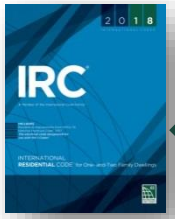
# 2021 IRC® Significant Changes

*Based on the 2021 International Residential Code® (IRC®)*


ICC LEARNING center

# Course Goal

- Identify the significant changes to the *2021 International Residential Code*.



# About me

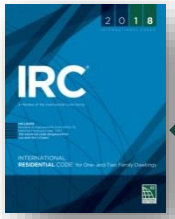
Adam Dupuy, CBO

Deputy Building Official –

South Central Planning & Development Commission

(985) 655 -1070

adam@scpdc.org




Pick up my business card

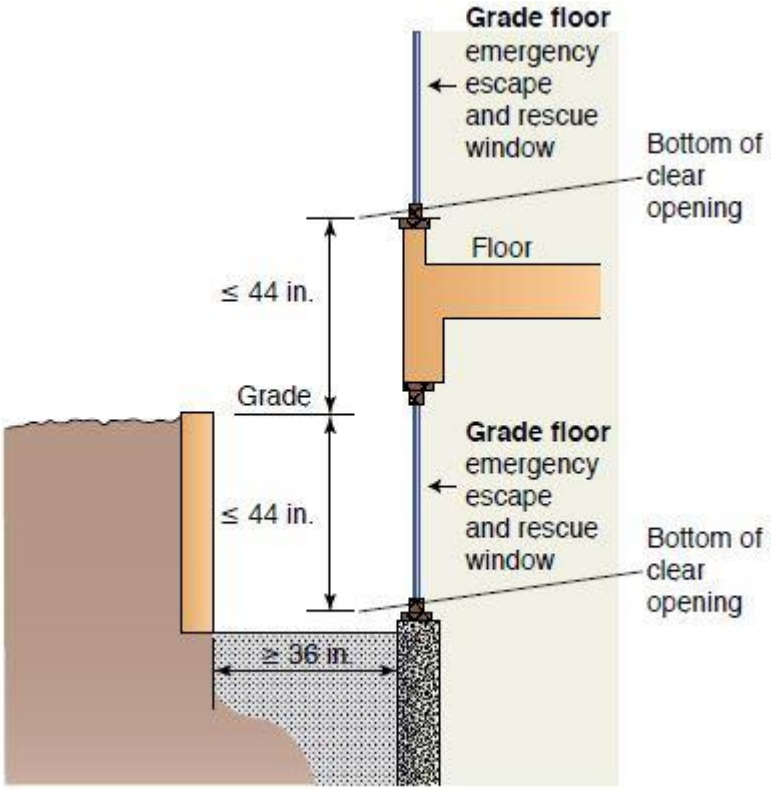
ICC LEARNING CENTER

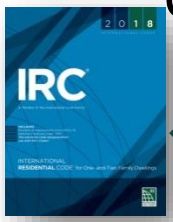
Chapter 2

# Definitions

# R202 Grade Floor EERO

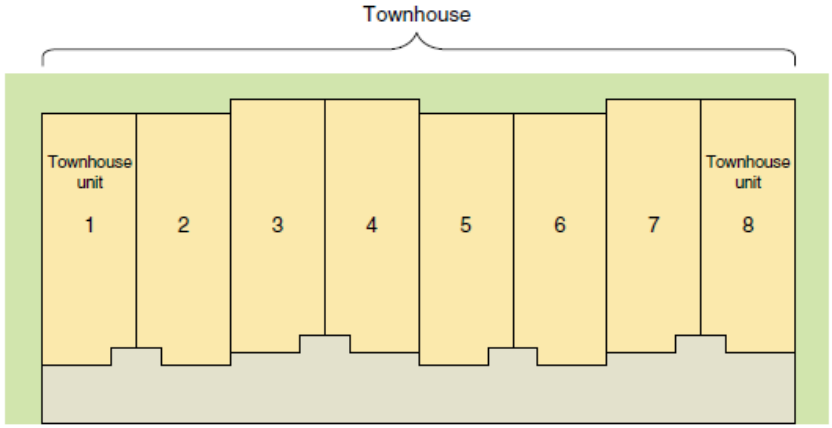
- **Grade Floor <u>Emergency Escape And Rescue</u> Opening.** ~~A window or other~~ <u>An emergency escape and rescue</u> opening located such that the ~~sill height~~ <u>bottom</u> of the <u>clear</u> opening is not more than 44 inches above or below the finished ground level adjacent to the opening.

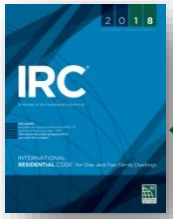


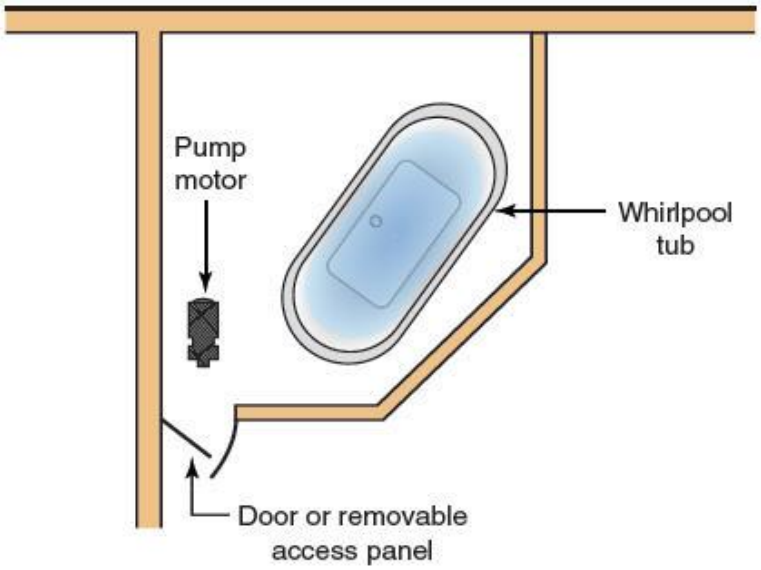
# R202 Townhouse and Townhouse Unit

- **TOWNHOUSE.** Building that contains three or more attached townhouse units.
- **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.

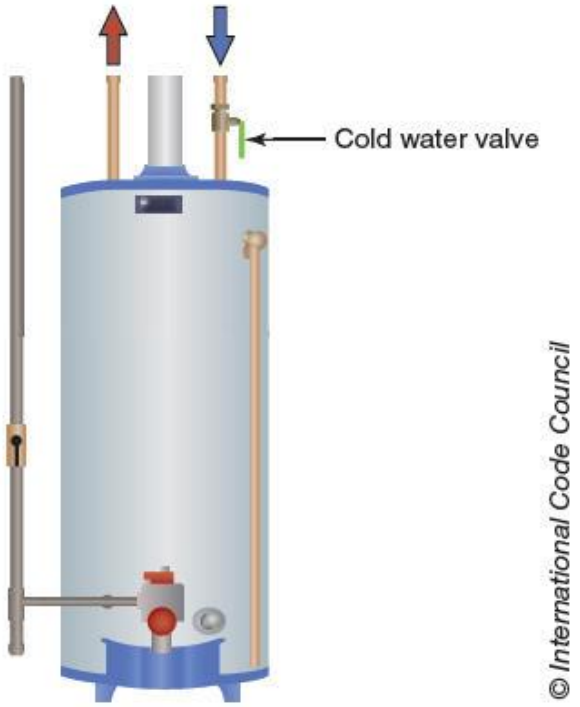


# R202 Definition of Access




Access to whirlpool pump



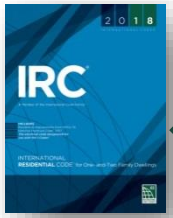

Ready access to cold water valve of water heater

Chapter 3

# Building Planning

# R301.1.4 Intermodal Shipping Containers

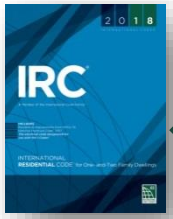
- Provisions for construction with intermodal shipping containers are added to the IRC by referencing IBC Section 3315 and ICC G5 – *Guideline for the Safe Use of ISO Shipping Containers Repurposed as Buildings and Building Components.*

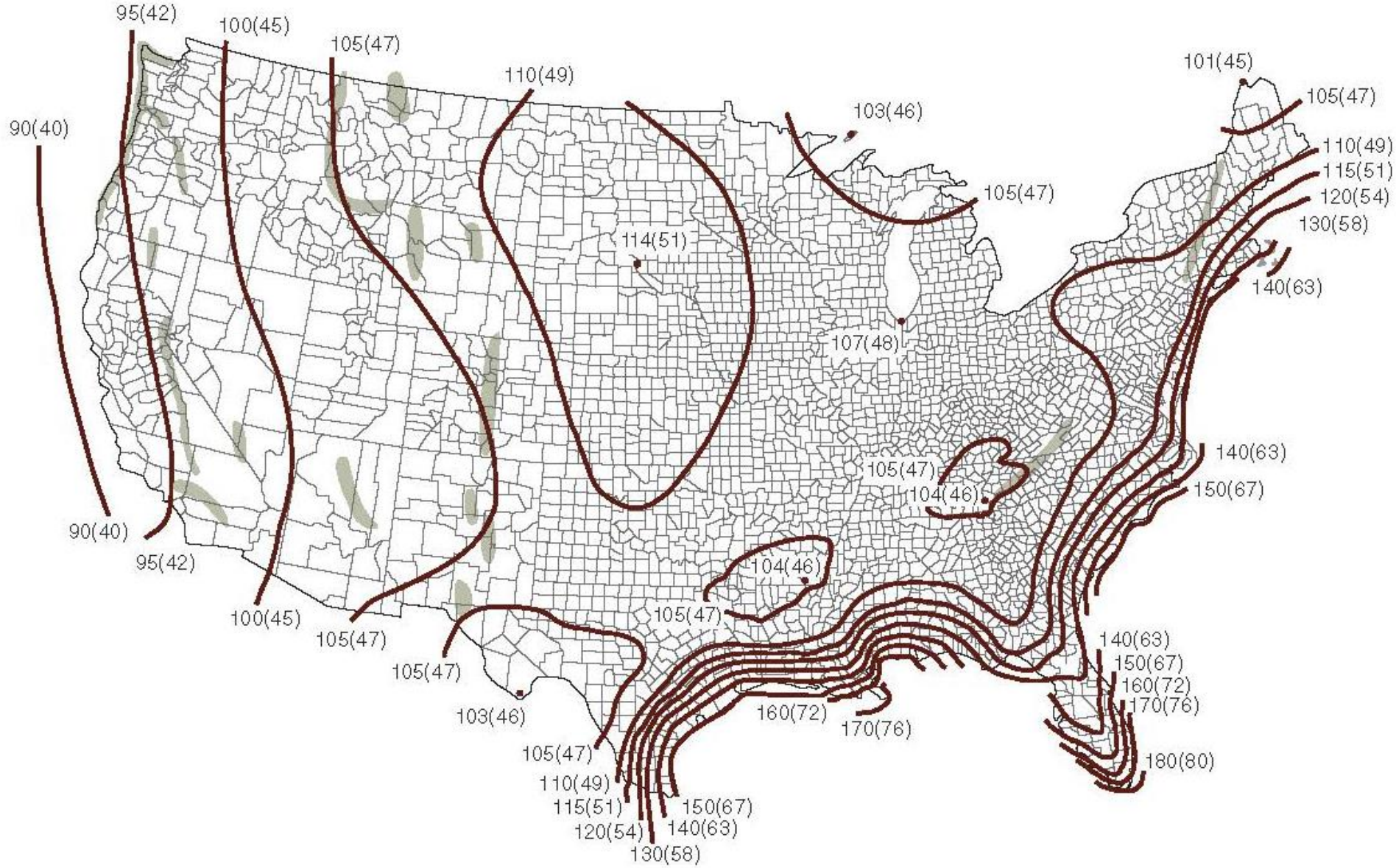




ICC LEARNING CENTER

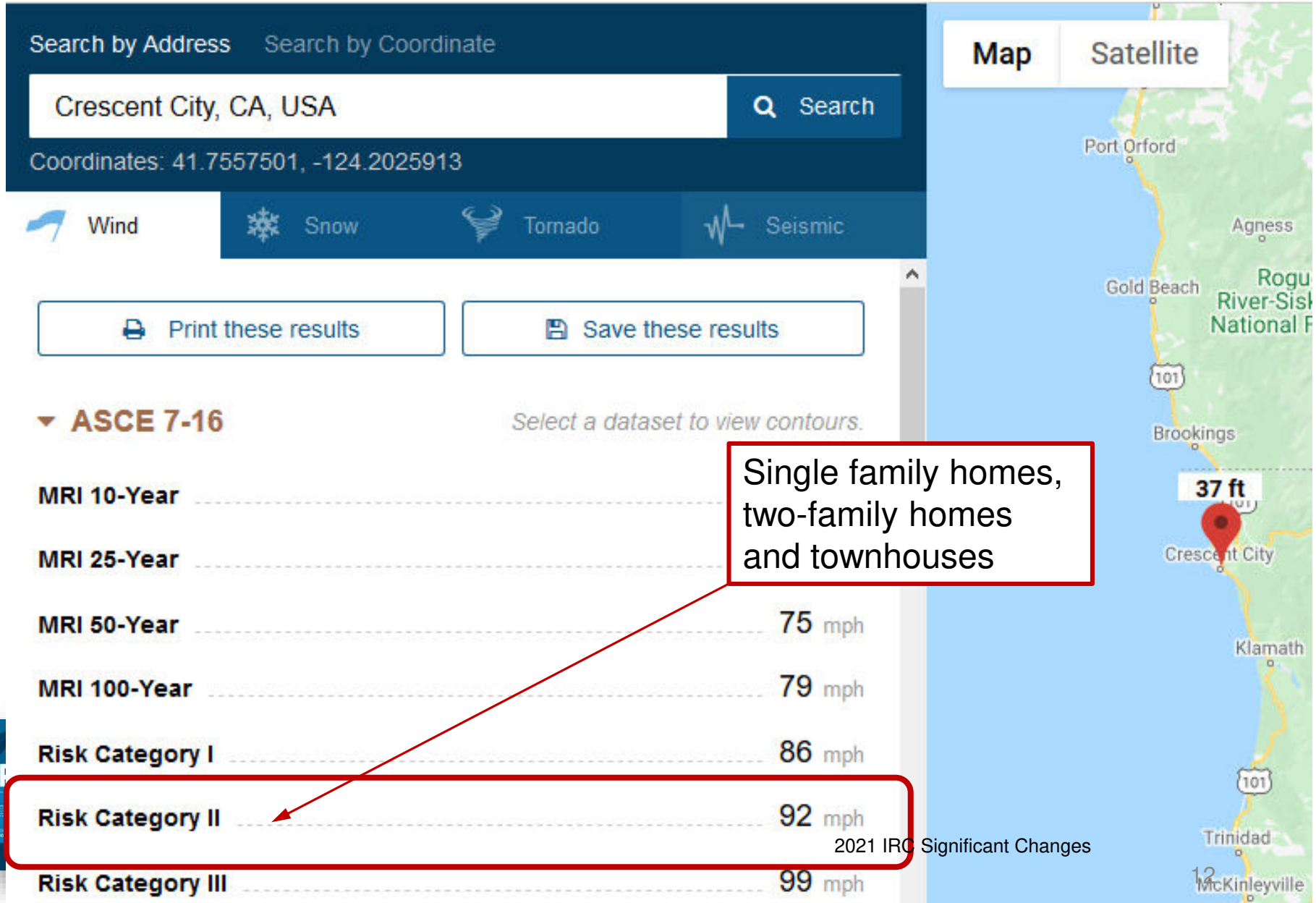
# R301.2 Wind Design

- Updated Wind Speed maps match IBC and ASCE 7 maps with a large portion of the country having wind speeds less than 115 mph.




95(42)
100(45)
105(47)
110(49)
103(46)
101(45)
105(47)
90(40)
110(49)
115(51)
120(54)
130(58)
105(47)
114(51)
140(63)
107(48)
140(63)
105(47)
150(67)
104(46)
90(40)
95(42)
104(46)
100(45)
105(47)
105(47)
140(63)
150(67)
160(72)
170(76)
103(46)
160(72)
170(76)
105(47)
180(80)
110(49)
115(51)
150(67)
120(54)
140(63)
130(58)

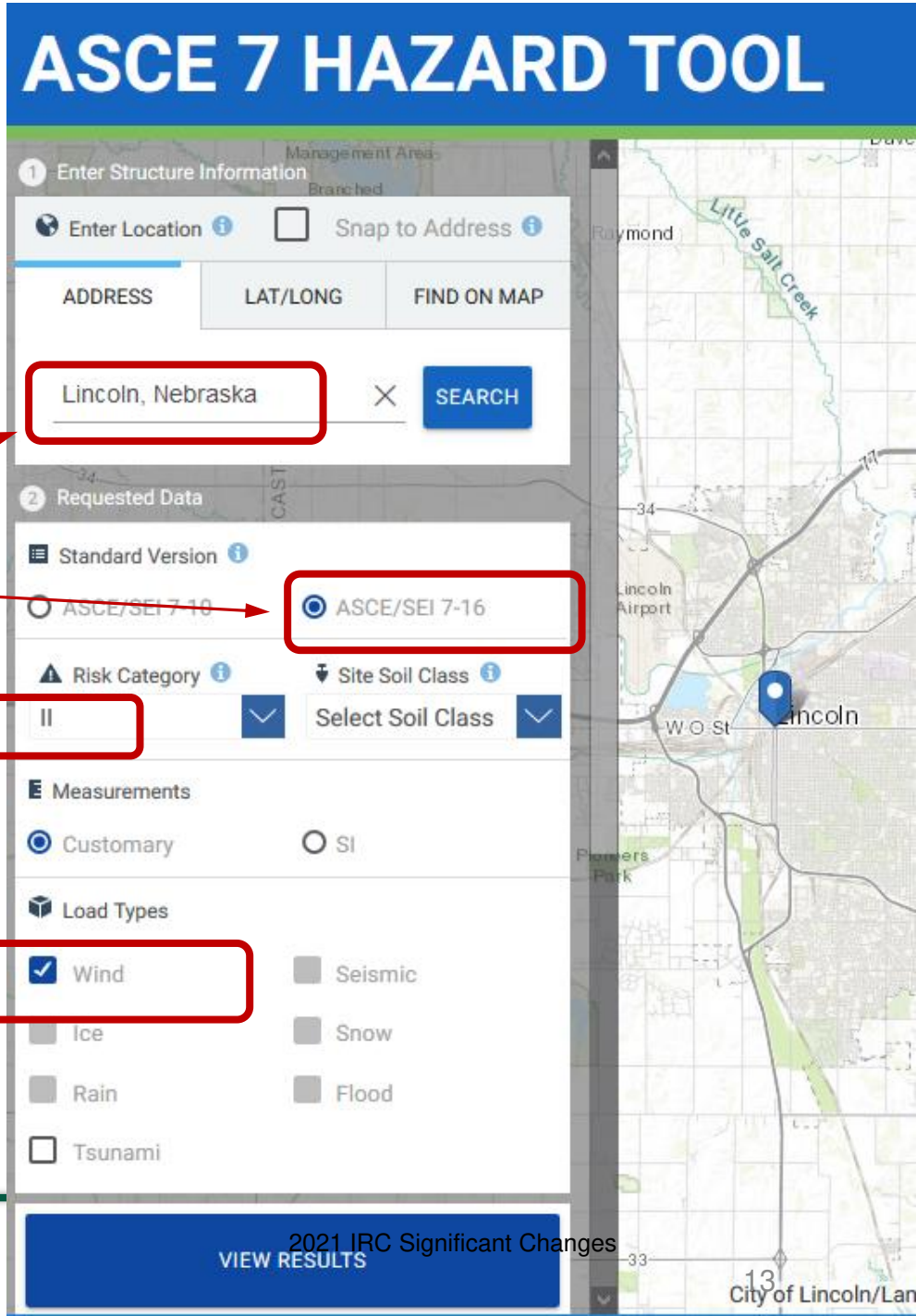
# Hazards.atcouncil.org

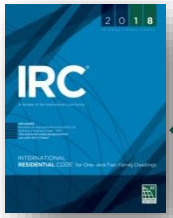



Single family homes, two-family homes and townhouses

# asce7hazardtool.online

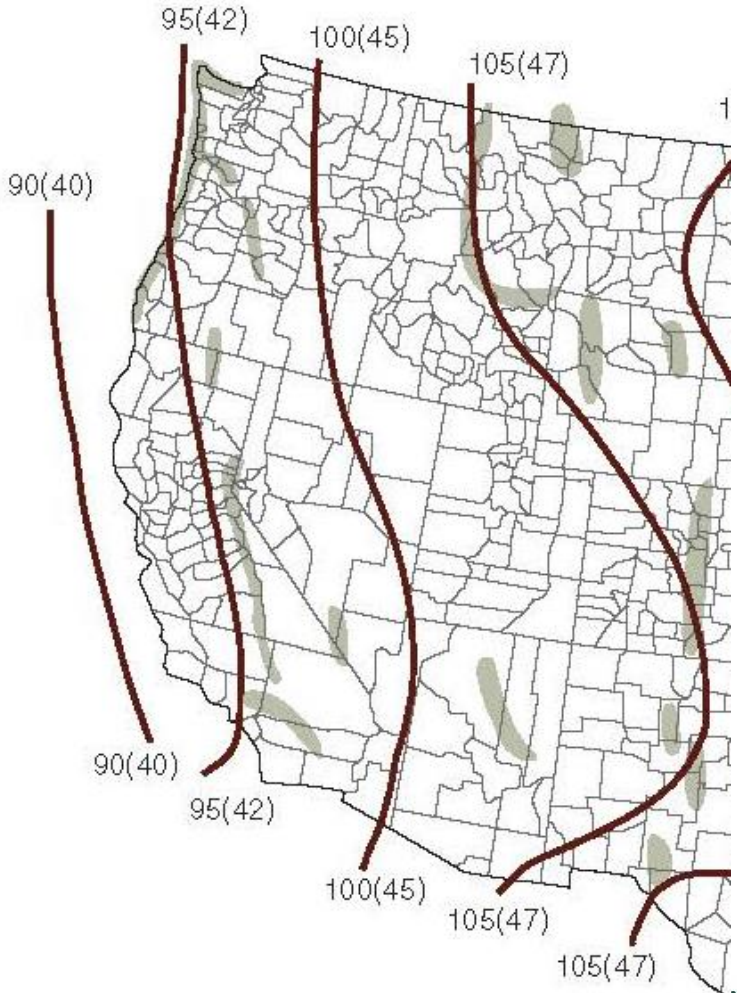
Inputs

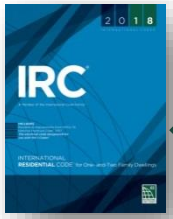


# R301.2.1.1 Wind Limitations

- Engineered design requirements for special wind regions are explicitly stated in Section R301.2.1.1.
- Engineered design is required when winds are 130 mph or greater in hurricane prone regions. Wood Frame Construction Manual Guidelines.

