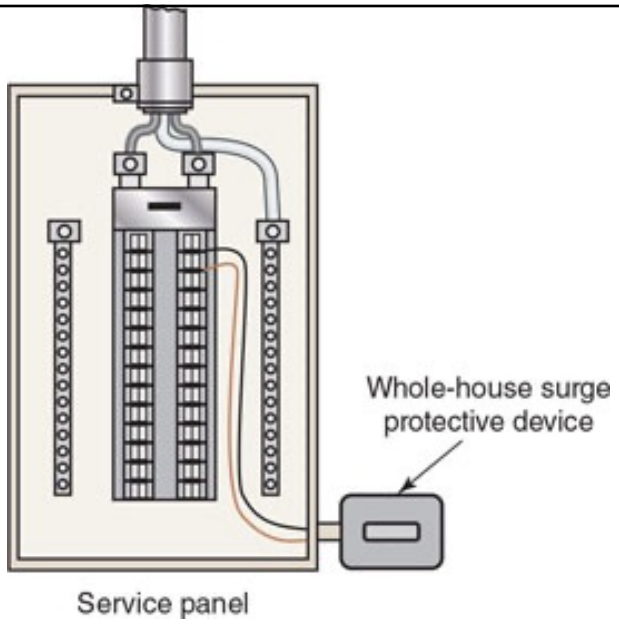

97 Surge protective device required for service of dwelling unit

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E3703.4 Bathroom Branch Circuits

CHANGE TYPE: Clarification

CHANGE SUMMARY: Only the required bathroom receptacle outlets or those serving a countertop need to be on the dedicated 20-amp bathroom circuit.

2021 CODE: E3703.4 Bathroom branch circuits. A minimum of one 20-ampere branch circuit shall be provided to supply bathroom receptacle outlet(s) required by Section E3901.6 and any countertop or similar work surface receptacle outlets. Such circuits shall have no other outlets. [210.11(C)(3)]

Exception: Where the 20-ampere circuit supplies a single bathroom, outlets for other equipment within the same bathroom shall be permitted to be supplied in accordance with Section E3702. [210.11(C) (3) Exception]

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E3703.5 Garage Branch Circuits

CHANGE TYPE: Modification

CHANGE SUMMARY: Only the required receptacle outlets must be on the 20-amp dedicated circuit for garages.

2021 CODE:E3703.5 Garage Branch Circuits. In addition to the number of branch circuits required by other parts of this section, not less than one 120-volt, 20-ampere branch circuit shall be installed to supply receptacle outlets required by Section E3901.9 in attached garages and in detached garages with electric power. This circuit shall not have other outlets.

Exception: This circuit shall be permitted to supply readily accessible outdoor receptacle outlets.

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E3901.4 Kitchen Countertops and Work Surface Receptacles - Not Adopted per RAC Report

- PA Amendment:
  - Exclude 2021 IRC Section E3901.4
  - Adopt 2018 IRC Section E3901.4.2
- 2018 IRC E3901.4.2 Island countertop spaces. At least one receptacle outlet shall be installed at each island countertop space with a long dimension of 24 inches (610 mm) or greater and a short dimension of 12 inches (305 mm) or greater.

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E3902 GFCI Protection for 250-Volt Receptacles

CHANGE TYPE: Modification

CHANGE SUMMARY: Ground-fault circuit-interrupter (GFCI) protection is required for up to 250-volt receptacles in the areas previously identified as requiring GFCI protection for 125-volt receptacles. The 20-amp limitation has been removed.

2021 CODE:E3902.1 Bathroom receptacles. 125-volt through 250-volt, ~~single-phase, 15- and 20-ampere~~ receptacles installed in bathrooms and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(1)]

E3902.2 Garage and accessory building receptacles. 125-volt through 250-volt, ~~single-phase, 15- and 20-ampere~~ receptacles installed in garages and grade-level portions of unfinished accessory buildings used for storage or work areas and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(2)]

E3902.3 Outdoor receptacles. 125-volt through 250-volt, ~~single-phase, 15- and 20-ampere~~ receptacles installed outdoors and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(3)]

Exception: Receptacles as covered in Section E4101.7. [210.8(A)(3) Exception]

E3902.4 Crawl space receptacles and lighting outlets. Where a crawl space is at or below grade level, 125-volt through 250-volt, ~~single-phase, 15- and 20-ampere~~ receptacles installed in such spaces and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. Lighting outlets not exceeding 120 volts shall have ground-fault circuit-interrupter protection. [210.8(A)(4), 2108(E)]

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E3902.5 GFCI Protection for Basement Receptacles

CHANGE TYPE: Modification

CHANGE SUMMARY: The requirement for GFCI protection in unfinished basement areas has been expanded to include all basement areas.

- **2021 CODE:E3902.5 ~~Unfinished~~ Basement receptacles.** 125-volt through 250-volt, ~~single-phase, 15- and 20-ampere~~ receptacles installed in ~~unfinished~~ basements and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. ~~For purposes of this section, unfinished basements are defined as portions or areas of the basement not intended as habitable rooms~~.
- **Exception: A receptacle supplying only a permanently installed fire alarm or burglar alarm system.** Receptacles installed in accordance with this exception shall not be considered as meeting the requirement of Section E3901.9. [210.8(A)(5) Exception]

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E3902.10 GFCI Protection for Indoor Damp and Wet Locations

CHANGE TYPE: Addition

CHANGE SUMMARY: GFCI protection is now required for indoor damp and wet locations not included in the other specific locations requiring GFCI protection.

2021 CODE:E3902.10 **Indoor damp and wet locations.** 125-volt through 250-volt, receptacles installed in indoor damp and wet locations and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel. [210.8(A)(11)]

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References

- International Code Council. (2008). *2009 International Residential Code*, ICC, Country Club Hill, Ill.
- International Code Council. (2014). *2015 International Residential Code*, ICC, Country Club Hill, Ill.
- International Code Council. (2017). *2018 International Residential Code*, ICC, Country Club Hill, Ill.
- International Code Council. (2018). *2018 Significant Changes to the International Residential Code*, ICC, Country Club Hill, Ill.
- International Code Council. (2021). *2021 Significant Changes to the International Residential Code*, ICC, Country Club Hill, Ill

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