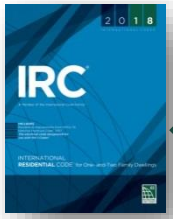


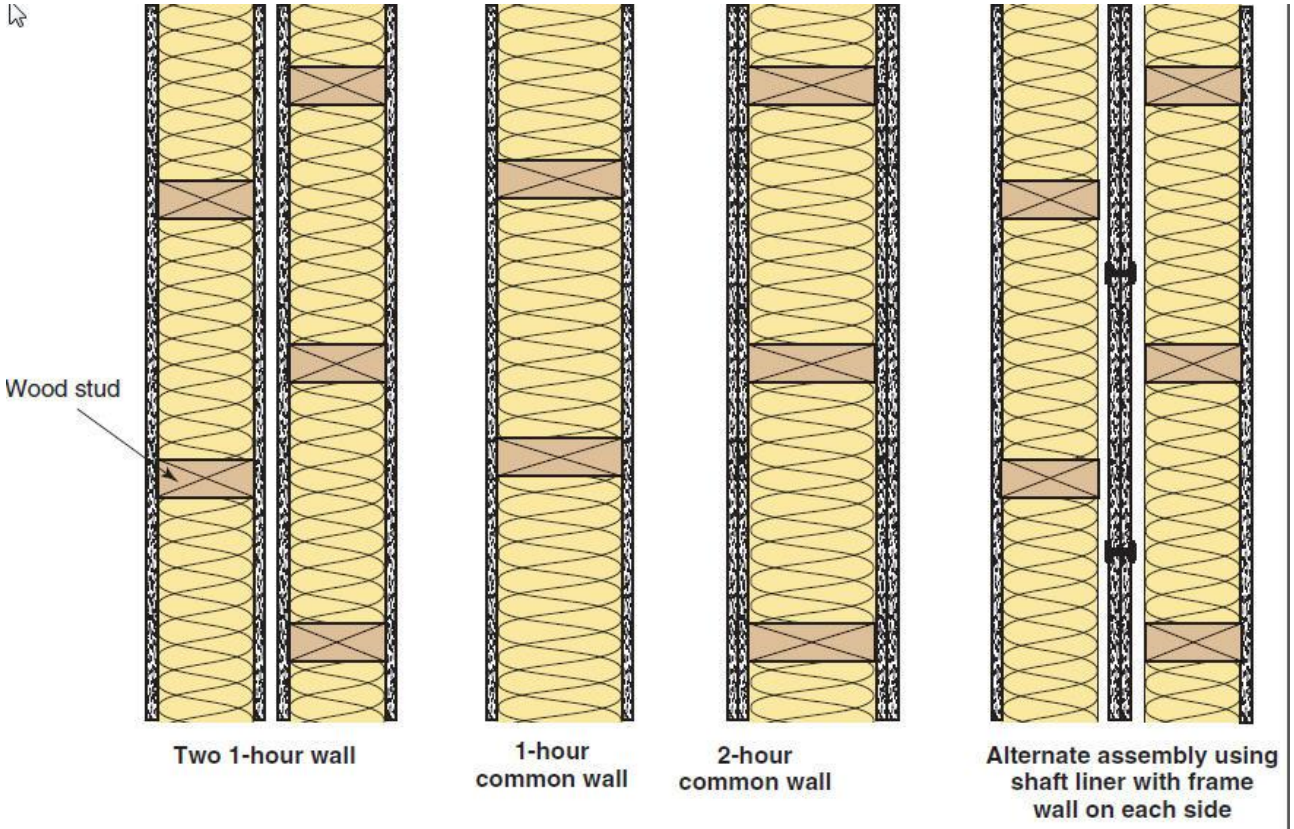
# R302.2 Townhouse Separation

**CHANGE TYPE: Modification**

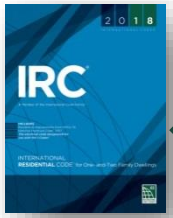
Two paths for achieving the fire-resistant separation between townhouse dwelling units – two 1-hour walls or a common wall – are spelled out in the townhouse provisions.



# R302.2 Townhouse Separation - two options




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

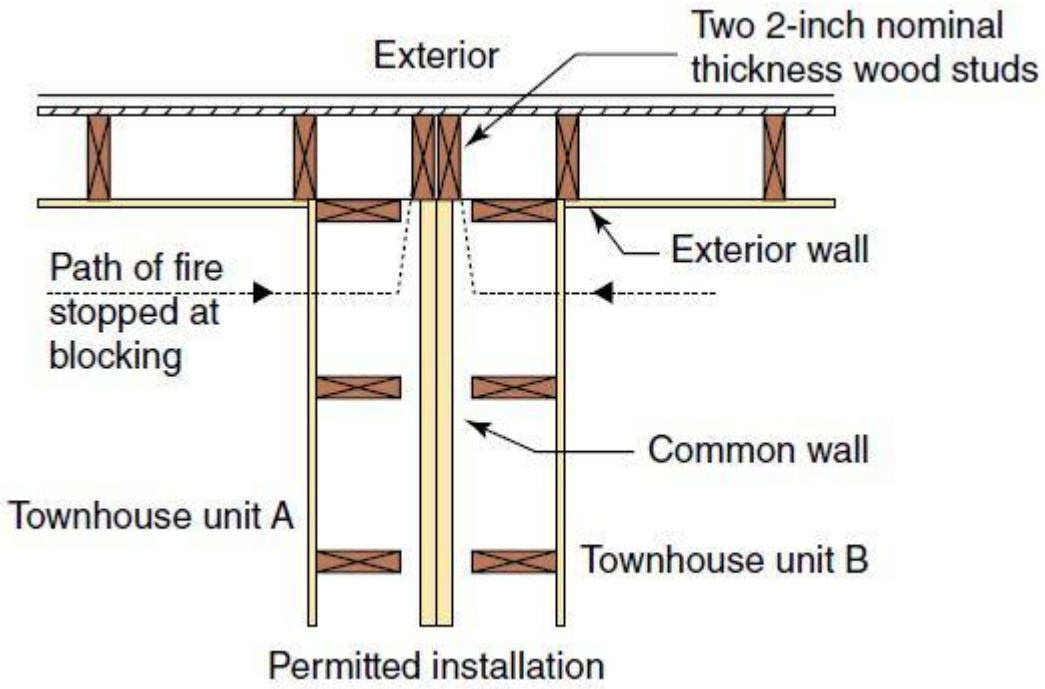


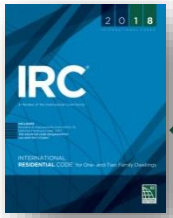



ICC LEARNING CENTER

# R302.2 Townhouse Common Wall

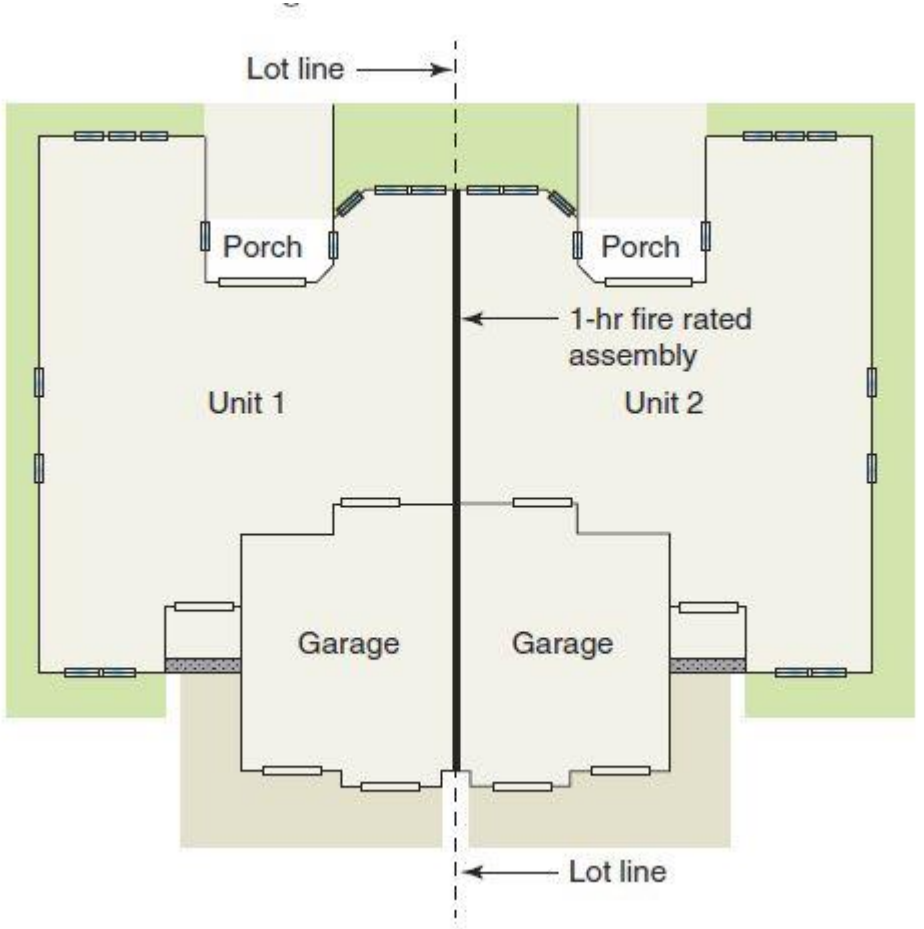
- Common walls separating townhouses can terminate at the inside of exterior walls:
  - Two 2 in. studs as fireblocking

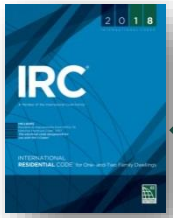


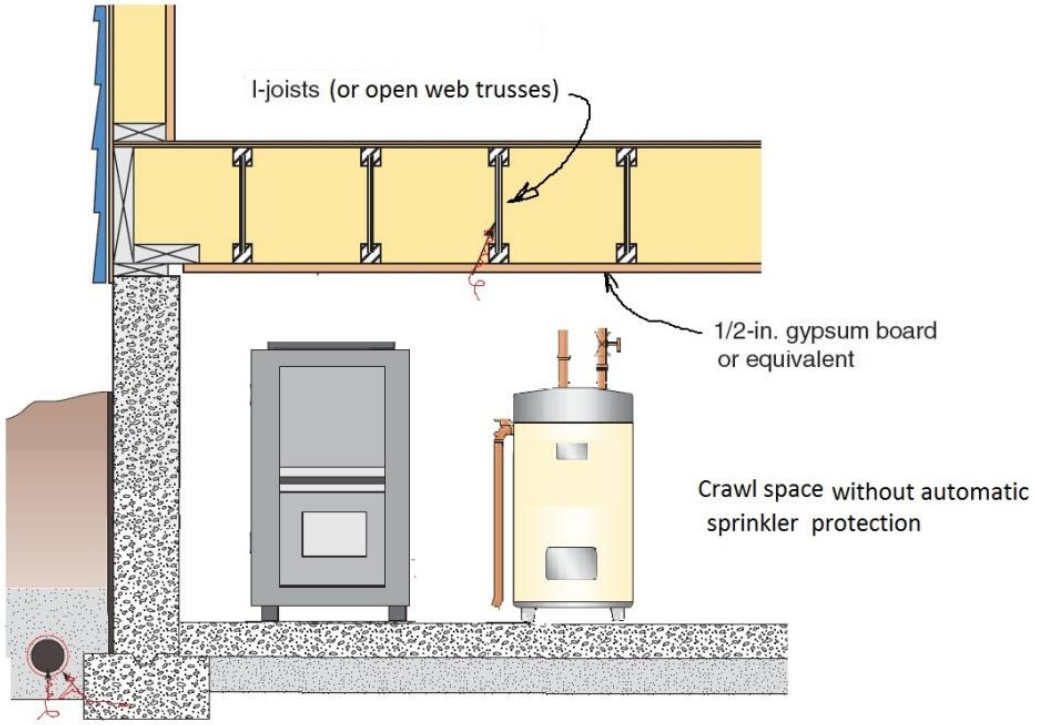
# R302.3 Two-Family Dwelling Separation

- One-hour separation whether or not a lot line exists between units



# R302.13 Fire Protection of Floors above Crawl Spaces




[Figure R302.13]

**Protection required on underside of floor assembly over a crawl space with fuel-fired or electic-powered heating equipment**

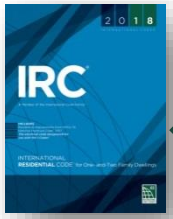
# R302.13 Fire Protection of Floors above Crawl Spaces

**R302.13 Fire protection of floors.** CDP

Floor assemblies that are not required elsewhere in this code to be fire-resistance rated, shall be provided with a $^{1}/_{2}$-inch (12.7 mm) gypsum wallboard membrane, $^{5}/_{8}$-inch (16 mm) *wood structural panel* membrane, or equivalent on the underside of the floor framing member. Penetrations or openings for ducts, vents, electrical outlets, lighting, devices, luminaires, wires, speakers, drainage, piping and similar openings or penetrations shall be permitted.

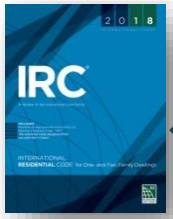
**Exceptions:**

1. Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with Section P2904, NFPA 13D, or other *approved* equivalent sprinkler system.
2. Floor assemblies located directly over a *crawl space* not intended for storage or for the installation of fuel-fired or electric-powered heating *appliances*.
3. Portions of floor assemblies shall be permitted to be unprotected where complying with the following:
   3.1. The aggregate area of the unprotected portions does not exceed 80 square feet (7.4 $m^2$) per story.
   3.2. Fireblocking in accordance with Section R302.11.1 is installed along the perimeter of the unprotected portion to separate the unprotected portion from the remainder of the floor assembly.
4. Wood floor assemblies using dimension lumber or *structural composite lumber* equal to or greater than 2-inch by 10-inch (50.8 mm by 254 mm) nominal dimension, or other *approved* floor assemblies demonstrating equivalent fire performance.



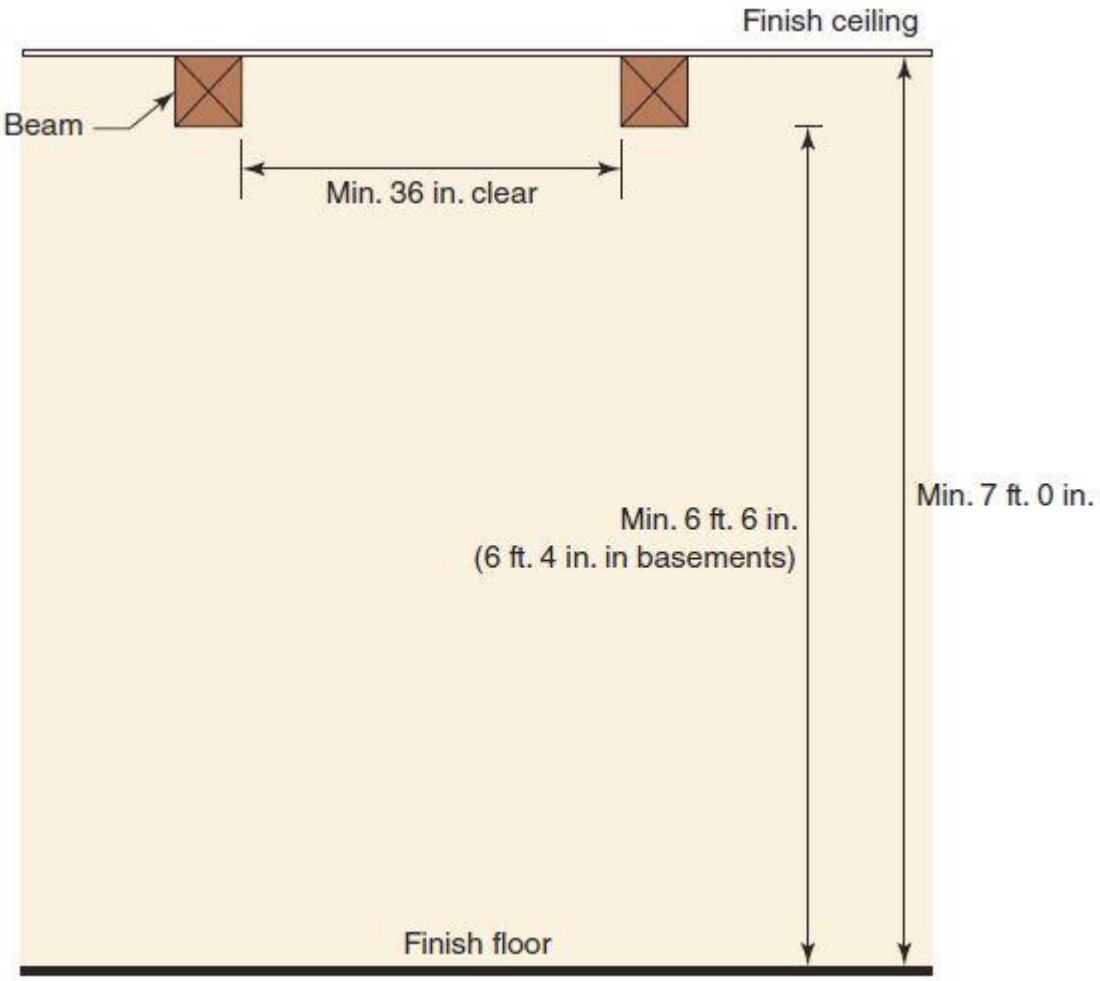
# R303.1 Mechanical Ventilation

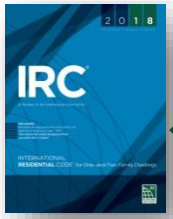
- Whole-house mechanical ventilation system or a mechanical ventilation system capable of producing 0.35 ACH in habitable rooms
- A local exhaust system is an acceptable substitute for natural ventilation in kitchens.



# R305.1 Ceiling Height

- Minimum ceiling height reduced to 6 ft. 6 in. under beams spaced at least 36 in. apart.

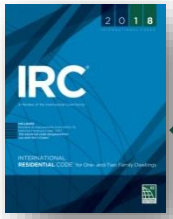


# R308.4.2 Glazing Adjacent to Doors

**Modification**

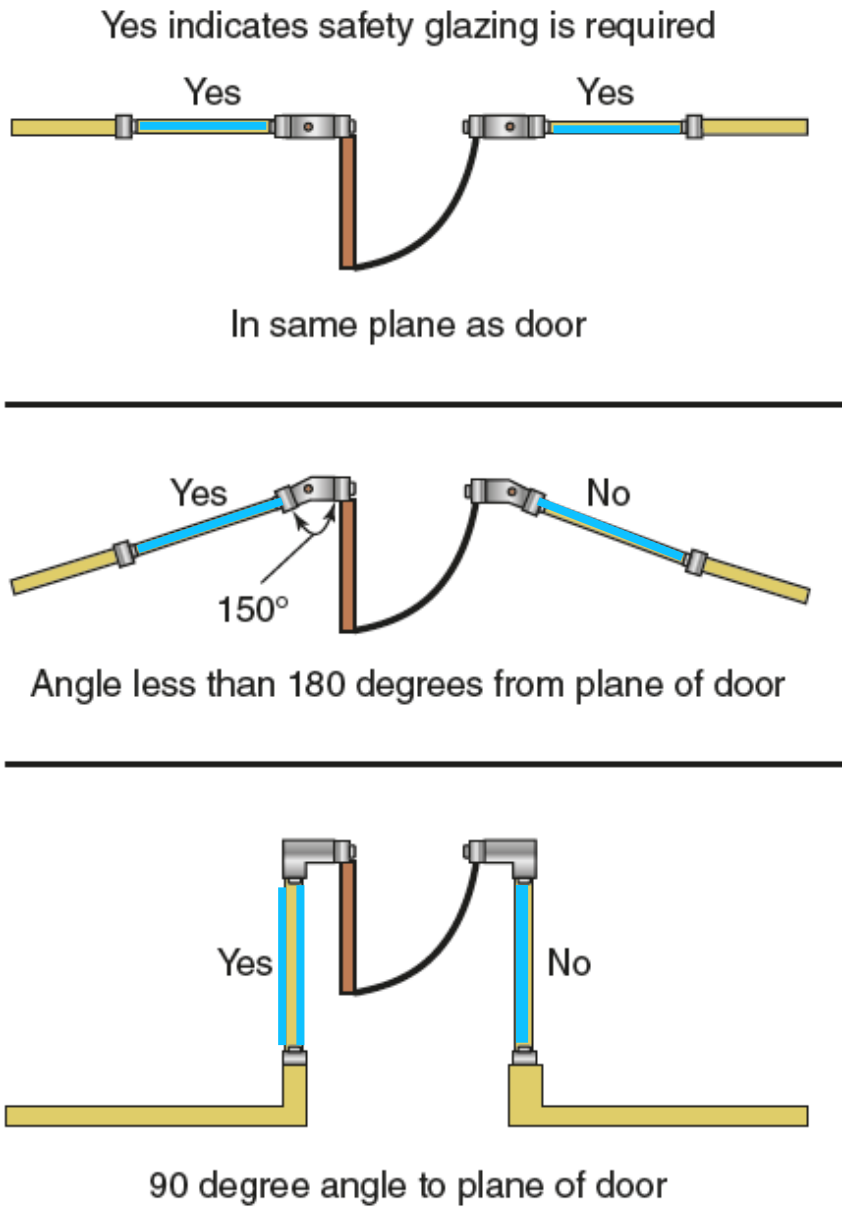
Glazing within 24 inches of the hinge side of an in-swinging door now requires safety glazing where the glazing is at an angle less than 180 degrees from the plane of the door

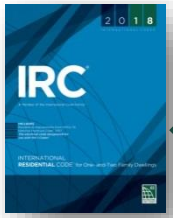


# R308.4.2 Glazing Adjacent to Doors

**Modification**

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

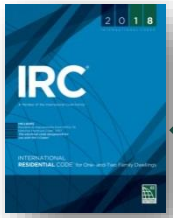


# R308.4.4 Glazing in Guards and Railings

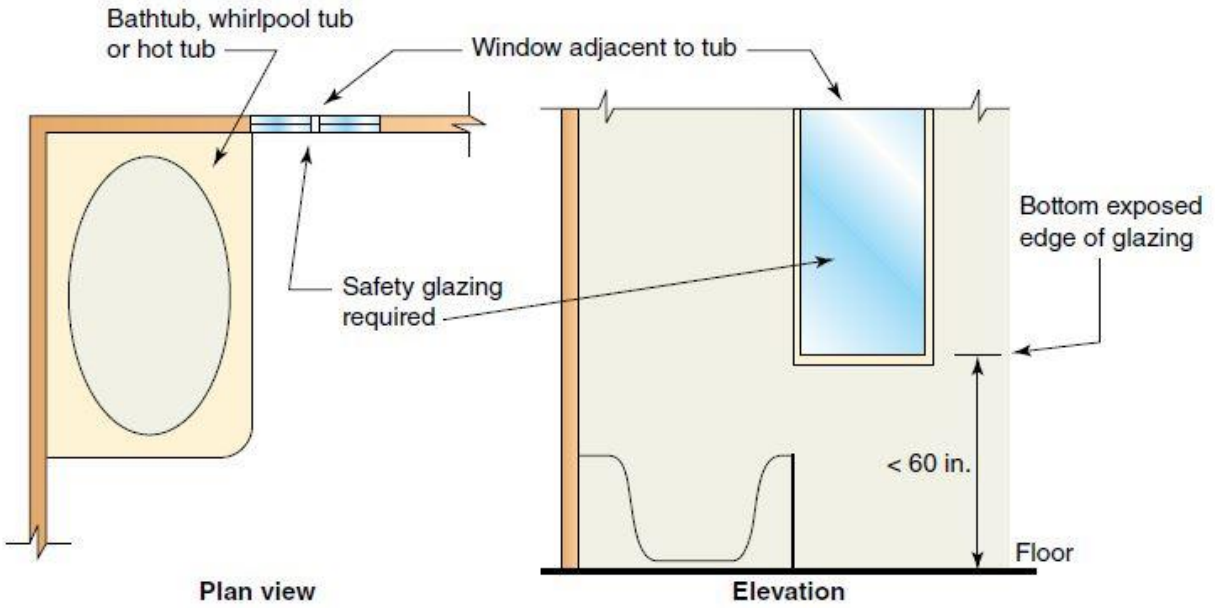
**R308.4.4 Glazing in Guards and Railings**

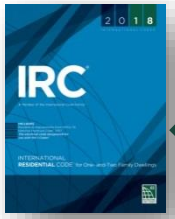
Unless laminated glass is used, structural glass baluster panels in guards now require an attached top rail or handrail.



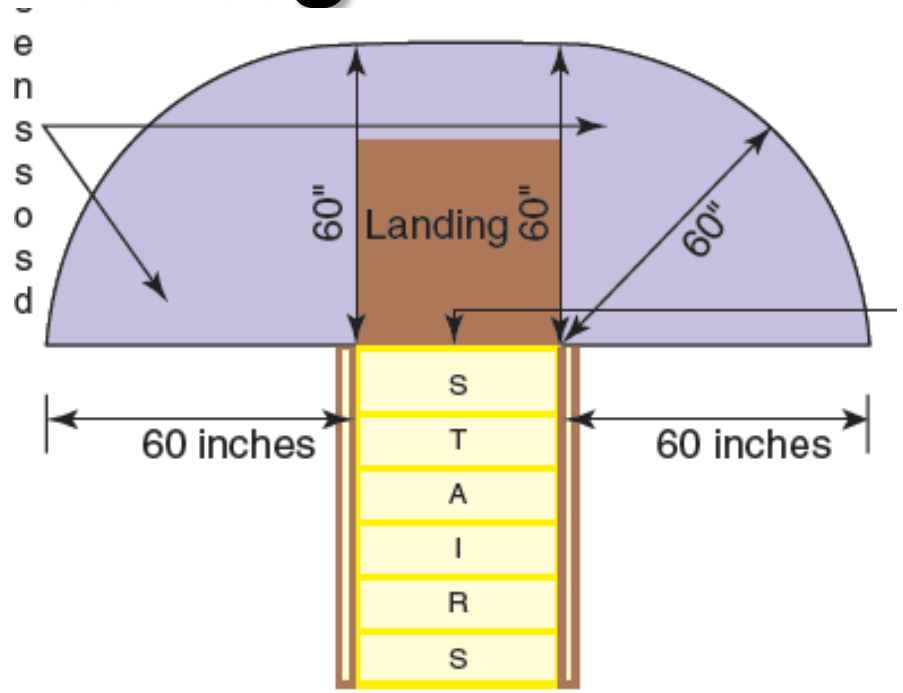
# R308.4.5 Glazing and Wet Surfaces

- Replaced the word “facing” with the words “adjacent to” for those elements related to wet surfaces.



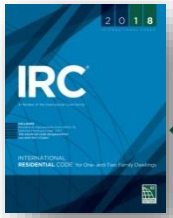



# R308.4.7 Glazing Adjacent to the Bottom Stair Landing



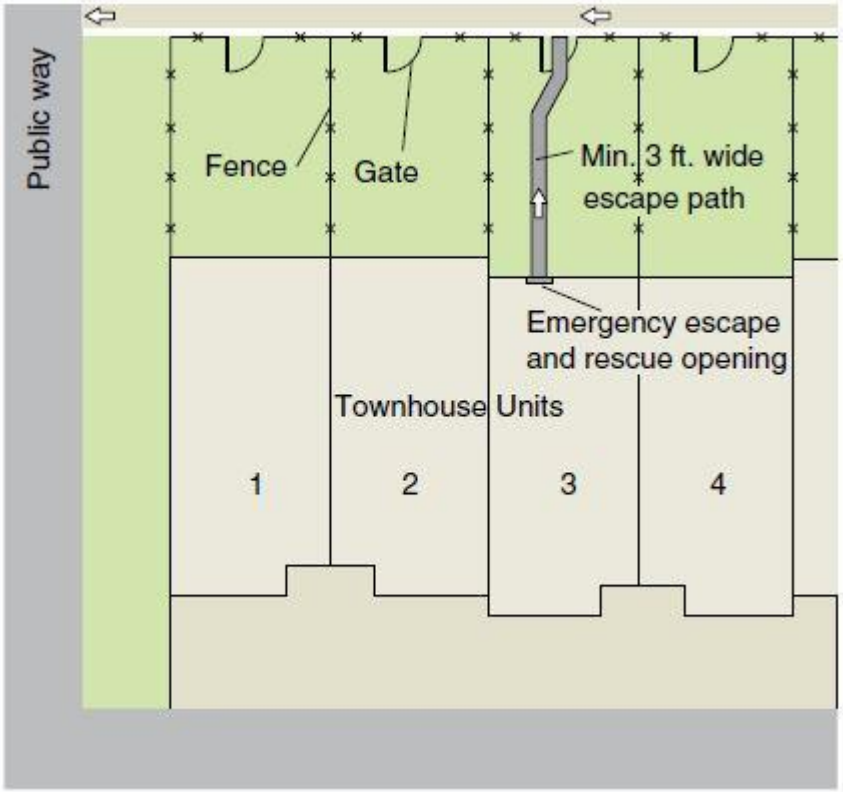

**Clarification**

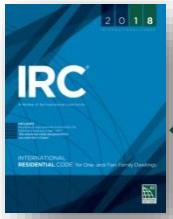
Figure R308.4.7 has been replaced with a new figure and the caption modified to more accurately reflect the related code provision. Previous figure was labeled "Prohibited Glazing Locations", which was not correct



# R310.1 Emergency Escape and Rescue Opening Required

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

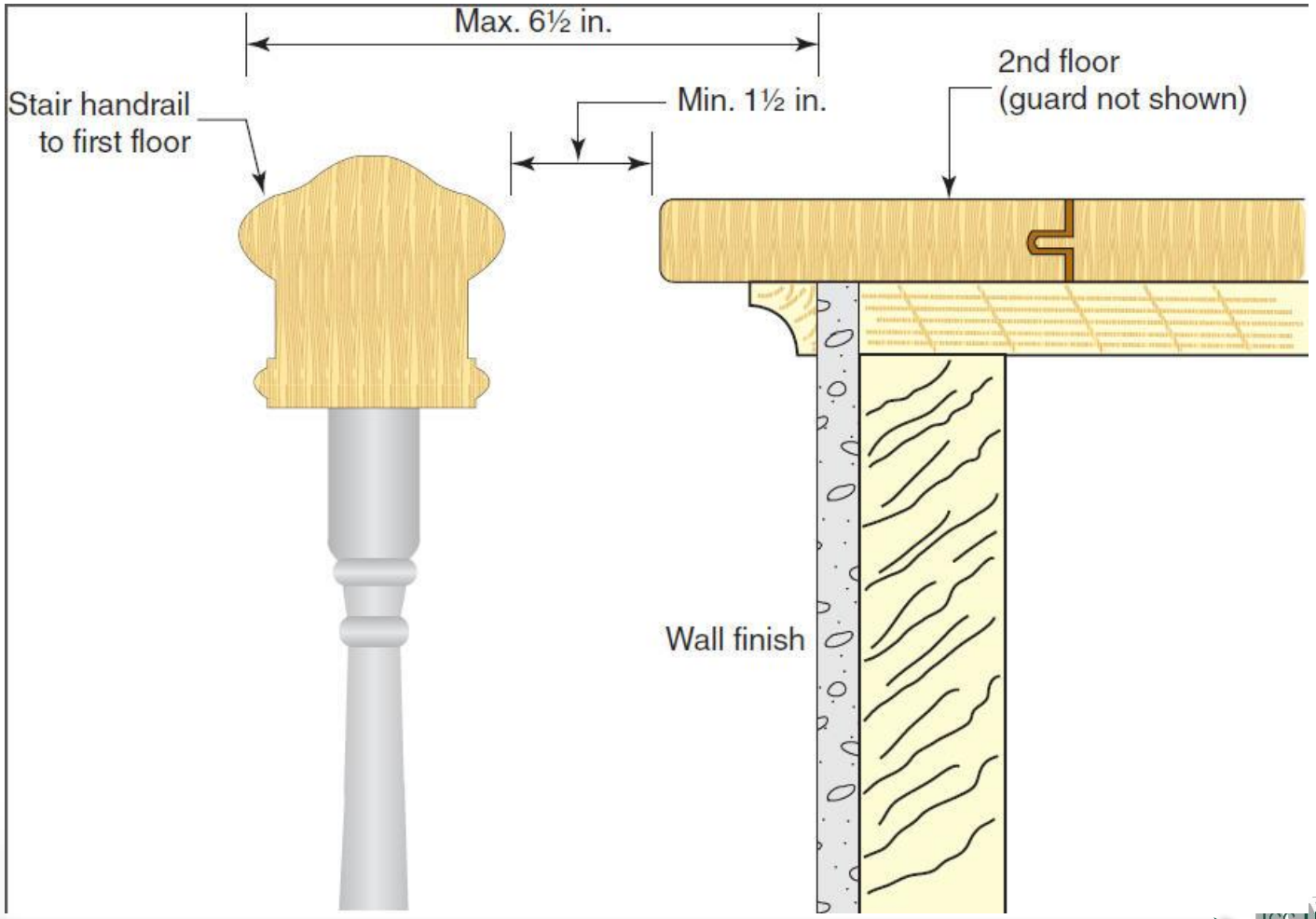


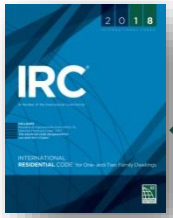



# R311.7.1 and R311.7.8 Handrail Projection

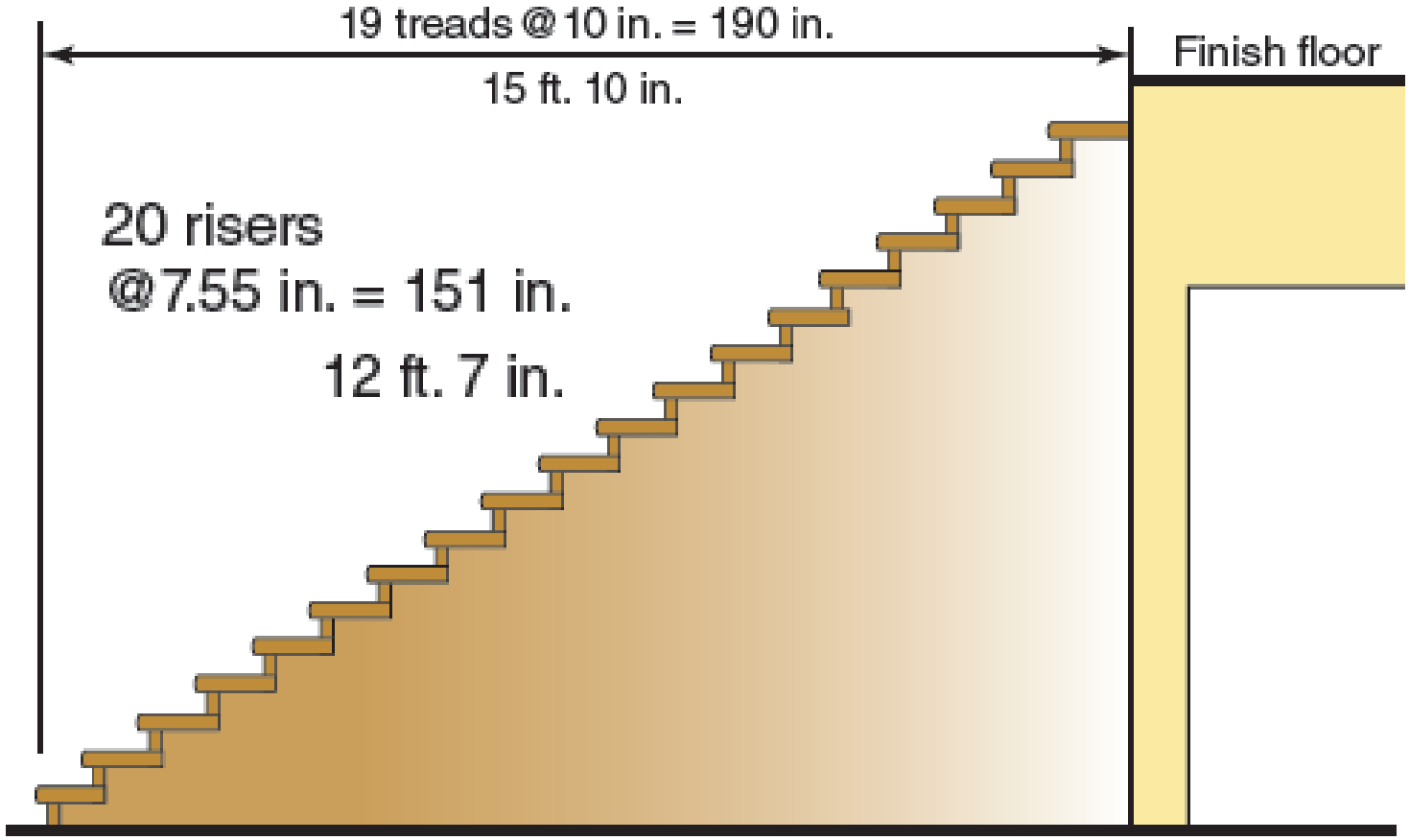
A new exception provides for adequate clearance behind the handrail when it passes a projection of a floor, landing or tread return. SEE NEXT SLIDE

# R311.7.1 and R311.7.8 Handrail Projection



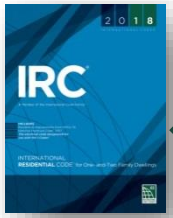



# R311.7.3 Vertical Rise

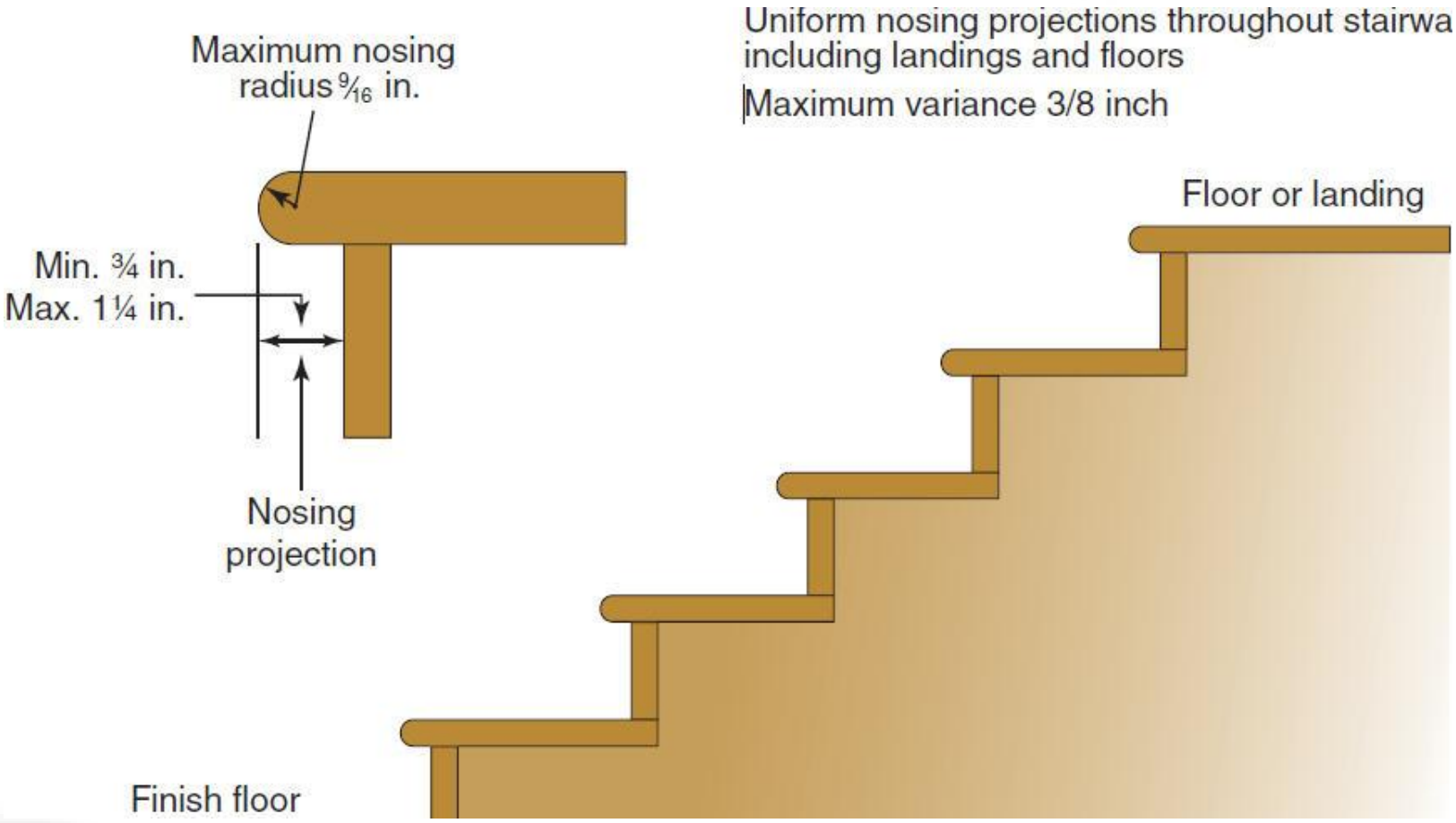


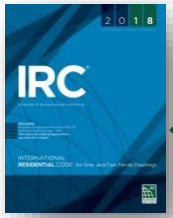

**CHANGE TYPE: Modification**

The vertical limit for a flight of stairs between floor levels or landings has been changed to 151 inches maximum, instead of the 147 inches previously.



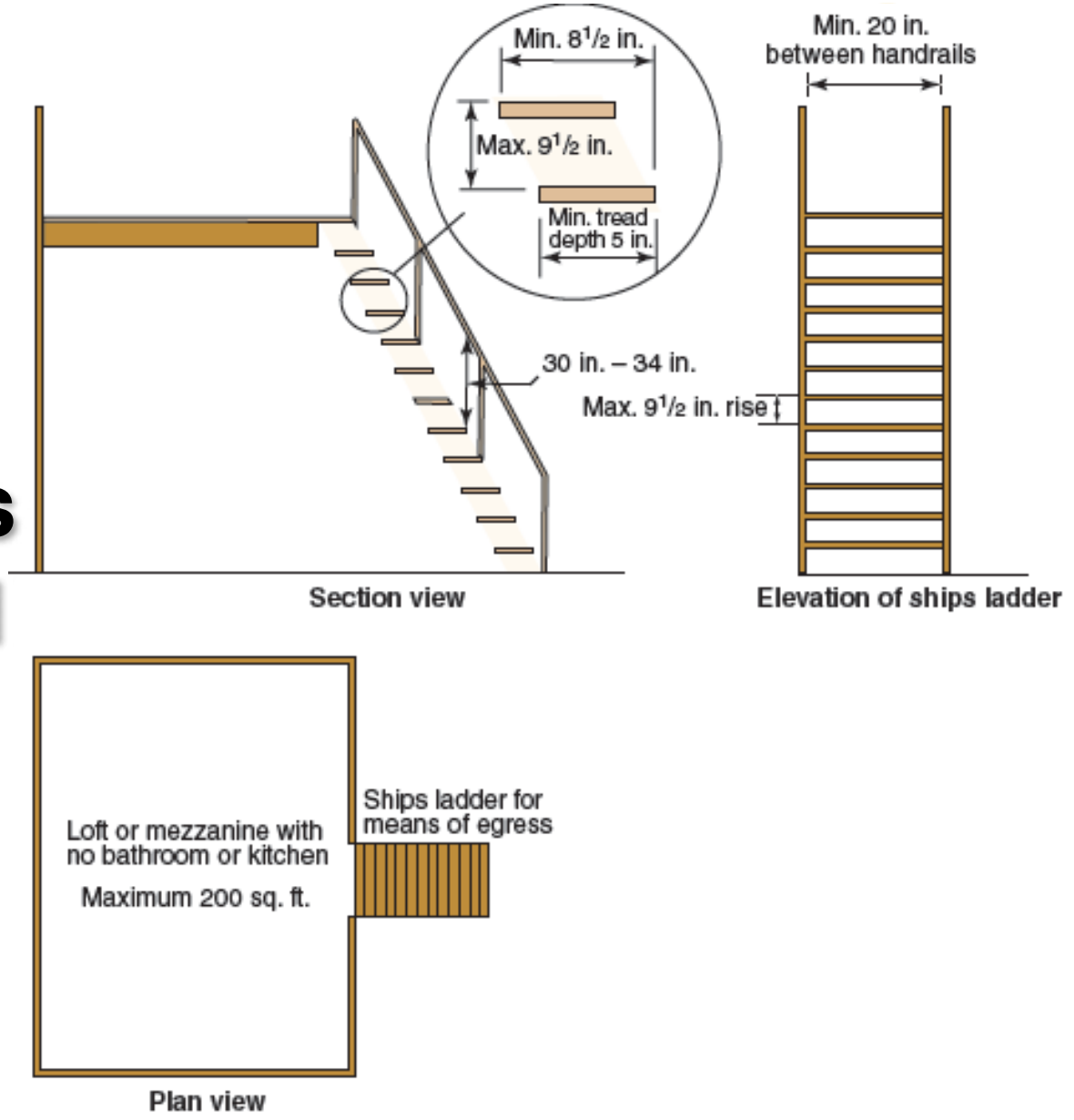
# R311.7.5.3 Stair Nosings

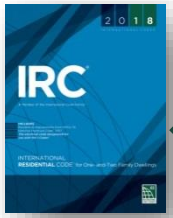



The revised text clarifies that nosings must be consistent throughout the stairway.

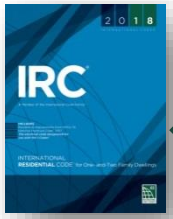
# R311.7.11, R311.7.12 Alternating tread devices & Ship ladders now permitted



# R311.7, R311.8 Stairways and Ramps

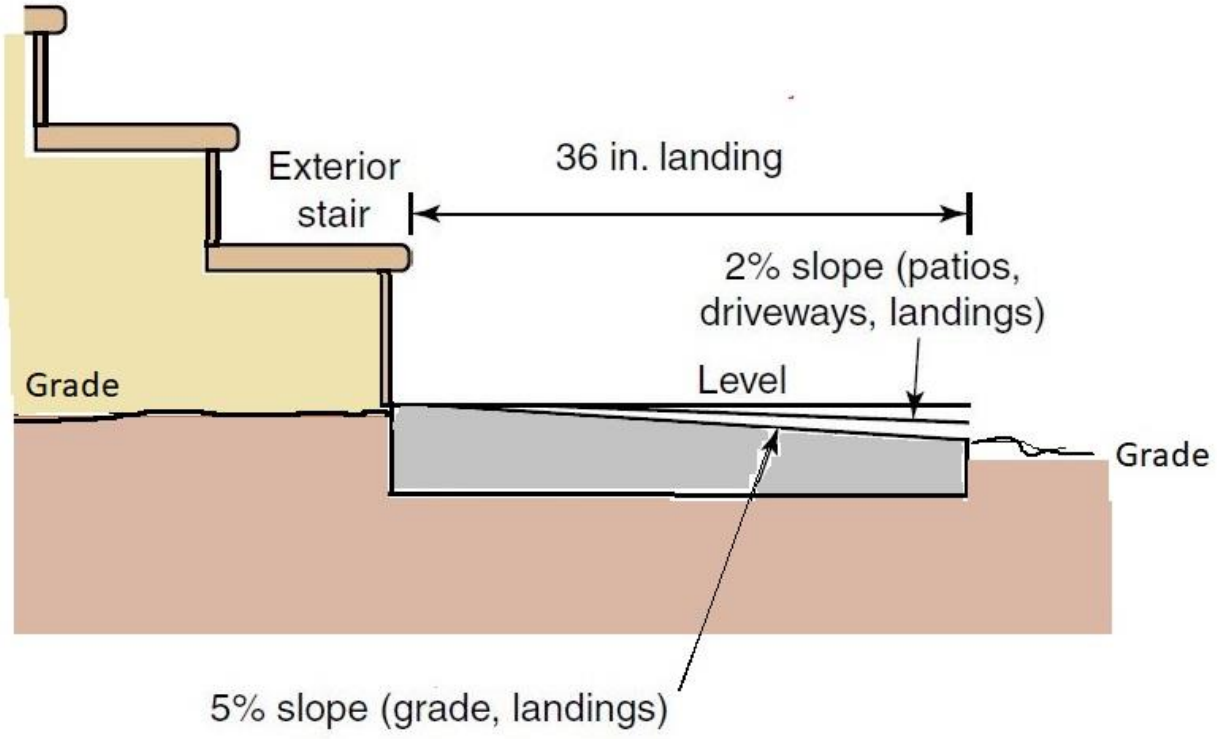
- The provisions of Sections R311.7 and R311.8 apply only to stairways and ramps within or serving: Definition revised
  - Building
  - Porch or
  - Deck

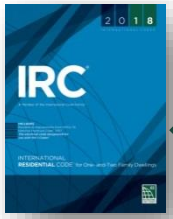



Clarifies that the associated elements apply when they are within or attached to a building, porch or deck

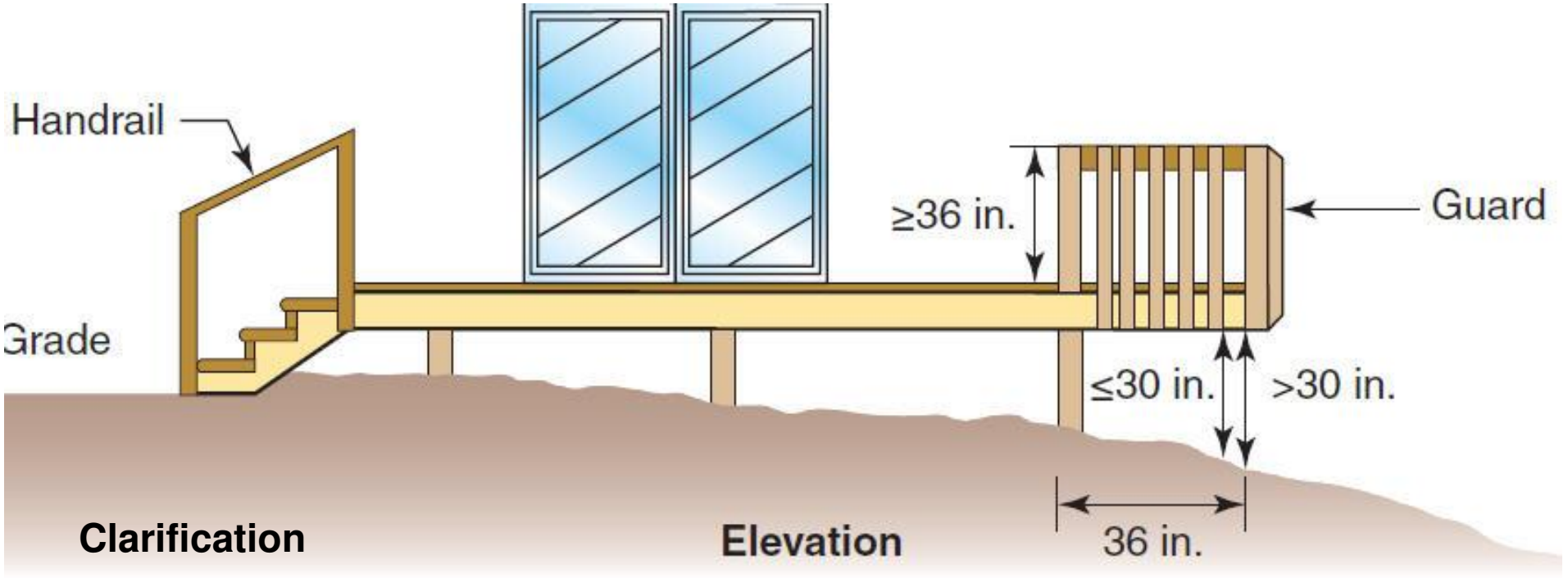
# R311.7.7 Stairway and Landing Walking Surface

- New exception allows steeper slopes for exterior landings that also serve to drain surface water away from the building.



# R312.1 Guards



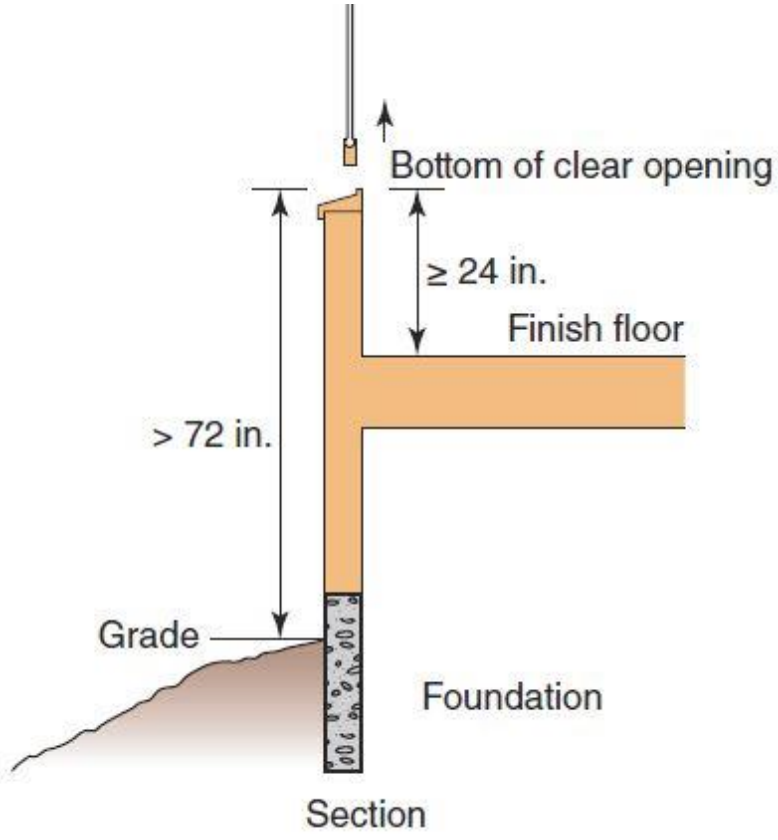

**Clarification**

**Elevation**

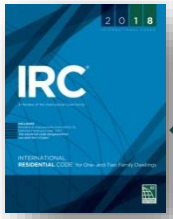
The guard requirements only apply to the specific portion of a walking surface that exceeds 30 inches above grade.

# R312.2 Window Fall Protection

- Measurements for determining the need for fall protection taken to bottom of clear opening of window.



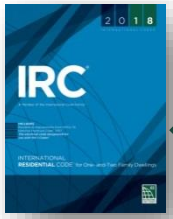

**Clarification**



# R314 Smoke Alarms

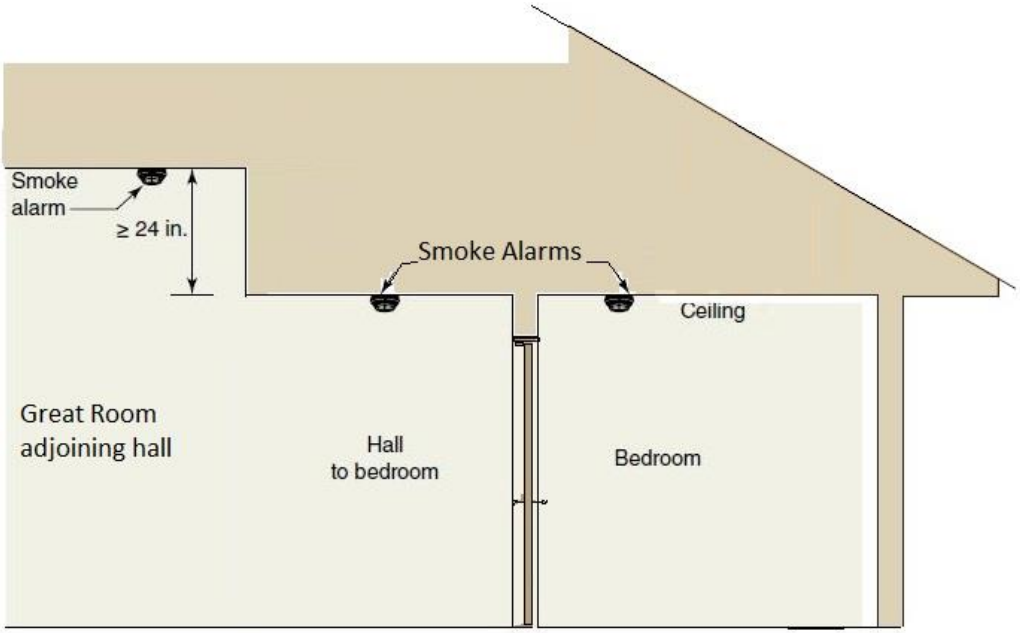
**Modification**

The exception that exempted interconnection of smoke alarms in existing areas where alterations or repairs do not result in removal of wall or ceiling finishes exposing the structure, has been deleted. Interconnection is always required. Easily achieved with wireless alarms.

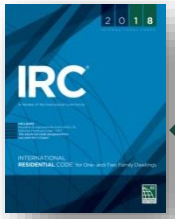


# R314.3 Smoke Alarm Locations

- A new location requirement addresses high ceilings adjacent to hallways serving bedrooms.



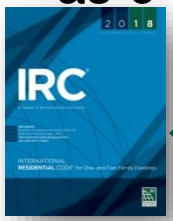

Section drawing



# R314.3 Smoke Alarm Locations (Continued)

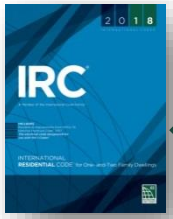
- Smoke alarms identified as having resistance to common nuisance alarms (Photoelectric) from cooking sources are now permitted to be as close as 6 feet from the cooking appliance.

Smoke alarms listed to the new edition of UL 217 (with an effective date of May 29, 2020) are required to pass tests designed to reduce nuisance alarms caused by residential cooking. Ionization smoke alarms generally require a separation distance of 20 feet, but that distance may be reduced to 10 feet if the smoke alarm has an alarm-silencing switch. Photoelectric smoke alarms are less susceptible to activation by cooking vapors and are permitted to be located as close as 6 feet from a permanently installed cooking appliance.



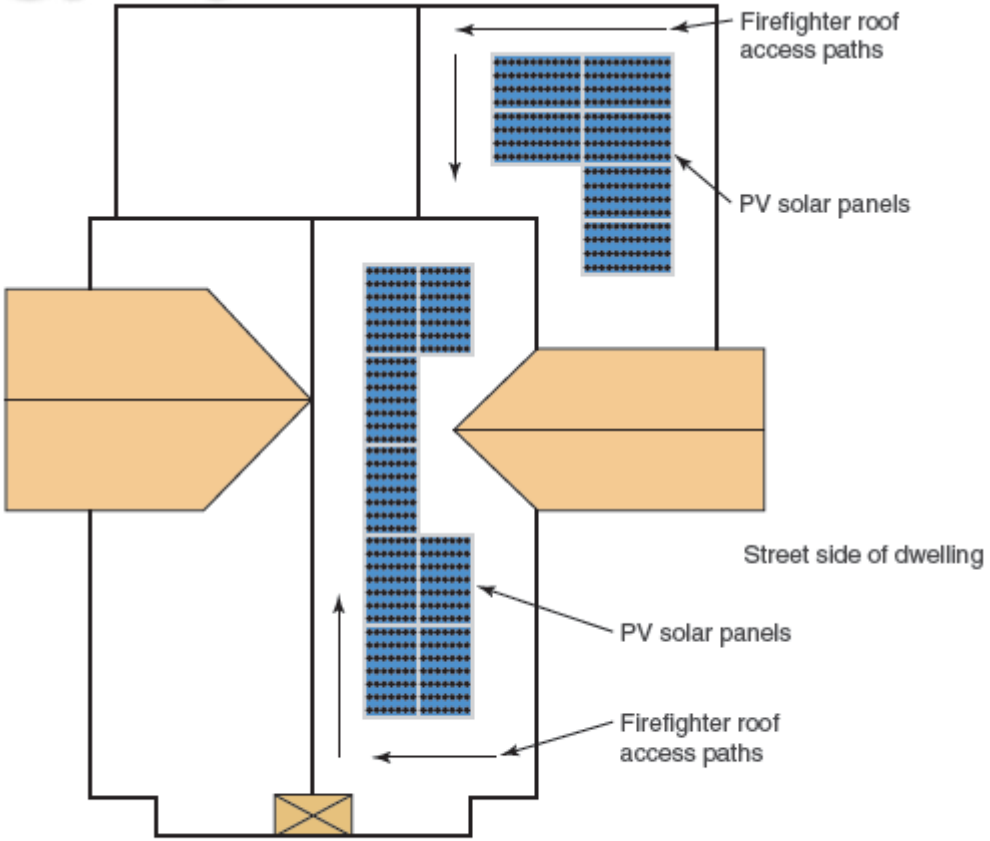
# R315.2.2 Carbon Monoxide Alarms

- Repairs to an existing fuel-fired mechanical system now trigger the retroactive requirements for carbon monoxide alarms. **LSUCCC Amendment:** When a permanent fuel fired appliance including a standby generator is installed outside. Carbon monoxide alarms are to be installed inside of each separate sleeping room and one in the living area.

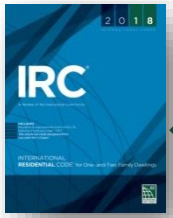



# R324.6 Roof Access for Photovoltaic Solar Energy Systems

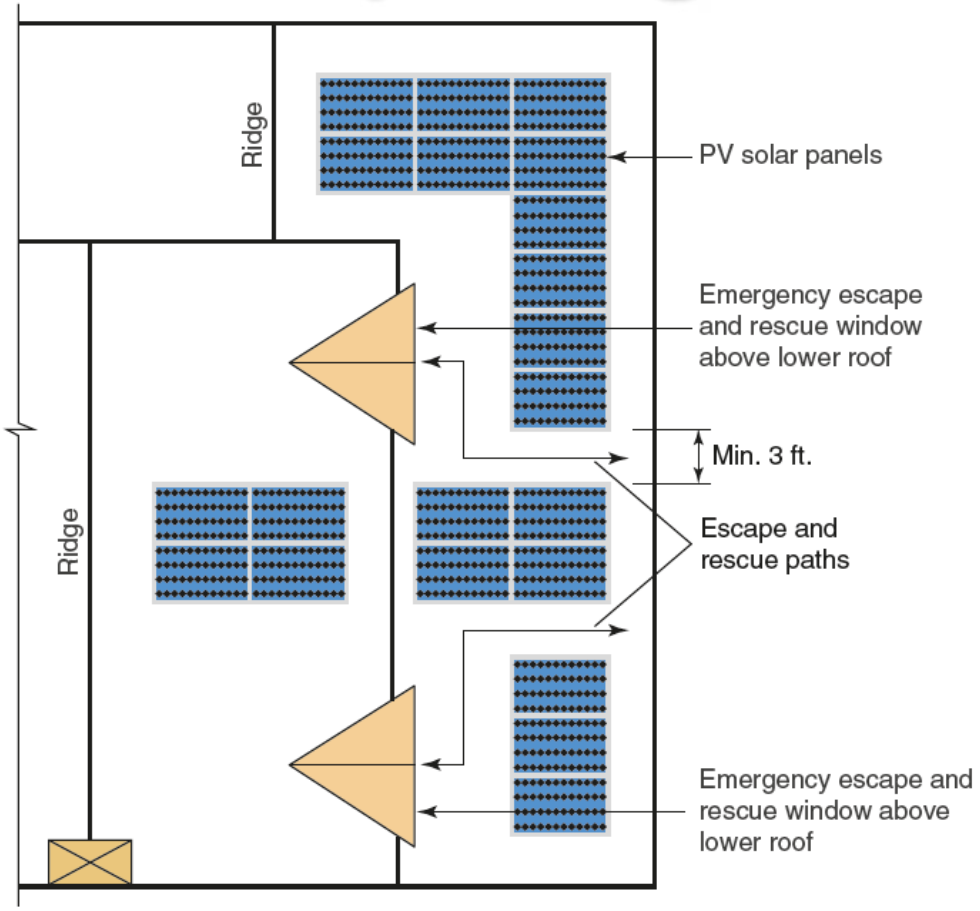
- Was an amendment to the 2015




Required roof access and pathways for firefighters for roof-mounted PV solar systems



# R324.6.2.2 Solar Panels Near Emergency Escape and Rescue Openings

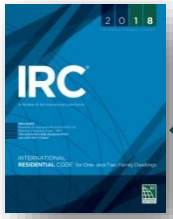


# Chapter 4 - Foundations

# R408.8 Under-floor Vapor Retarder

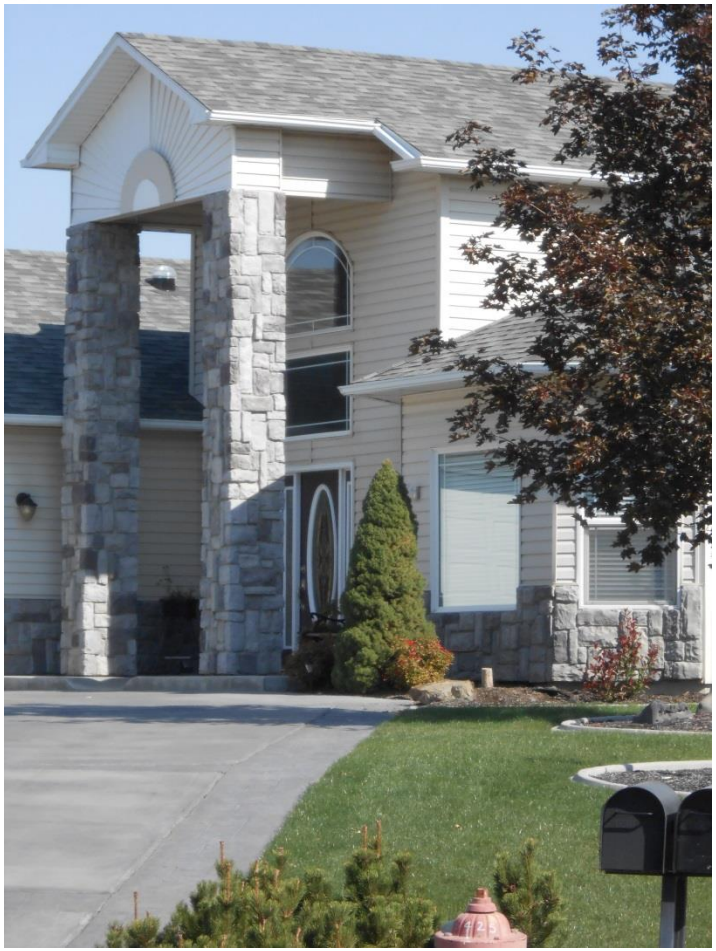
New Section R408.8 addresses issues with moisture accumulation in floors above vented and open crawlspaces in warm-humid climates. Water vapor migrating from under-floor spaces such as vented crawlspaces or open foundation systems towards cooler and drier indoor spaces may cause mold, mildew and decay within floor assemblies - especially where an impermeable floor covering or underlayment is used, as moisture can condense and be trapped within the wood subfloor. Such moisture problems have been observed even where crawl spaces are constructed in accordance with the IRC, with properly sized and located ventilation openings with use of Class I vapor retarders on the ground.

This section requires a Class I or Class II vapor retarder between the exposed face of air-permeable insulation materials installed between floor framing members above the crawlspace and the under-floor grade. The vapor retarder can be a separate layer of material or incorporated as part of the insulation. Examples include foil facing on fiberglass batts, polyisocyanurate rigid foam, or  a 6-mil polyethylene sheet applied over permeable insulation along the base of floor joists, I-joists or trusses.



# Chapter 6 - Walls

# Table R602.3(6) Alternate Stud Heights



# Table R602.3(6) Alternate Stud Heights

**TABLE R602.3(6) ALTERNATE WOOD BEARING WALL STUD SIZE, HEIGHT AND SPACING**

| STUD HEIGHT | SUPPORTING | STUD SPACING[a] | ULTIMATE DESIGN WIND SPEED | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 115 mph | | 130 mph[b] | | 140 mph[b] | |
| | | | Maximum roof/floor span[c] | | Maximum roof/floor span[c] | | Maximum roof/floor span[c] | |
| | | | 12 ft | 24 ft | 12 ft | 24 ft | 12 ft | 24 ft |
| 11 ft | Roof only | 12 in | 2 × 4 | 2 × 4 | 2 × 4 | 2 × 4 | 2 × 4 | 2 × 4 |
| | | 16 in | 2 × 4 | 2 × 4 | 2 × 4 | 2 × 6 | 2 × 4 | 2 × 6 |
| | | 24 in | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 |
| | Roof and one floor | 12 in | 2 × 4 | 2 × 6 | 2 × 4 | 2 × 6 | 2 × 4 | 2 × 6 |
| | | 16 in | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 |
| | | 24 in | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 |
| 12 ft | Roof only | 12 in | 2 × 4 | 2 × 4 | 2 × 4 | 2 × 6 | 2 × 4 | 2 × 6 |
| | | 16 in | 2 × 4 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 |
| | | 24 in | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 |
| | Roof and one floor | 12 in | 2 × 4 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 |
| | | 16 in | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 |
| | | 24 in | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | 2 × 6 | DR |

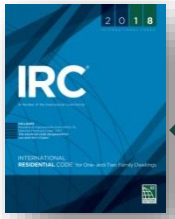
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mph = 0.447 m/s, 1 pound = 4.448 N.

DR = Design Required.

a. Wall studs not exceeding 16 inches on center shall be sheathed with minimum $^{1}/_{2}$-inch gypsum board on the interior and $^{3}/_{8}$-inch wood structural panel sheathing on the exterior. Wood structural panel sheathing shall be attached with 8d (2.5" × 0.131") nails not greater than 6 inches on center along panel edges and 12 inches on center at intermediate supports, and all panel joints shall occur over studs or blocking.

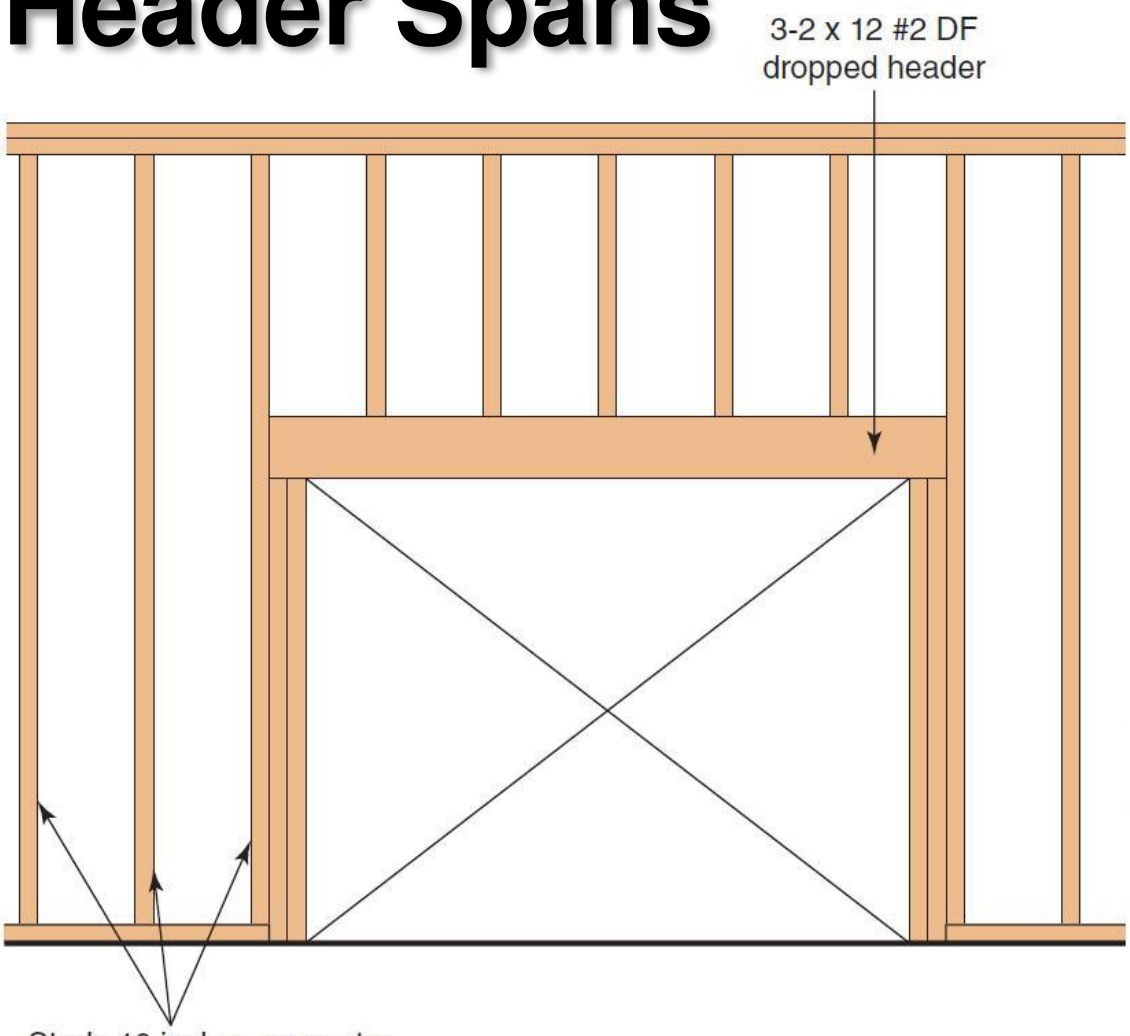
b. Where the ultimate design wind speed exceeds 115 mph, studs shall be attached to top and bottom plates with connectors having a minimum 300-pound lateral capacity.

c. The maximum span is applicable to both single- and multiple-span roof and floor conditions. The *roof assembly* shall not contain a habitable attic.



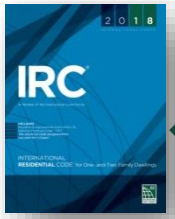
# Tables R602.7(1), R602.7(2) Girder and Header Spans Revised

# Tables R602.7(1), R602.7(2) Girder and Header Spans

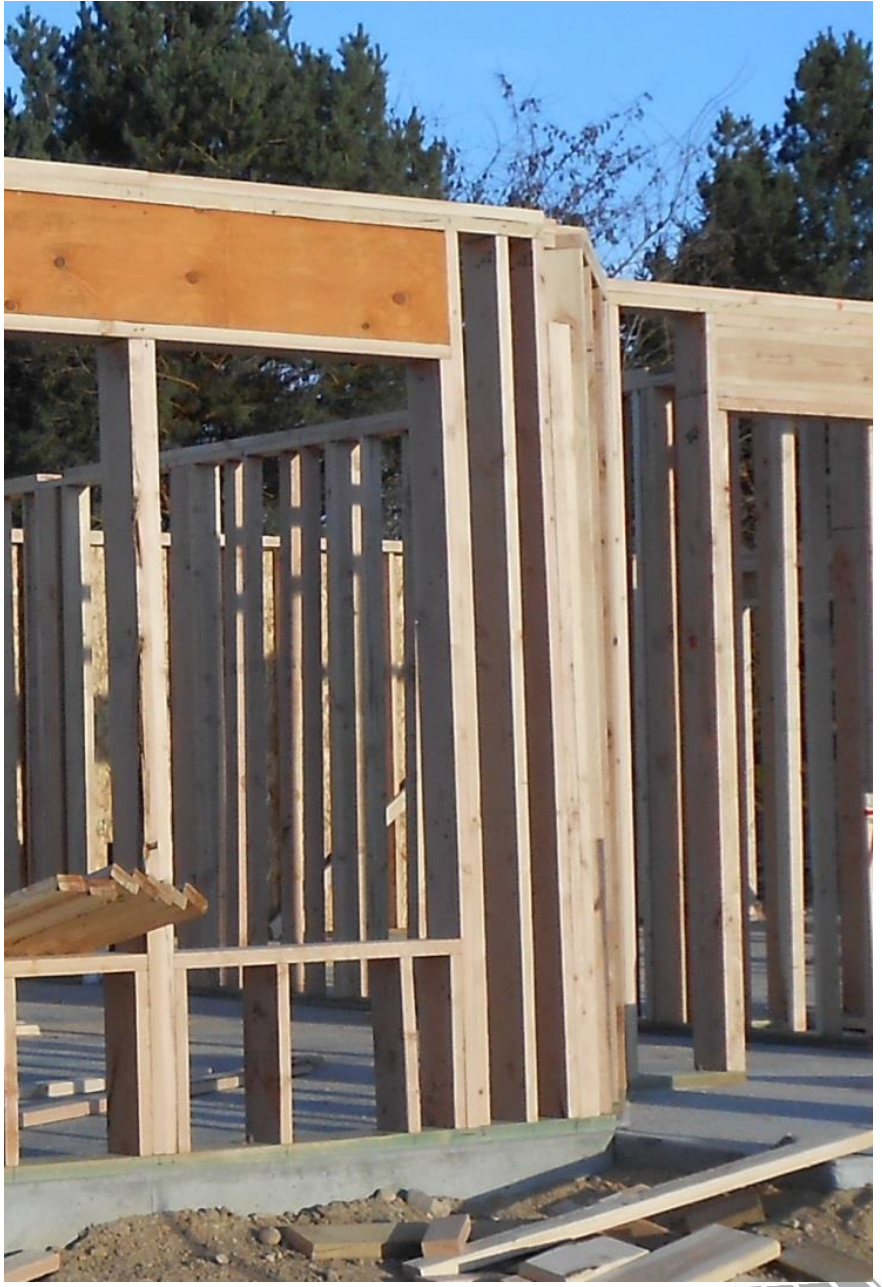



Dropped header with pony wall above

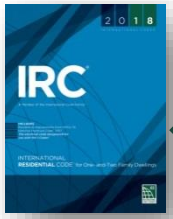




# Table R602.7.5 Full Height Studs at End of Headers



The table increases the number of king studs in higher wind regions and requires only one or two king studs at each end of a header in regions with 115 mph wind speeds.



# Table R602.7.5 Full Height Studs at End of Headers

The table increases the number of king studs in higher wind regions and requires only one or two king studs at each end of a header in regions with 115 mph wind speeds.

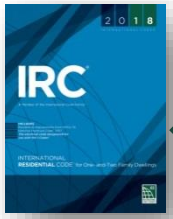
**TABLE R602.7.5**
**MINIMUM NUMBER OF FULL-HEIGHT STUDS AT EACH END OF HEADERS IN EXTERIOR WALLS[a]**

| MAXIMUM HEADER SPAN (feet) | ULTIMATE DESIGN WIND SPEED AND EXPOSURE CATEGORY | |
|---|---|---|
| | < 140 mph, Exposure B or < 130 mph, Exposure C | ≤ 115 mph, Exposure B[b] |
| 4 | 1 | 1 |
| 6 | 2 | 1 |
| 8 | 2 | 1 |
| 10 | 3 | 2 |
| 12 | 3 | 2 |
| 14 | 3 | 2 |
| 16 | 4 | 2 |
| 18 | 4 | 2 |

For SI: 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.

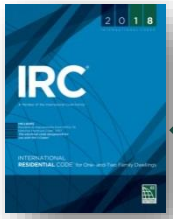
a. For header spans between those given, use the minimum number of full-height studs associated with the larger header span.

b. The tabulated minimum number of full-height studs is applicable where jack studs are provided to support the header at each end in accordance with Table R602.7(1). Where a framing anchor is used to support the header in lieu of a jack stud in accordance with Note d of Table R602.7(1), the minimum number of full-height studs at each end of a header shall be in accordance with requirements for wind speed < 140 mph, Exposure B.



# 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
  - model/series number
  - positive and negative design wind pressure rating
  - installation instruction drawing reference number
  - applicable test standard



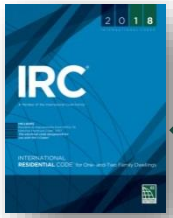

# Chapter 7 – Wall Covering

# R703.2 Water-resistive Barrier

1. Install comply with Manufacturer's installation instructions
2. Detached accessory buildings

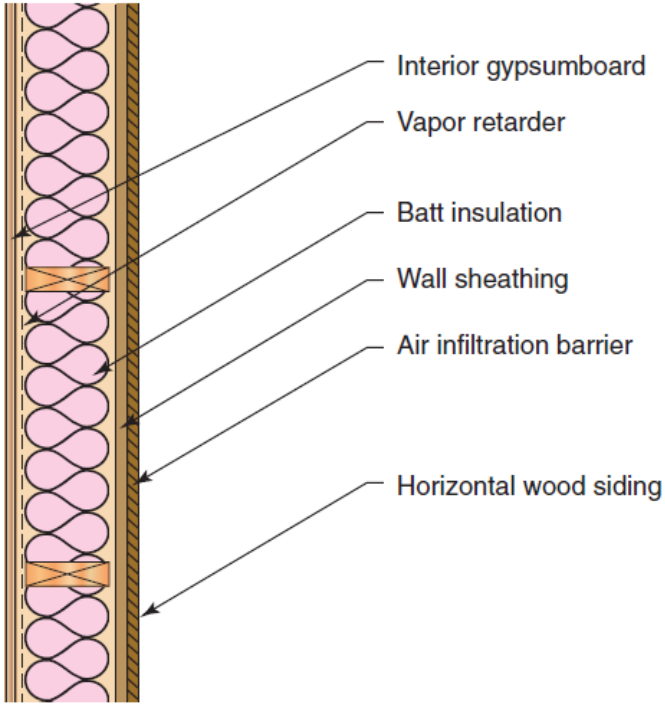

**Modification**

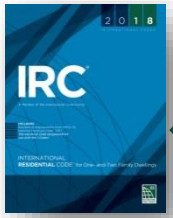
Water-resistive barriers other than the traditional No. 15 asphalt felt, must comply with the manufacturer's installation instructions.



# R702.7Vapor Retarders

- The vapor retarder section is reorganized for clarity and ease of use.
- Materials are listed as Class I, II or III.
- Tables offer appropriate climate zones for each class.
- Class II and III vapor retarders may be used with continuous insulation.

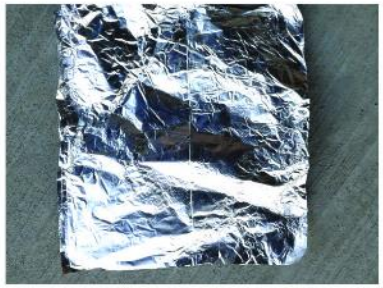



ICC LEARNING CENTER

# Vapor Retarders

**Class I**



VR < 0.1 perm

Impermeable

Foil and Polyethylene sheets

**Class II**

0.1 perm < VR < 1 perm

Semi-impermeable

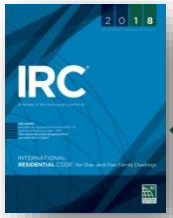
Extruded polystyrene and
Kraft fiberglass batts

**Class III**

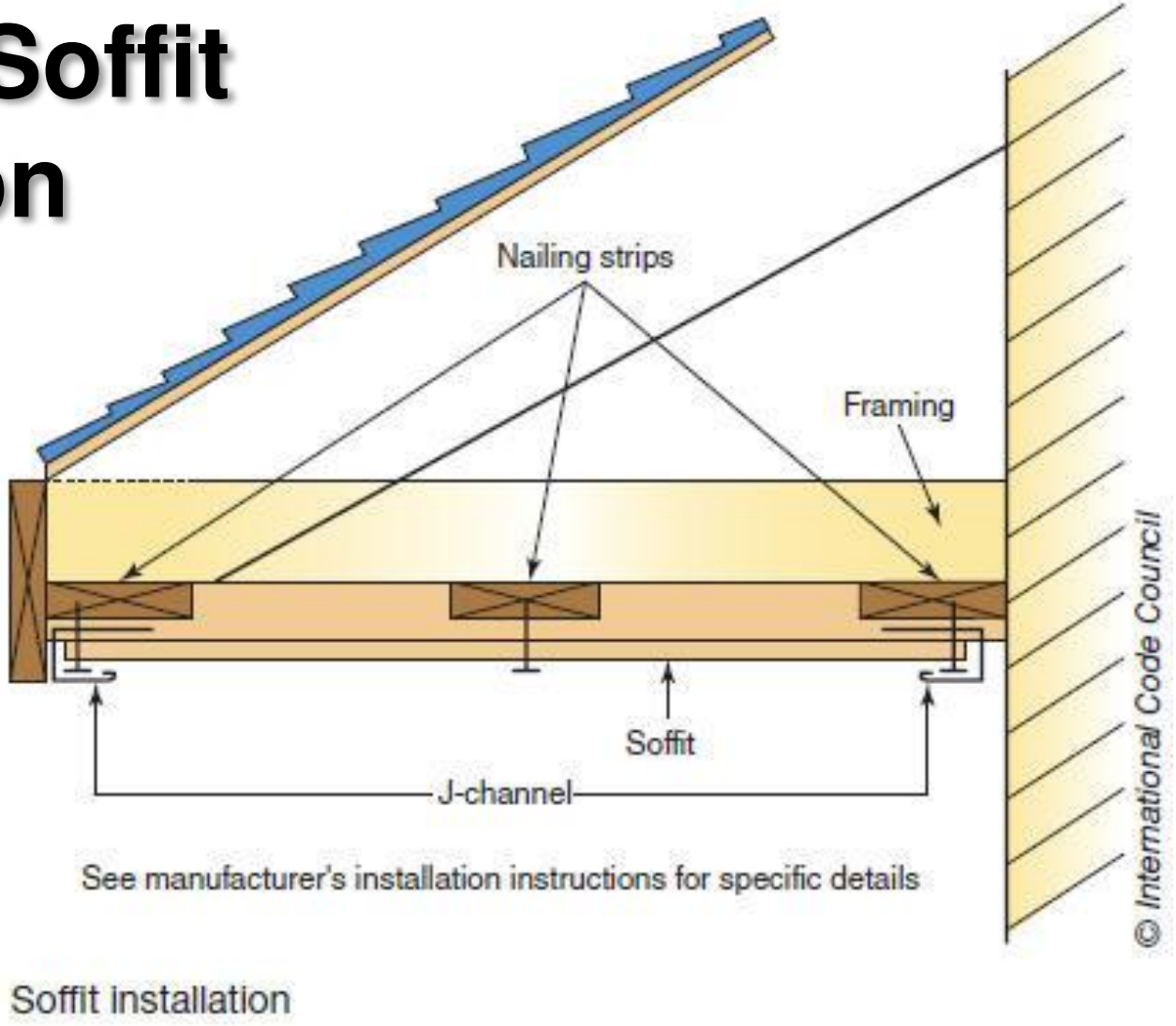

1 perm < VR

Semi-impermeable

Latex paint, 30# felt and Plywood



# R703.3.1 Soffit Installation




Soffit installation

- And wood structural panels

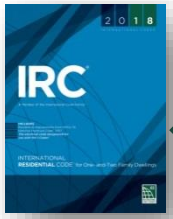
# R703.3.1 Soffit Installation (NEW)

**R703.3.1.1 Wood structural panel soffit.**

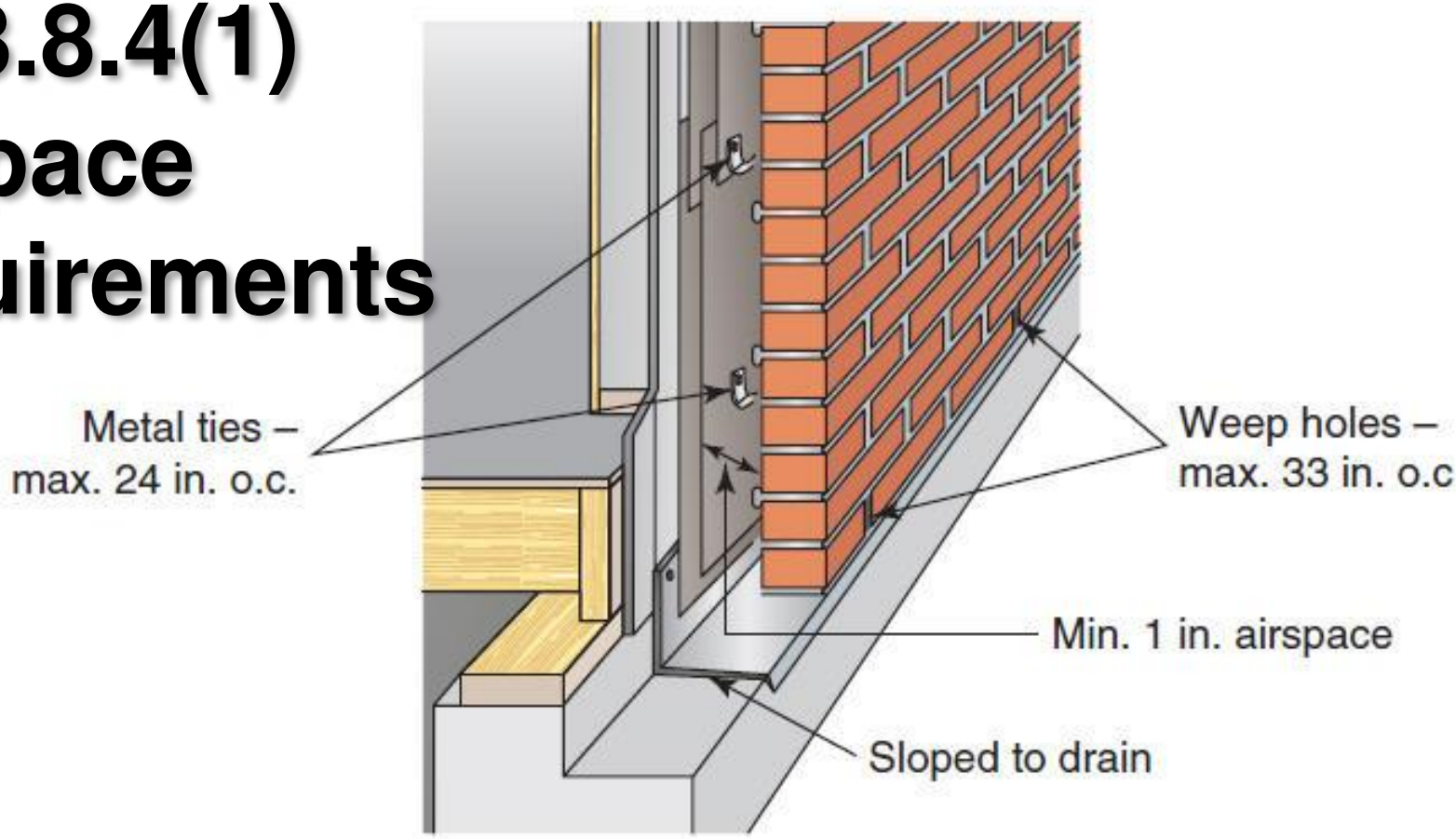
The minimum nominal thickness for wood structural panel soffits shall be $^{3}/_{8}$ inch (9.5 mm) and shall be fastened to framing or nailing strips with 2-inch by 0.099-inch (51 mm × 2.5 mm) nails. Fasteners shall be in spaced not less than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.

**R703.3.1.2 Vinyl soffit panels.**

Soffit panels shall be fastened at fascia and wall ends and to intermediate nailing strips as necessary to ensure that there is no unsupported span greater than 16 inches (406 mm), or as specified by the manufacturer's instructions.



# Table R703.8.4(1) Airspace Requirements




Drainage airspace behind veneer may contain some mortar spills.

# Chapter 8 – Roof
# Chapter 9 – Roof Covering


ICC LEARNING center

# R802 Roof Framing

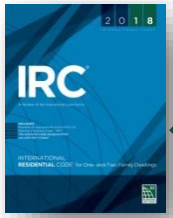
- Reorganized

# R802.1.5.4 FRTW Labeling

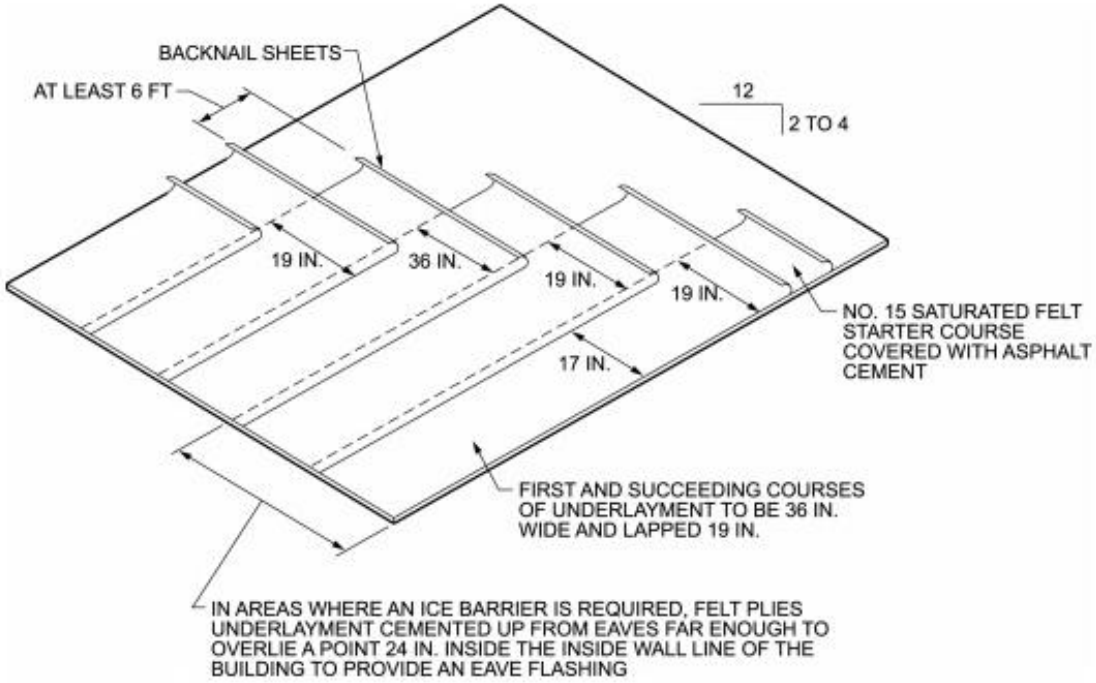

**Modification**

In addition to the labels already required for sawn lumber and wood structural panels, this section now clarifies that there will be an additional label for fire-retardant-treated lumber and wood structural panels that contains the information from Section R802.1.5.4.

Two labels will be stamped on each piece of fire-retardant-treated wood or panel.

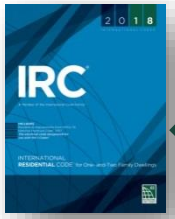


# TABLE R905.1.1(2) UNDERLAYMENT APPLICATION




**Commentary Figure R905.1.1 LOW-SLOPE DOUBLE-PLY UNDERLAYMENT APPLICATION**

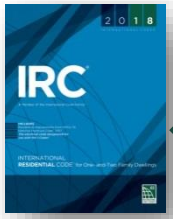
For roof slopes from 2 units vertical in 12 units horizontal (2:12), up to 4 units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied in the following manner: apply a 19-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches



# TABLE R905.1.1(2) UNDERLAYMENT APPLICATION

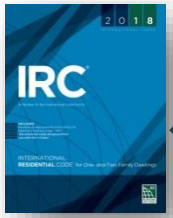
TABLE R905.1.1(2) UNDERLAYMENT APPLICATION

| ROOF COVERING | SECTION | AREAS WHERE WIND DESIGN IS NOT REQUIRED IN ACCORDANCE WITH FIGURE R301.2.1.1 | AREAS WHERE WIND DESIGN IS REQUIRED IN ACCORDANCE WITH FIGURE R301.2.1.1 |
|---|---|---|---|
| Asphalt shingles | R905.2 | For roof slopes from 2 units vertical in 12 units horizontal (2:12), up to 4 units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied in the following manner: apply a 19-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. For roof slopes of 4 units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied in the following manner: underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches, Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. | Underlayment shall be two layers applied in the following manner: apply a 19-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. |
| Clay and concrete tile | R905.3 | For roof slopes from $2\frac{1}{2}$ units vertical in 12 units horizontal ($2\frac{1}{2}$:12), up to 4 units vertical in 12 units horizontal (4:12), underlayment shall be not fewer than two layers applied as follows: starting at the eave, apply a 19-inch strip of underlayment parallel with the eave. Starting at the eave, apply 36-inch-wide strips of underlayment felt, overlapping successive sheets 19 inches. End laps shall be 4 inches and shall be offset by 6 feet. For roof slopes of 4 units vertical in 12 units horizontal (4:12) or greater, underlayment shall be not fewer than one layer of underlayment felt applied shingle fashion, parallel to and starting from the eaves and lapped 2 inches. End laps shall be 4 inches and shall be offset by 6 feet. | Underlayment shall be two layers applied in the following manner: apply a 19-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. |
| Metal roof shingles | R905.4 | Apply in accordance with the manufacturer's installation instructions. | Underlayment shall be two layers applied in the following manner: apply a 19-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches. End laps shall be 4 inches and shall be offset by 6 feet. |
| Mineral-surfaced roll roofing | R905.5 | | |
| Slate and slate-type shingles | R905.6 | | |
| Wood shingles | R905.7 | | |
| Wood shakes | R905.8 | | |
| Metal panels | R905.10 | | |



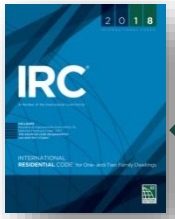
# TABLE R905.1.1(3) UNDERLAYMENT APPLICATION

| ROOF COVERING | SECTION | AREAS WHERE WIND DESIGN IS NOT REQUIRED IN ACCORDANCE WITH FIGURE R301.2.1.1 | AREAS WHERE WIND DESIGN IS REQUIRED IN ACCORDANCE WITH FIGURE R301.2.1.1 |
|---|---|---|---|
| Asphalt shingles | R905.2 | Fastened sufficiently to hold in place | The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of 12 inches between side laps with a 6-inch spacing at side and end laps. Underlayment shall be attached using annular ring or deformed shank nails with 1-inch-diameter metal or plastic caps. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than $^{3}/_{4}$ inch into the roof sheathing. |
| Clay and concrete tile | R905.3 | | |
| Photovoltaic | R905.16 | | |
| Metal roof shingles | R905.4 | Manufacturer's installation instructions. | The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of 12 inches between side laps with a 6-inch spacing at side and end laps. Underlayment shall be attached using annular ring or deformed shank nails with 1-inch-diameter metal or plastic caps. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than $^{3}/_{4}$ inch into the roof sheathing. |
| Mineral-surfaced roll roofing | R905.5 | | |
| Slate and slate-type shingles | R905.6 | | |
| Wood shingles | R905.7 | | |
| Wood shakes | R905.8 | | |
| Metal panels | R905.10 | | |



# LSUCCC Amendment Section 905.1.2, Ice Barriers.

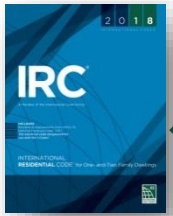
An ice barrier shall be installed for asphalt shingles, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles and wood shakes. The ice barrier shall consist of not fewer than two layers of *underlayment* cemented together, or a self-adhering polymer-modified bitumen sheet shall be used in place of normal *underlayment* and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building. On roofs with slope equal to or greater than 8 units vertical in 12 units horizontal (67-percent slope), the ice barrier shall also be applied not less than 36 inches (914 mm) measured along the roof slope from the eave edge of the building.



Chapter 10

# Chimneys and Fireplaces

# R1005.8 Chimney Insulation Shield

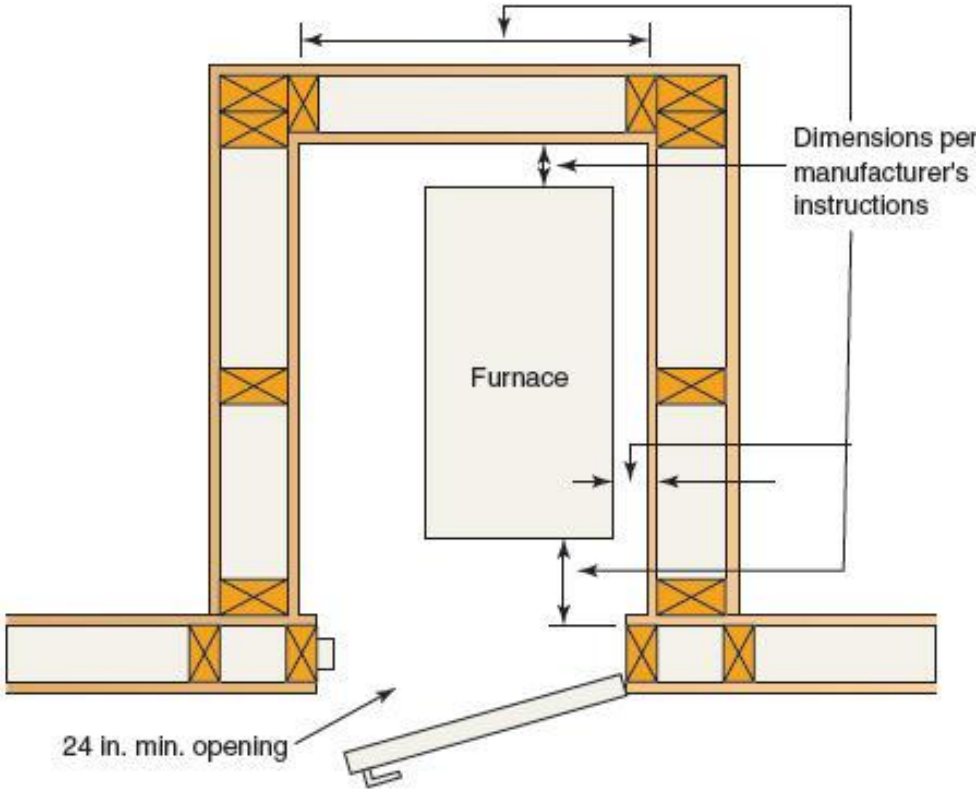



A new Section R1005.8 Chimney insulation shield requires an insulation shield when a factory-built chimney passes through an insulated assembly.

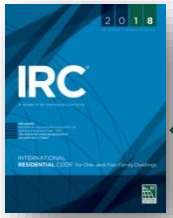
Chapters 12 through 23

# Mechanical

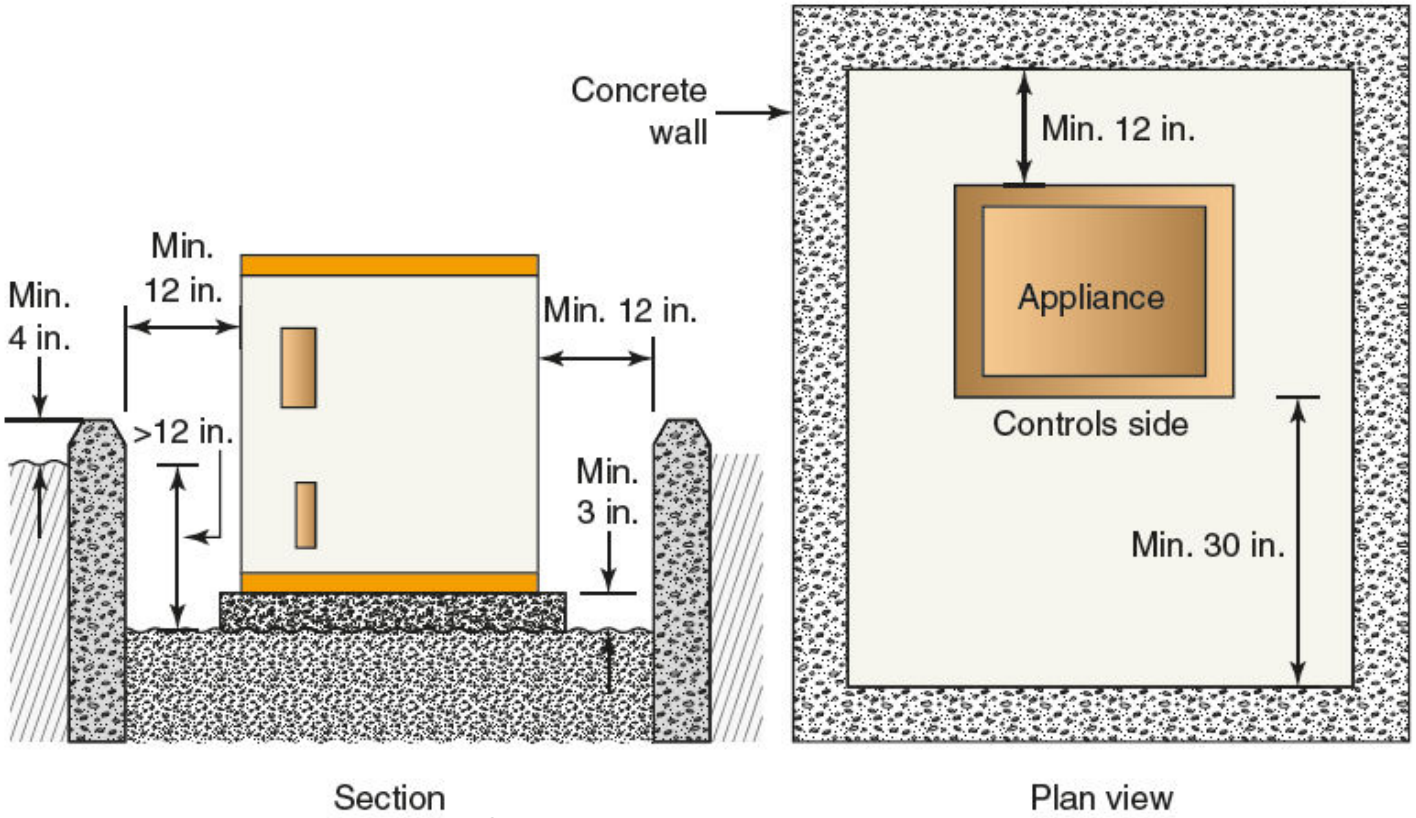
# M1305.1.1 Access to Furnaces within Compartment



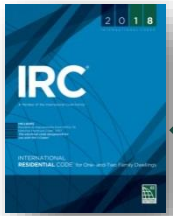

The appliance access requirements for furnaces in compartments have been removed from the code in favor of other code provisions and the manufacturer's instructions.



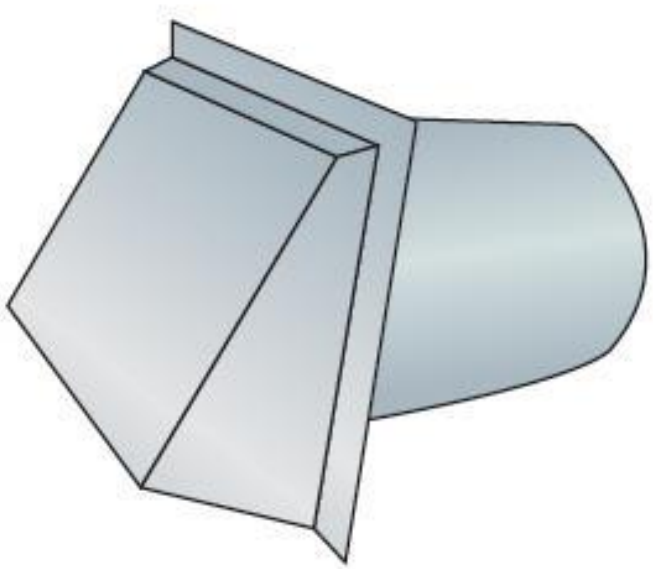
# M1305.1.3.2 Appliances Installed in Pits

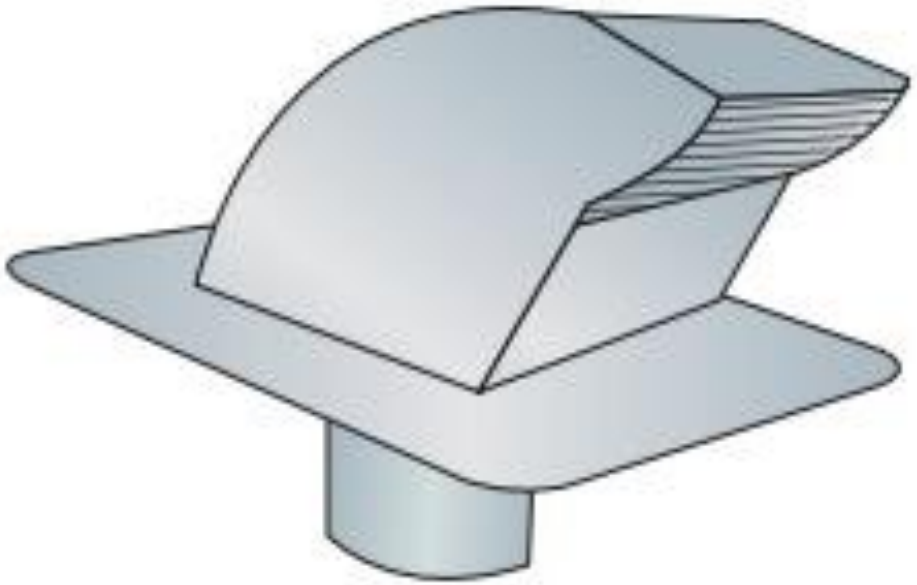



The requirements for appliance installation in pits has been expanded to provide more detail and to be similar to language found in other ICC codes. The minimum bottom clearance has been reduced from 6 inches to 3 inches.

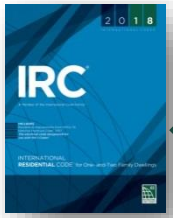


# M1502.3.1 Dryer Exhaust Duct Termination



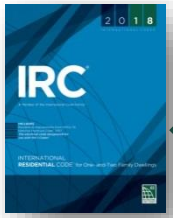


A minimum area of 12.5 square inches has been established for the terminal outlet of dryer duct exhaust.



# M1502.4.2 Concealed Dryer Exhaust Ducts

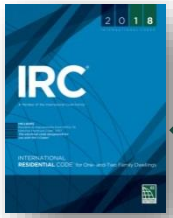


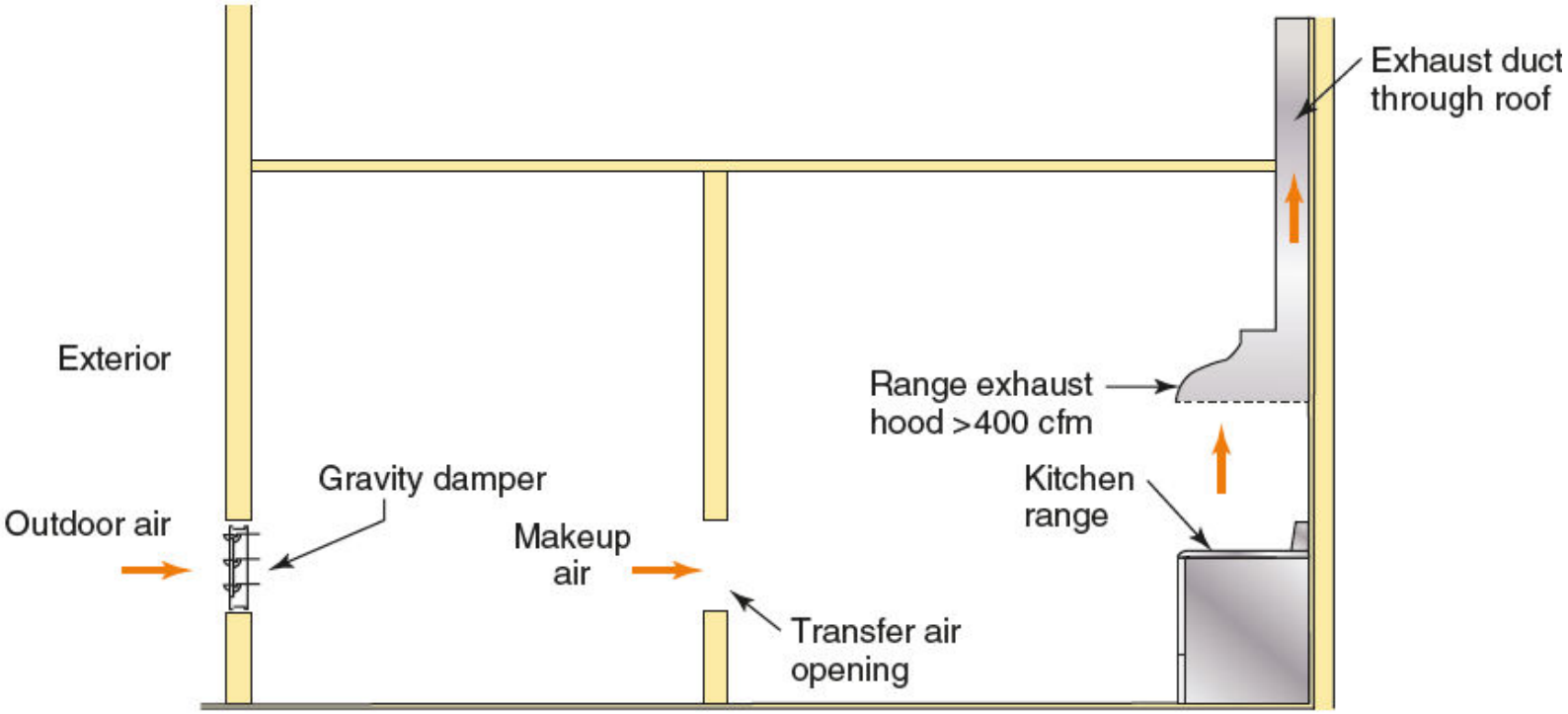

Wall and ceiling cavities enclosing dryer exhaust duct must provide sufficient space that the 4-inch duct is not squeezed out of its round shape.

# M1503 Domestic Cooking Exhaust Equipment

Domestic cooking exhaust equipment is the preferred terminology for kitchen exhaust because it is more descriptive and includes all of the components of the exhaust system

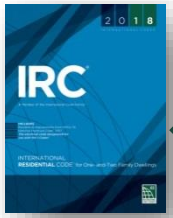


# M1503.6 Makeup Air for Kitchen Exhaust Systems



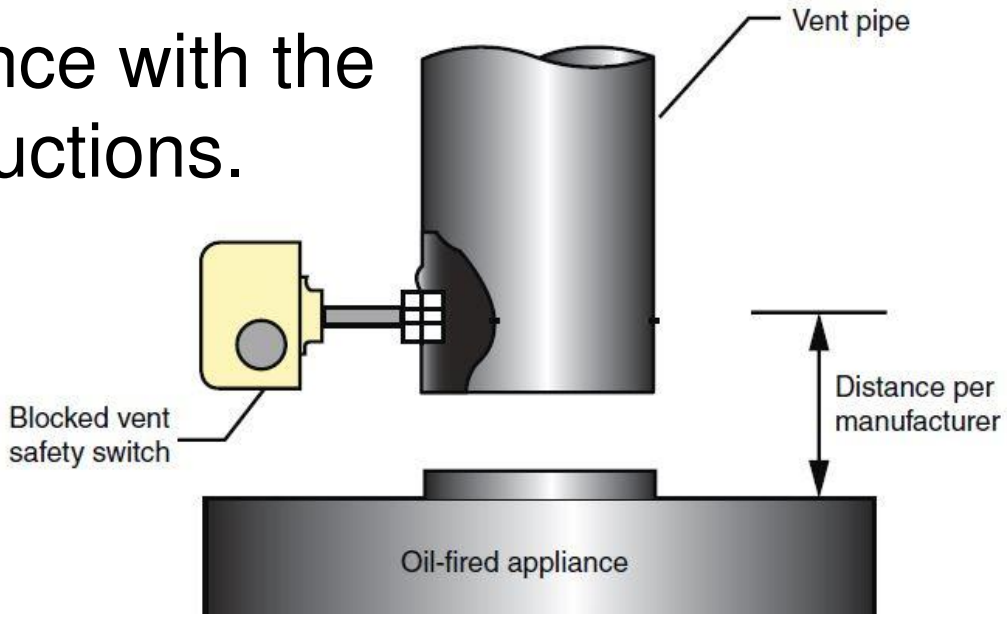

Option 2

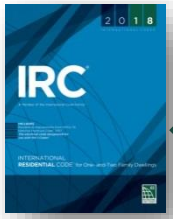
Makeup air for domestic cooking exhaust systems is no longer required if all fuel-burning appliances in the dwelling unit have a direct vent or mechanical draft vent system.



# M1802.4 Blocked Vent Switch for Oil-fired Appliances

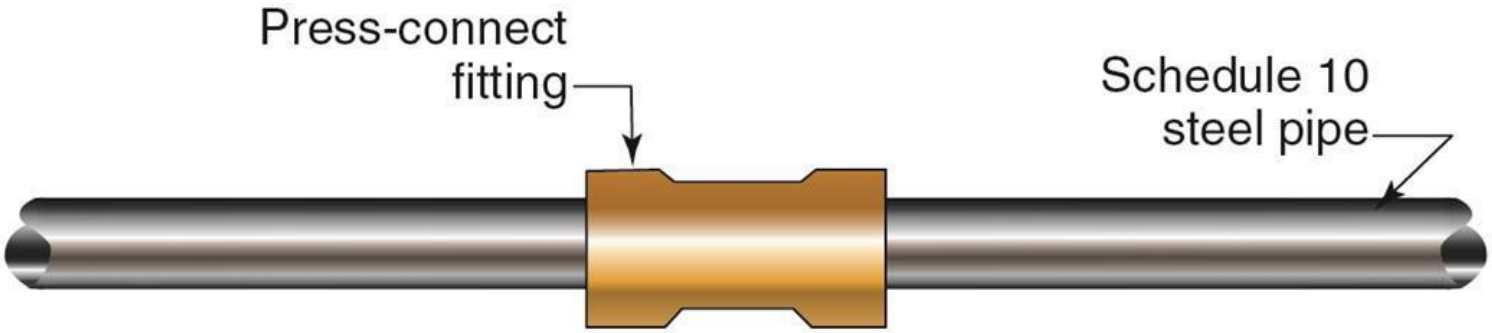
- Device will stop burner operation if venting system is obstructed.
- Requires a manual reset.
- Installed in accordance with the manufacturer's instructions.



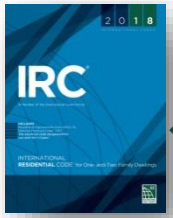
# Chapter 24 – Fuel Gas

# G2414.4.2, G2414.10.1 Schedule 10 Steel Gas Piping

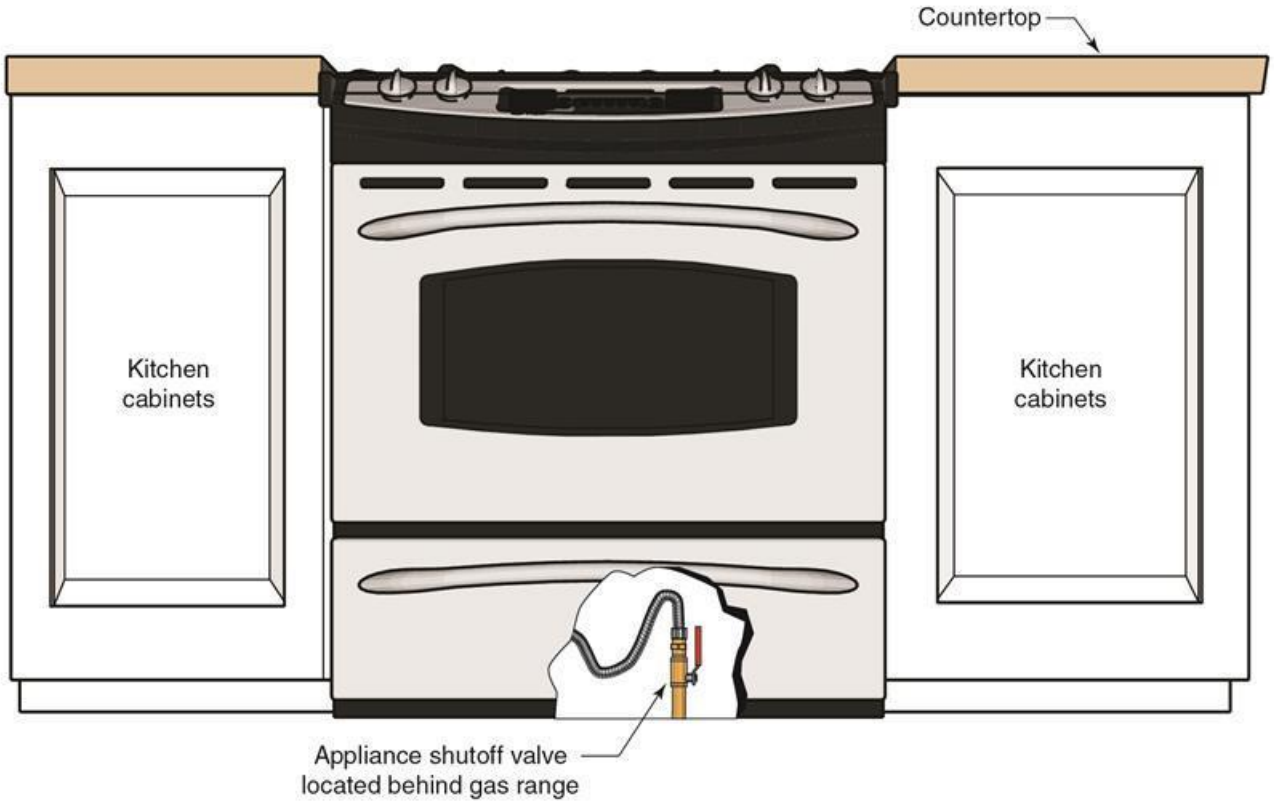



Press-connect fittings use gaskets and special equipment to join steel gas piping

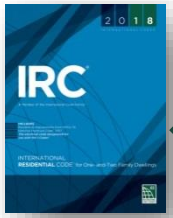
The code now allows Schedule 10 steel pipe to be used for fuel gas piping.



# G2420.5.1 Shutoff Valve Location



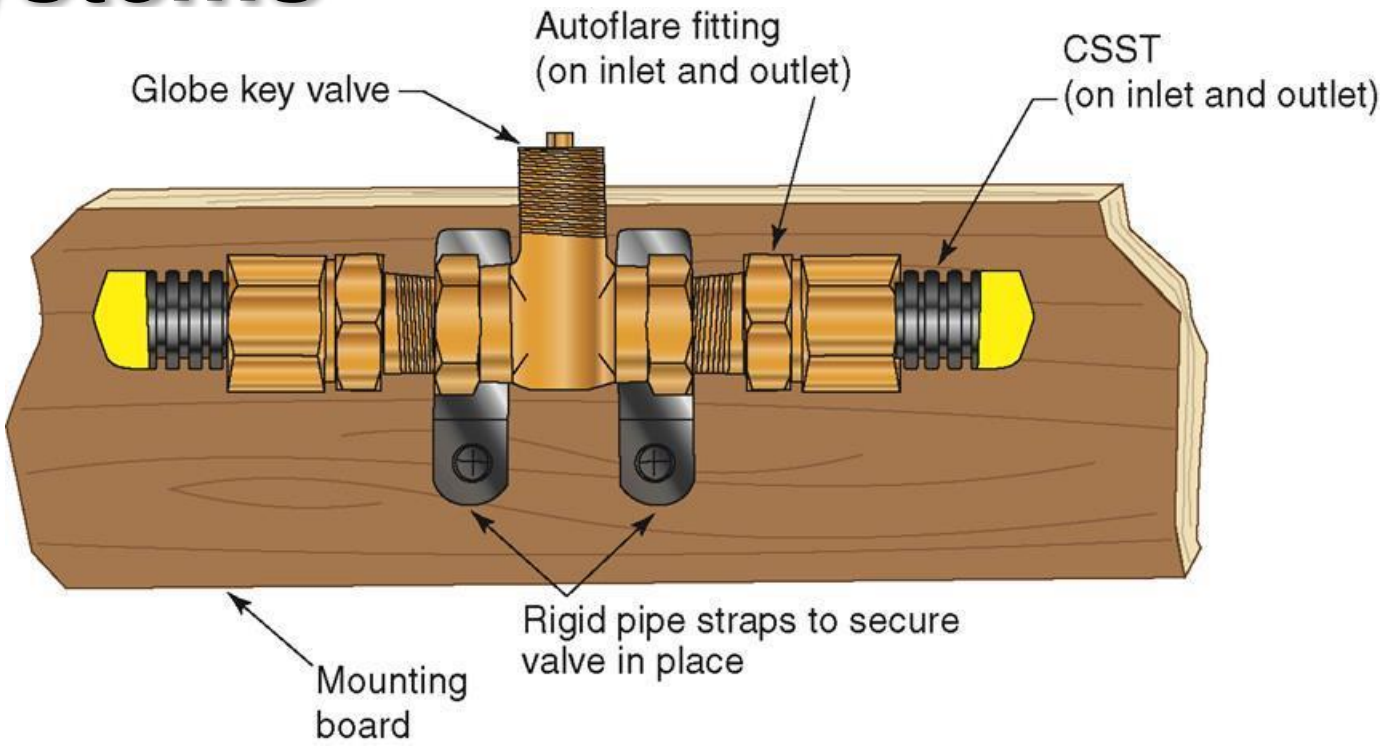

Clarification G2420.5.1
Shutoff valves located behind movable appliances are considered as meeting the requirement for access.

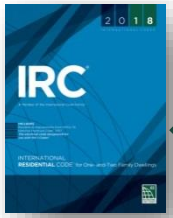





ICC LEARNING CENTER

# G2420.6 Support for Shutoff Valves in Tubing Systems

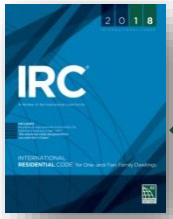



Shutoff valves in gas tubing systems require rigid support separate from the tubing to prevent damage at the valve connection.

# G2447.2 Commercial Cooking Appliances Prohibited

- The marketplace has taken care of the demand for commercial-style appliances. Appliance manufacturers currently offer many commercial-style appliances that are dual listed as both commercial and household appliances.

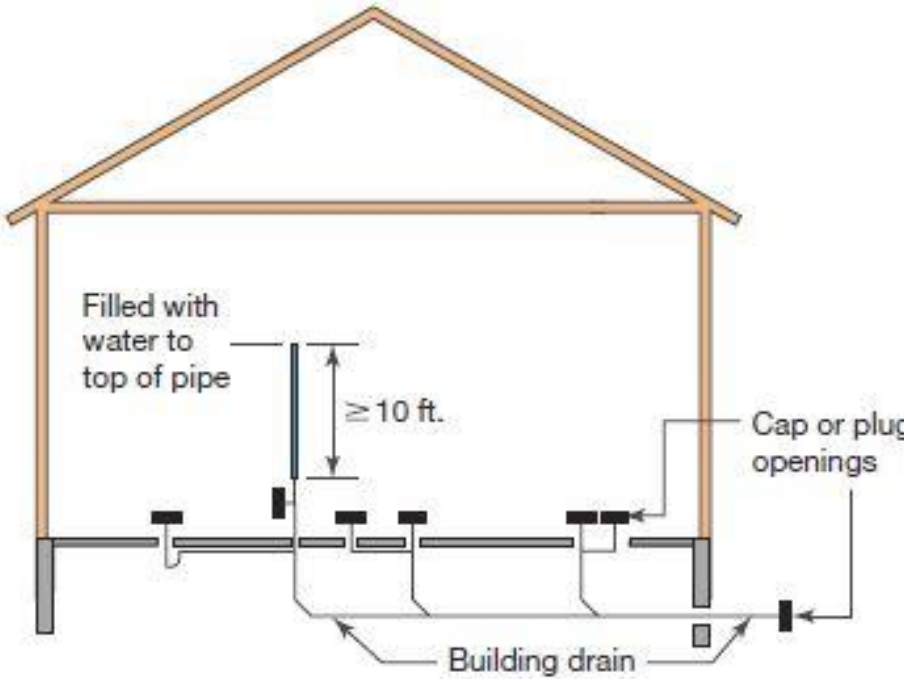


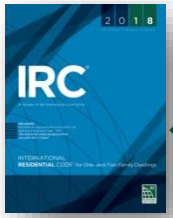
# Chapters 25-33 – Plumbing


ICC LEARNING center

# P2503.5.1 Drain, Waste and Vent Systems Testing

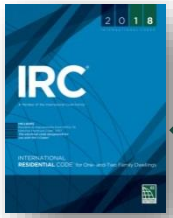
- The head pressure for a water test of DWV systems has increased to 10 feet.
  - Now matches the IPC.



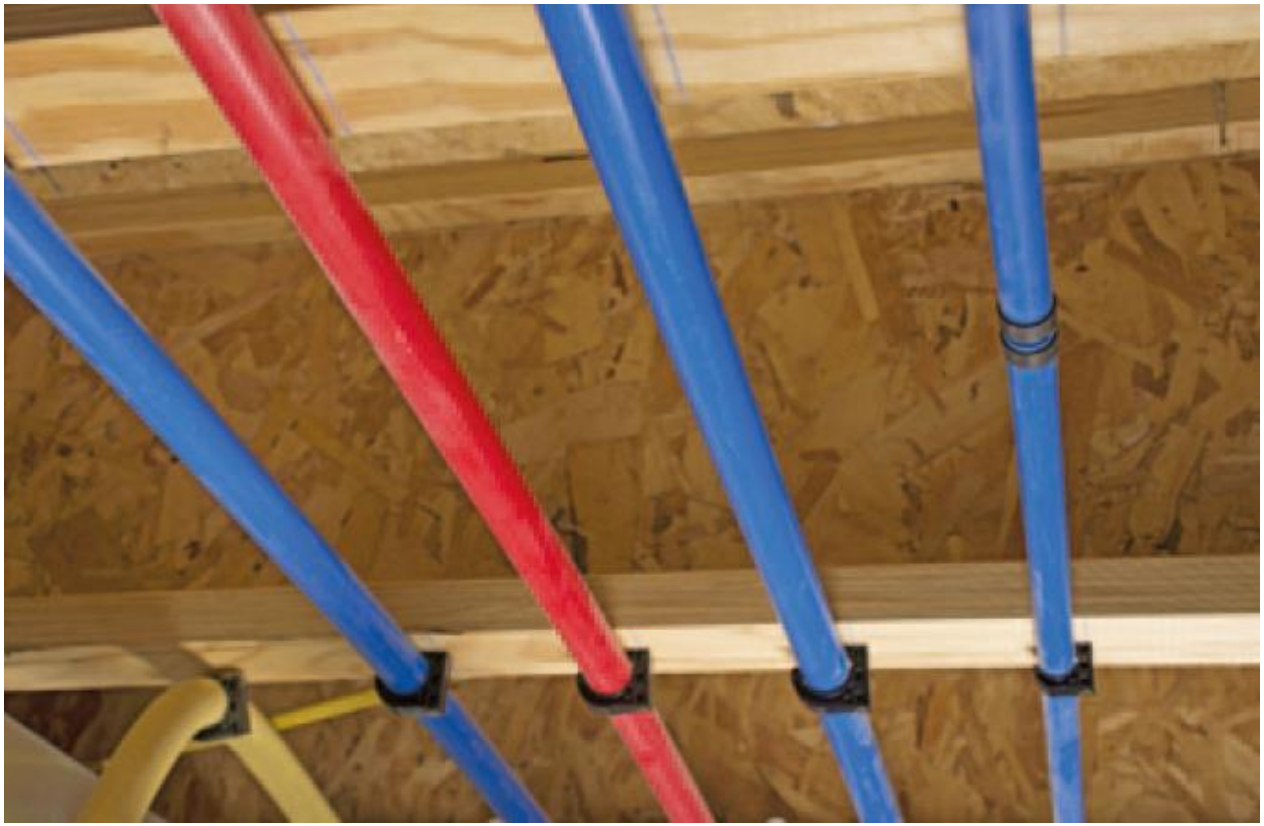



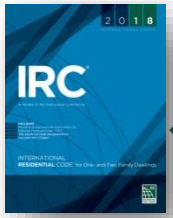
# P2503.5.1 Drain, Waste and Vent Systems Testing (continued)

- This alternate test is a means for testing plastic piping systems when the ambient temperatures are below freezing and testing with water presents a challenge.



# P2503.7 Air Testing of PEX Piping

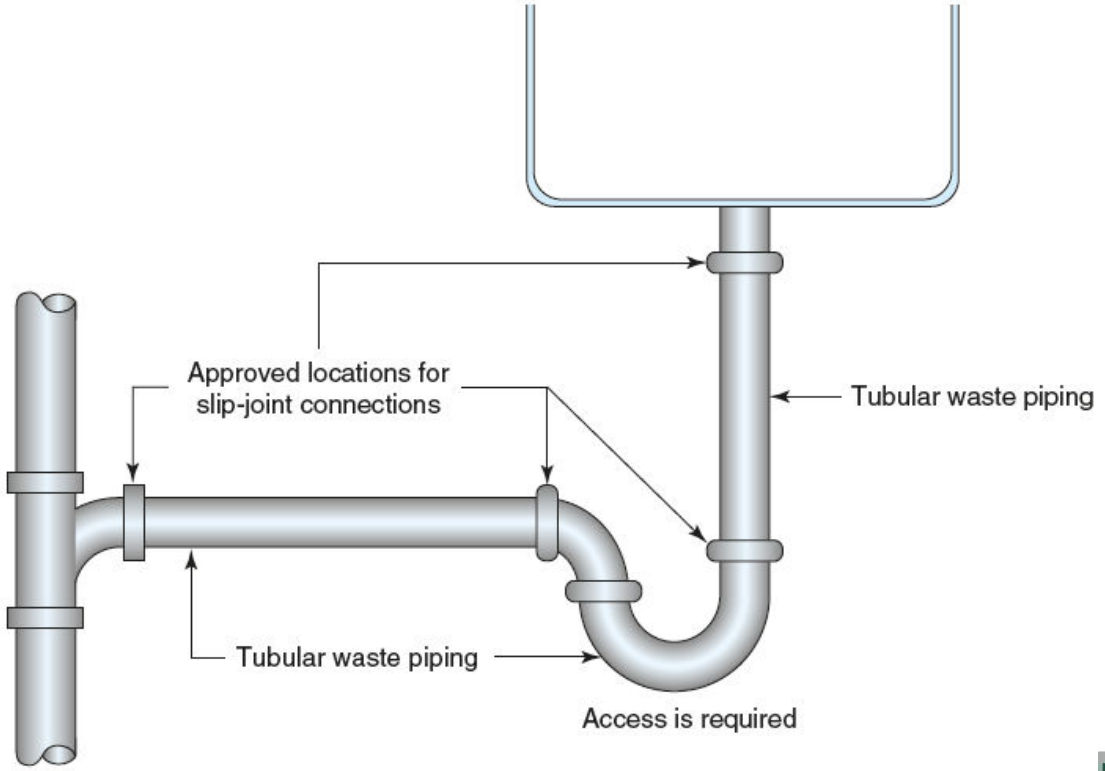


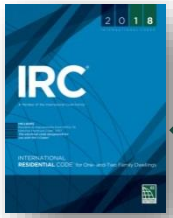



Compressed air testing of PEX water supply piping is now allowed when testing is in accordance with the manufacturer's instructions.

# P2704 Slip Joint Connections

Slip joint connections are permitted anywhere between the fixture outlet and the drainage piping, and are no longer limited to the trap inlet, outlet and trap seal locations.

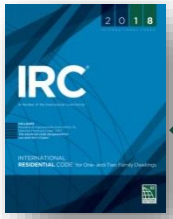


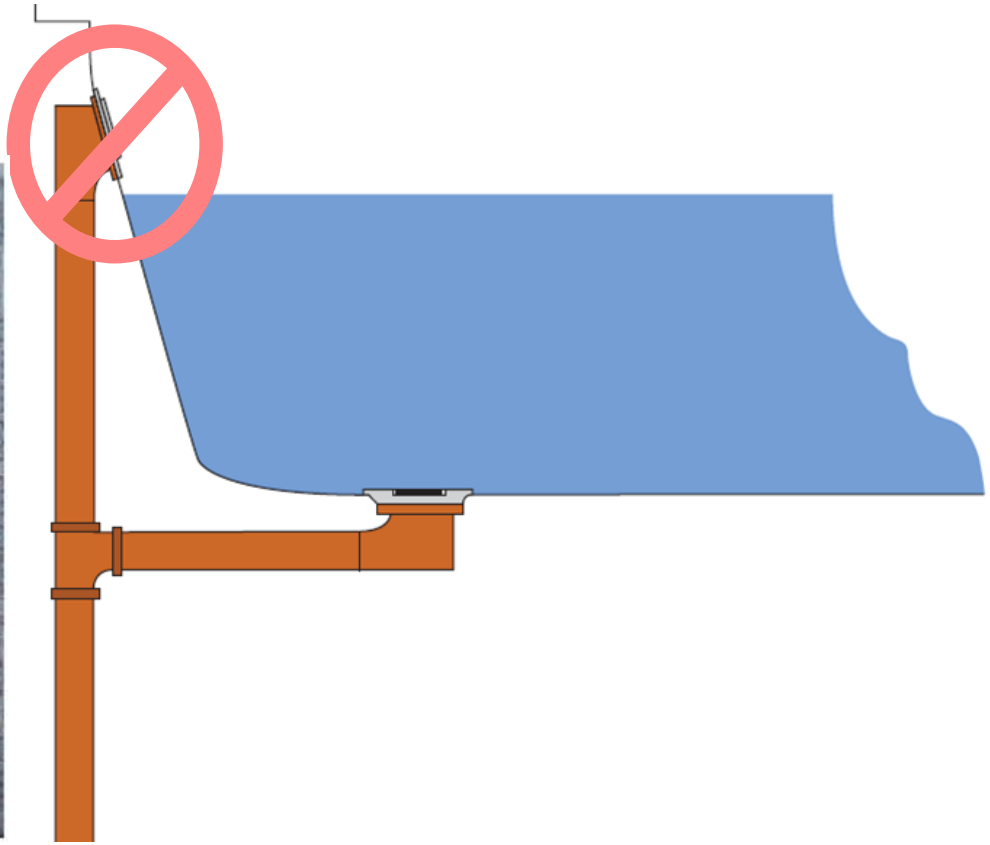
# P2708.4, P2713.3 Shower and Bathtub Control Valves

- Addresses field adjustment and access to shower control valves.
- Lower flow shower heads need to be compatible with the shower control mixing valve.

Standard shower head flow rate not greater than 2.5 gallons per minute (gpm). Shower heads are available in the market that have lower flow rates that can interfere with mixing valve anti scalding protection. Section P2708.4 requires shower control valves to be rated for the flow rate of the installed showerhead. Access must be provided



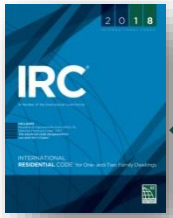
# P2713.1 Bathtub Overflow



Bathtub overflow outlets are no longer required

# P2801.6 Plastic Pan for Gas-Fired Water Heaters

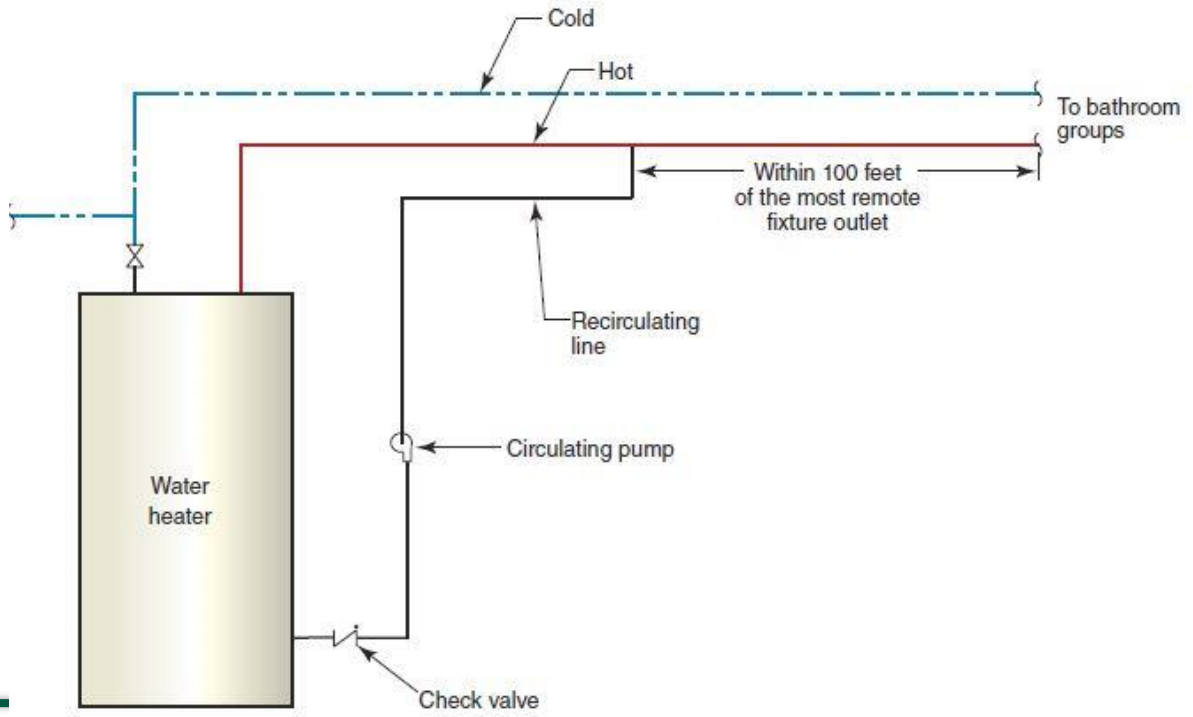

Photo courtesy of Lowe's

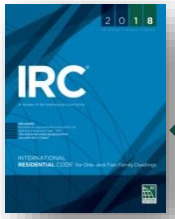



Plastic safety pans are now allowed under gas water heaters provided the material falls within the prescribed flame spread and smoke developed indices.

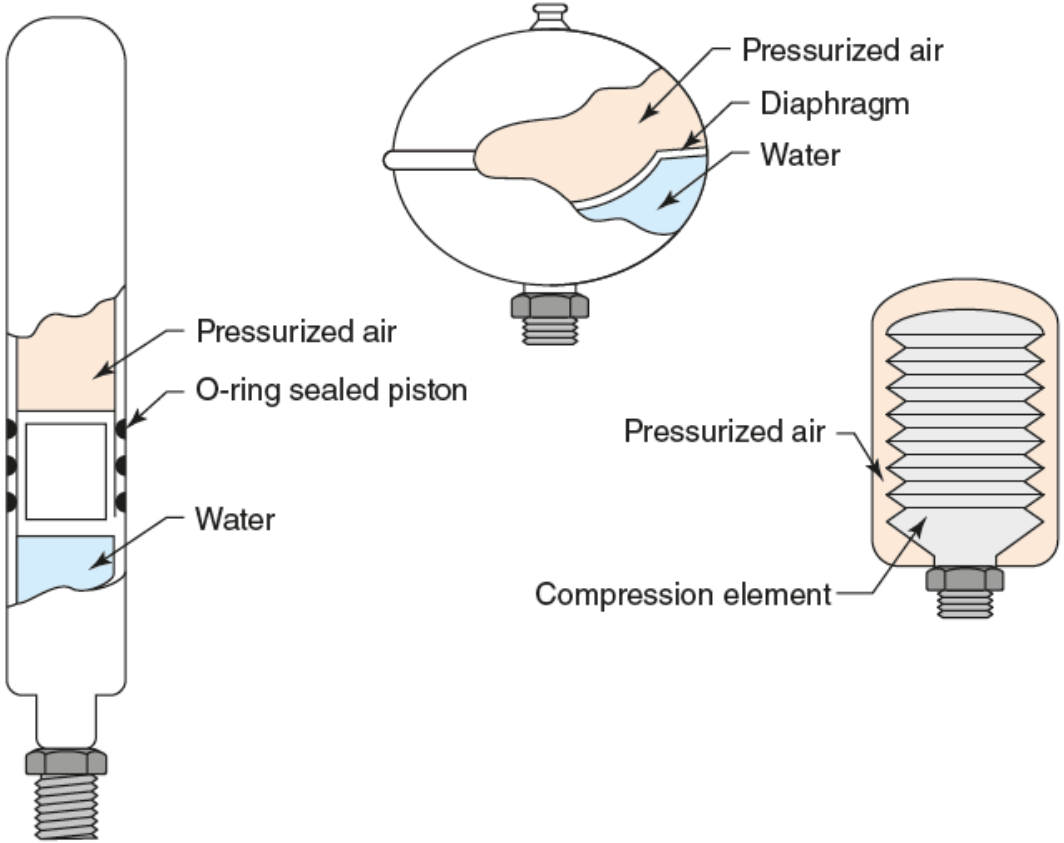
# P2905.3 Length of Hot Water Piping to Fixtures

- Limits the length of hot water piping serving fixtures to 100 ft. (IPC = 50 ft.)



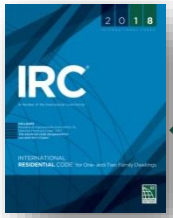
# P2903.5 Water Hammer Arrestors




A water hammer arrestor is now required where quick-closing valves are used in the water distribution system

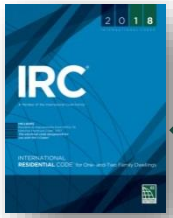
# P3003.2 Prohibited Joints
## (Single PVC to ABS fitting)

A solvent cement joint is now permitted for joining ABS and PVC piping at the connection of the building drain to the building sewer.



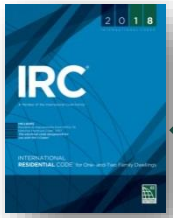
# P3005.1.6 Reduction in Pipe Size

Modification
Water closet flanges, offset bend fittings and offset flanges are now specifically listed as exceptions to the provision that drainage piping must not be reduced in size in the direction of flow.

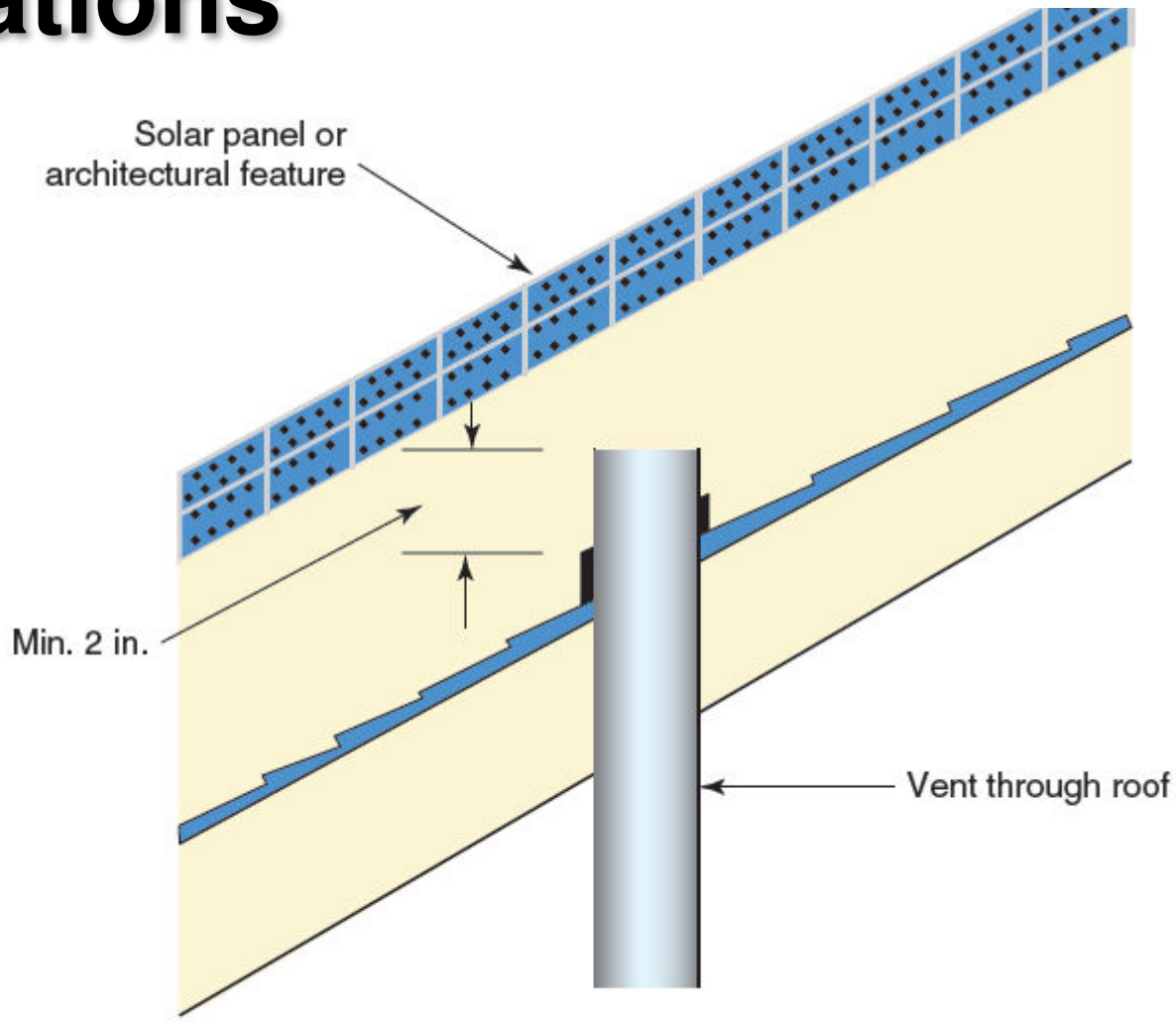


# P3005.2.10.1 Removable Fixture Traps as Cleanouts

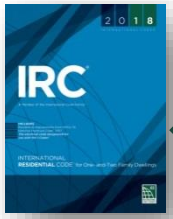
- Removable traps and removeable fixtures with integral traps are acceptable for use as cleanouts and have long been considered as acceptable access to the drainage system for clearing stoppages.



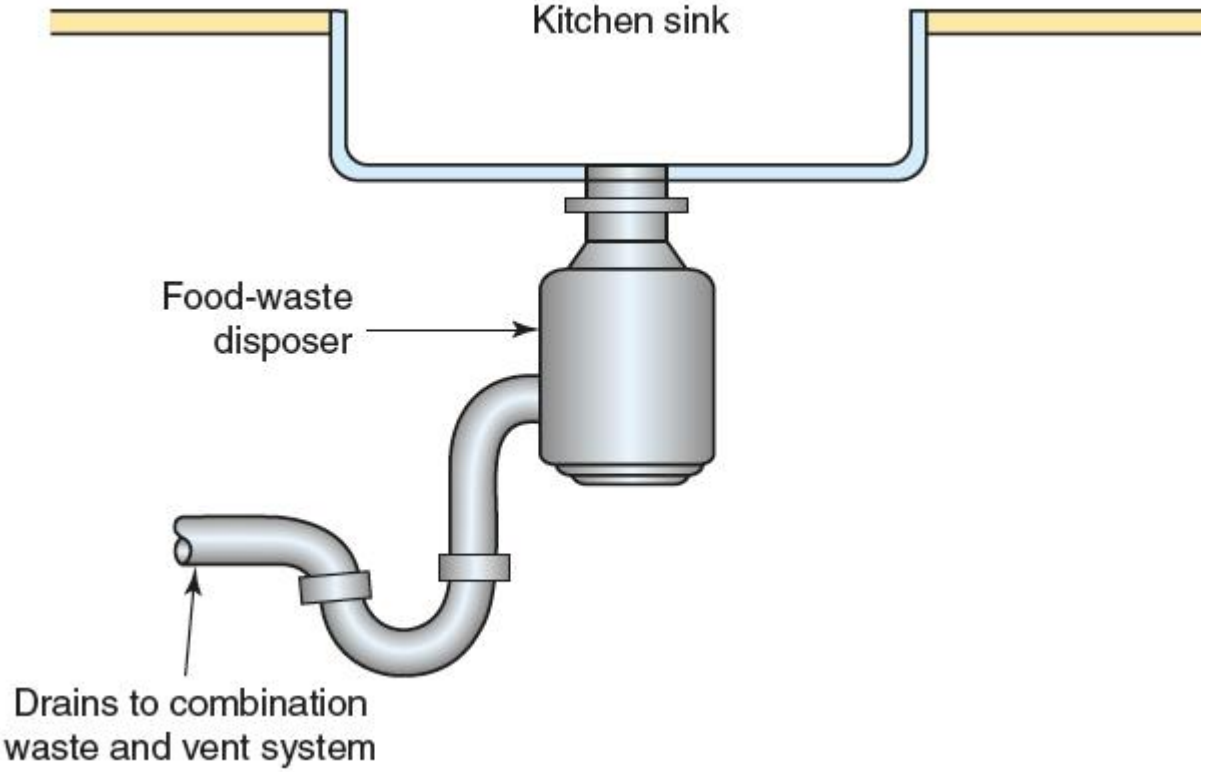
# P3103.1 Vent Pipe Terminations

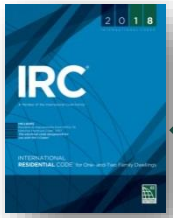



Covered vent pipe termination through roof



# P3111 Combination Waste and Vent Svstem



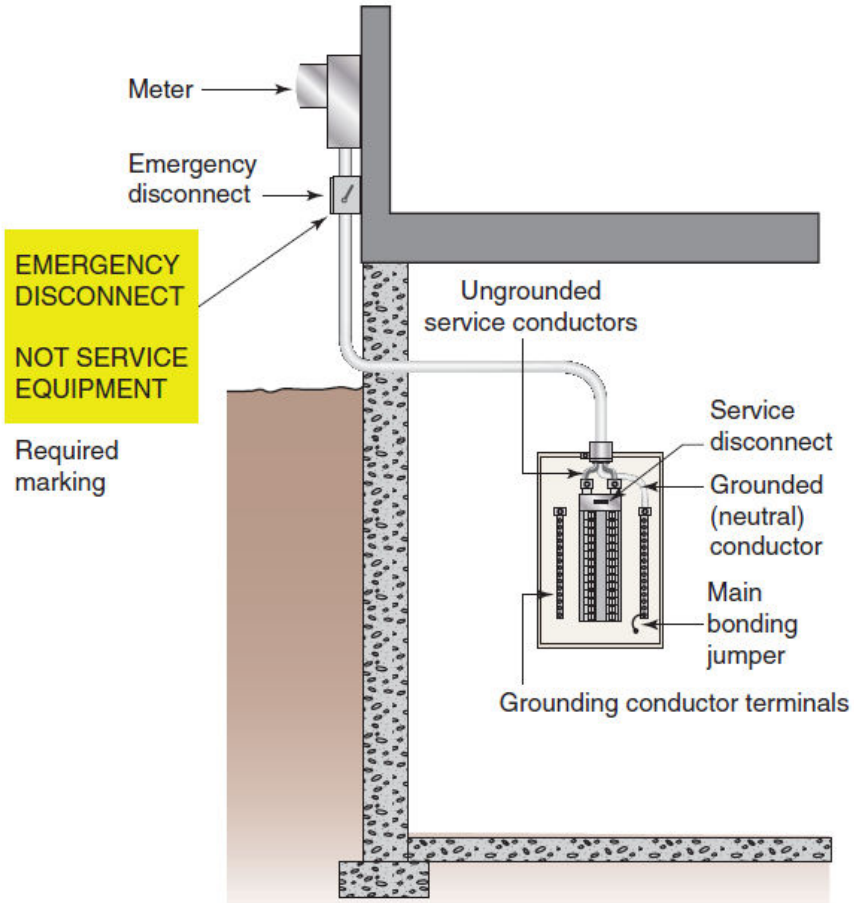

Modification: Food waste disposers and drinking fountains are now permitted to connect to a combination waste and vent system.

# Chapters 34-43 – Electrical

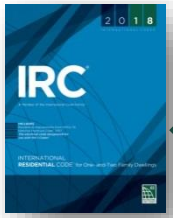

ICC LEARNING center

# E3601.8 Emergency Service Disconnects

- An emergency service disconnect is required in a readily accessible outdoor location.



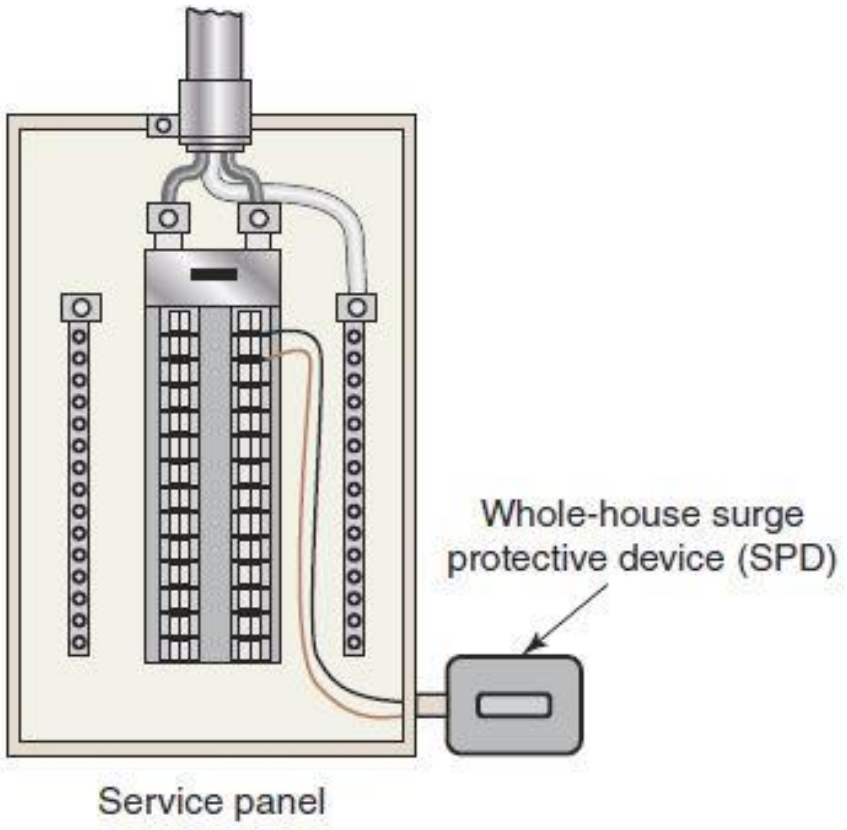

New to the 2021 code, an emergency disconnect is required at a readily accessible location outside the building. The main purpose of the emergency disconnect is to allow first responders to quickly and safely shut down power to the building in an emergency situation.



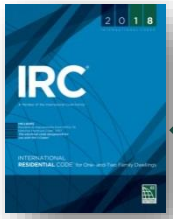

ICC LEARNING CENTER

# E3606.5 Service Surge-Protective Device

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



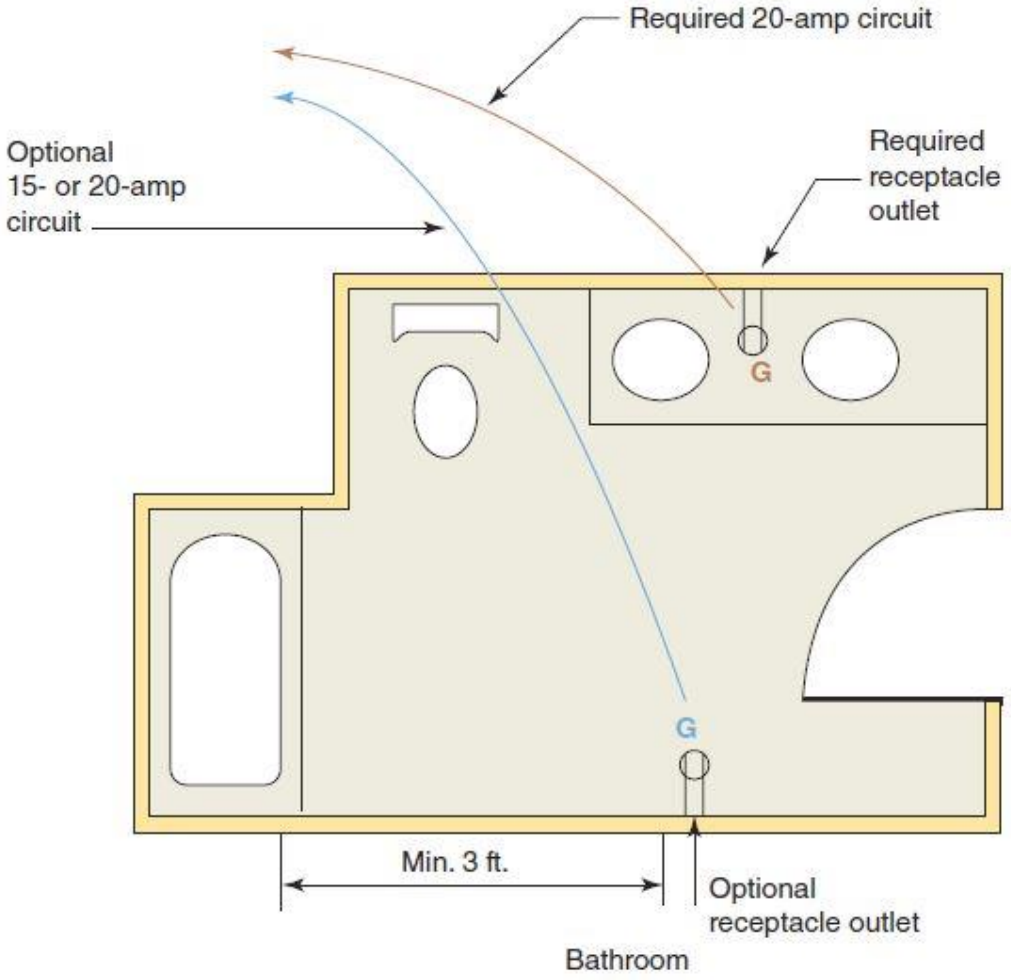

The code now requires a surge-protective device (SPD) located integral to or immediately adjacent to the service equipment. This requirement also applies to replacement service equipment. The new requirement is in response to an identified need for surge protection of sensitive electronic devices including appliances, GFCI and AFCI devices and smoke alarms.

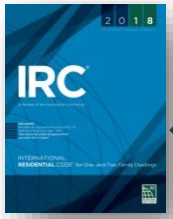



ICC LEARNING CENTER

# E3703.4 Bathroom Branch Circuits

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

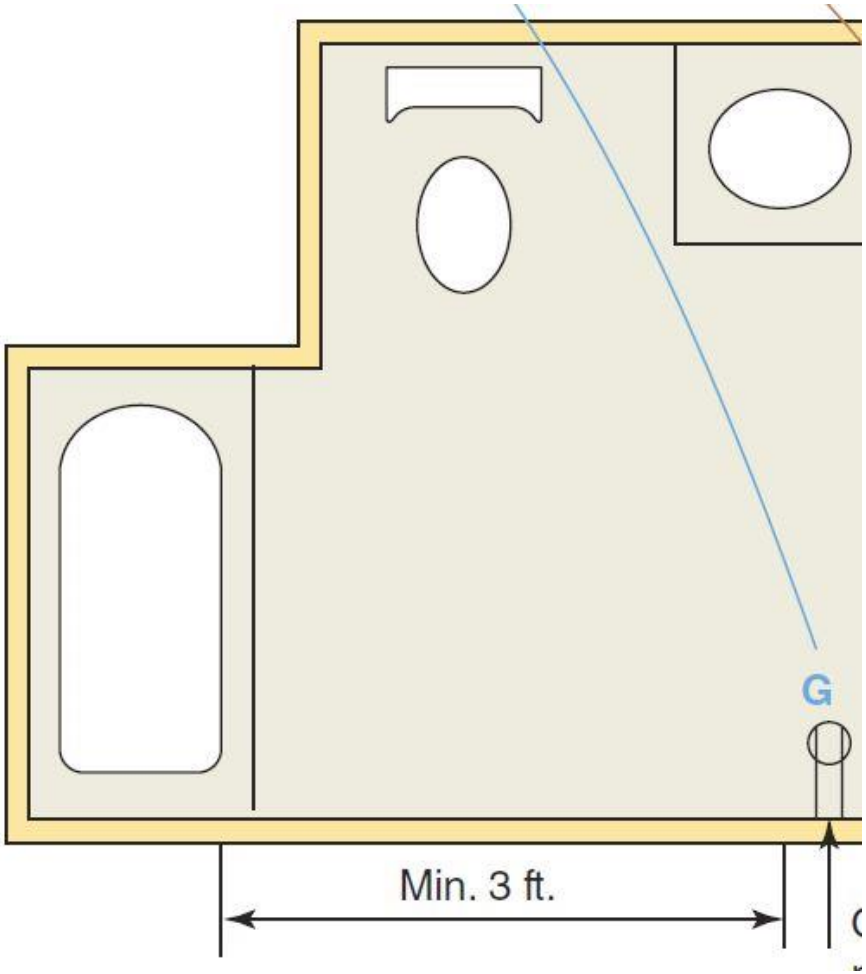


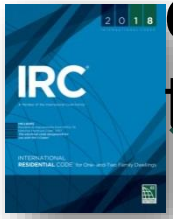




Clarification

# E3703.4 Bathroom Branch Circuits

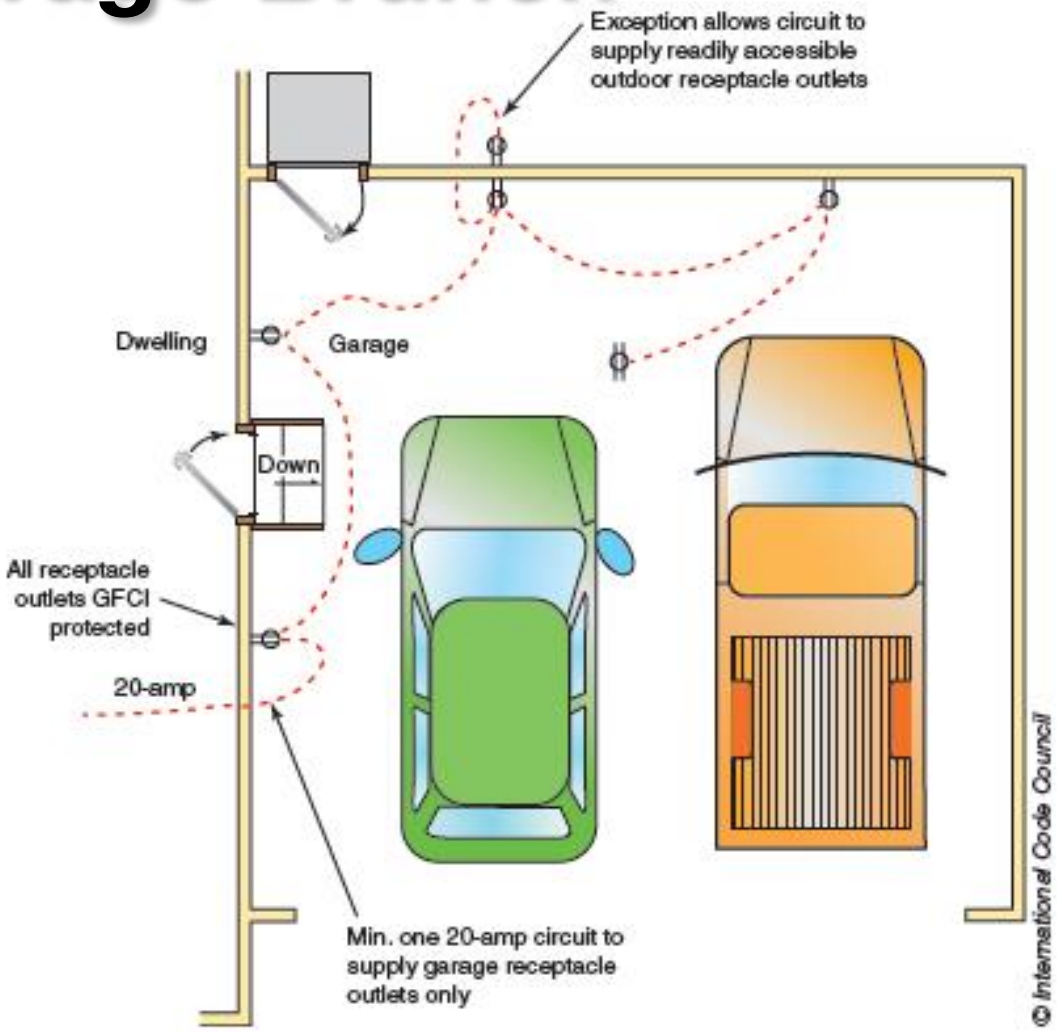
- Note new provision in E4002.11 prohibits receptacle outlets within 3 feet horizontally from bathtub rim or shower stall threshold.



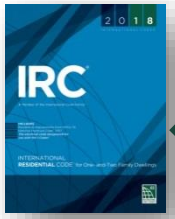



# E3703.5 Garage Branch Circuits

A separate 20-ampere branch circuit is now required to serve receptacle outlets of attached garages and detached garages with electric power.

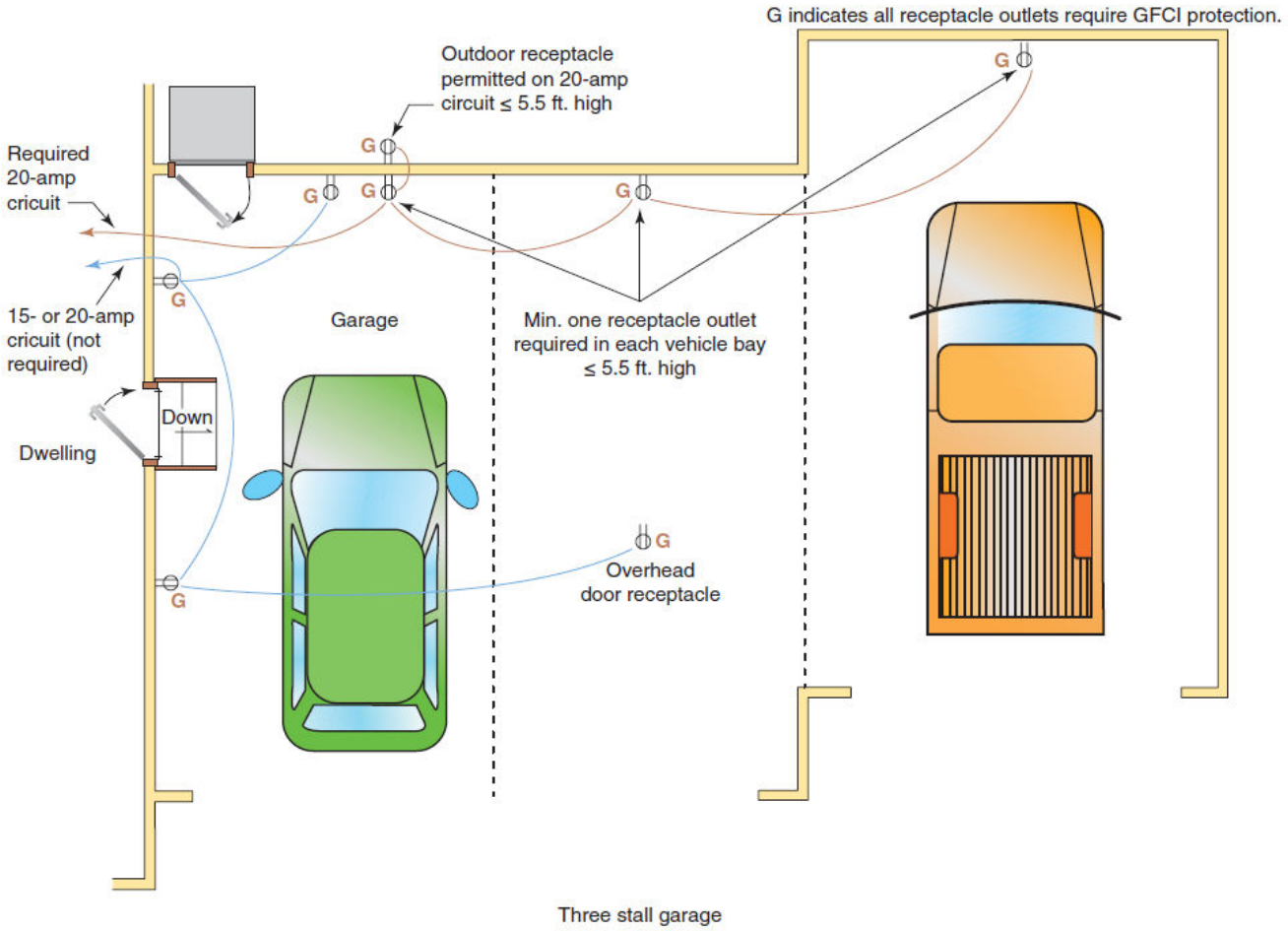


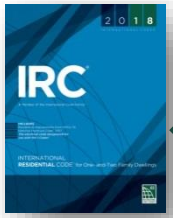

20-amp circuit to supply garage receptacle outlets



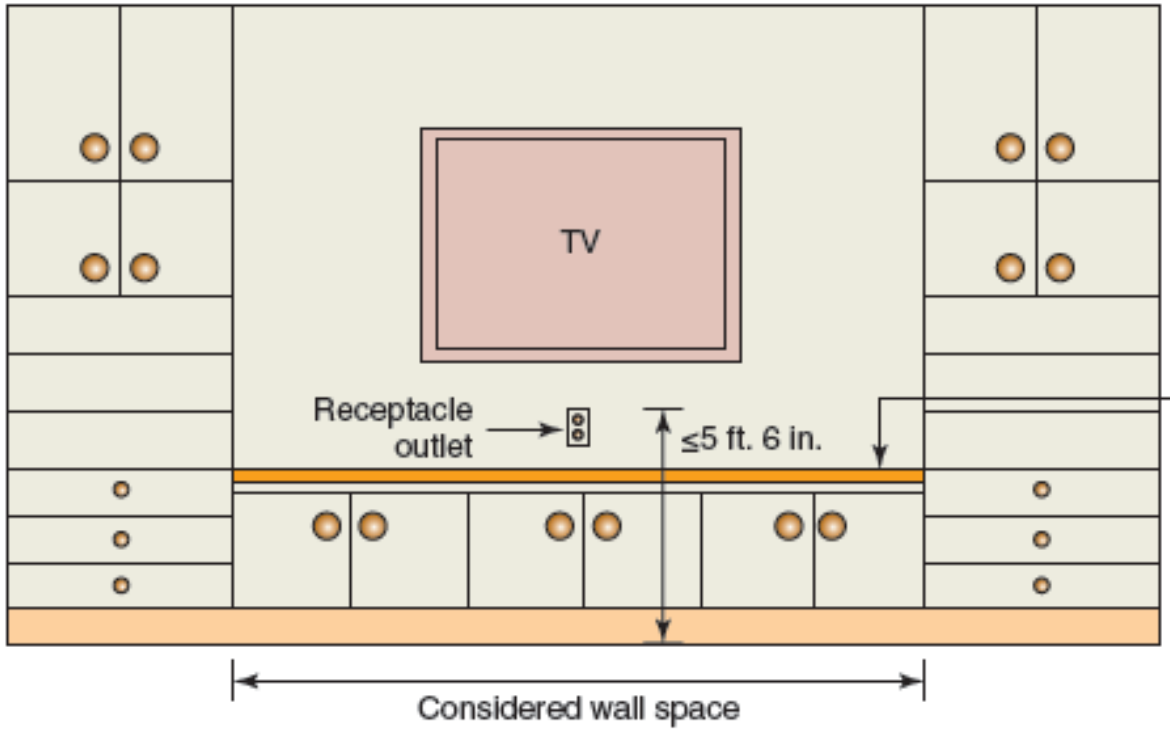
# E3703.5 Garage Branch Circuits

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



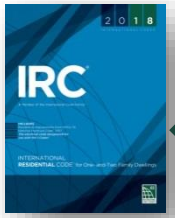
# E3901.2 Wall Space for Receptacle Distribution




**Elevation—Family room**



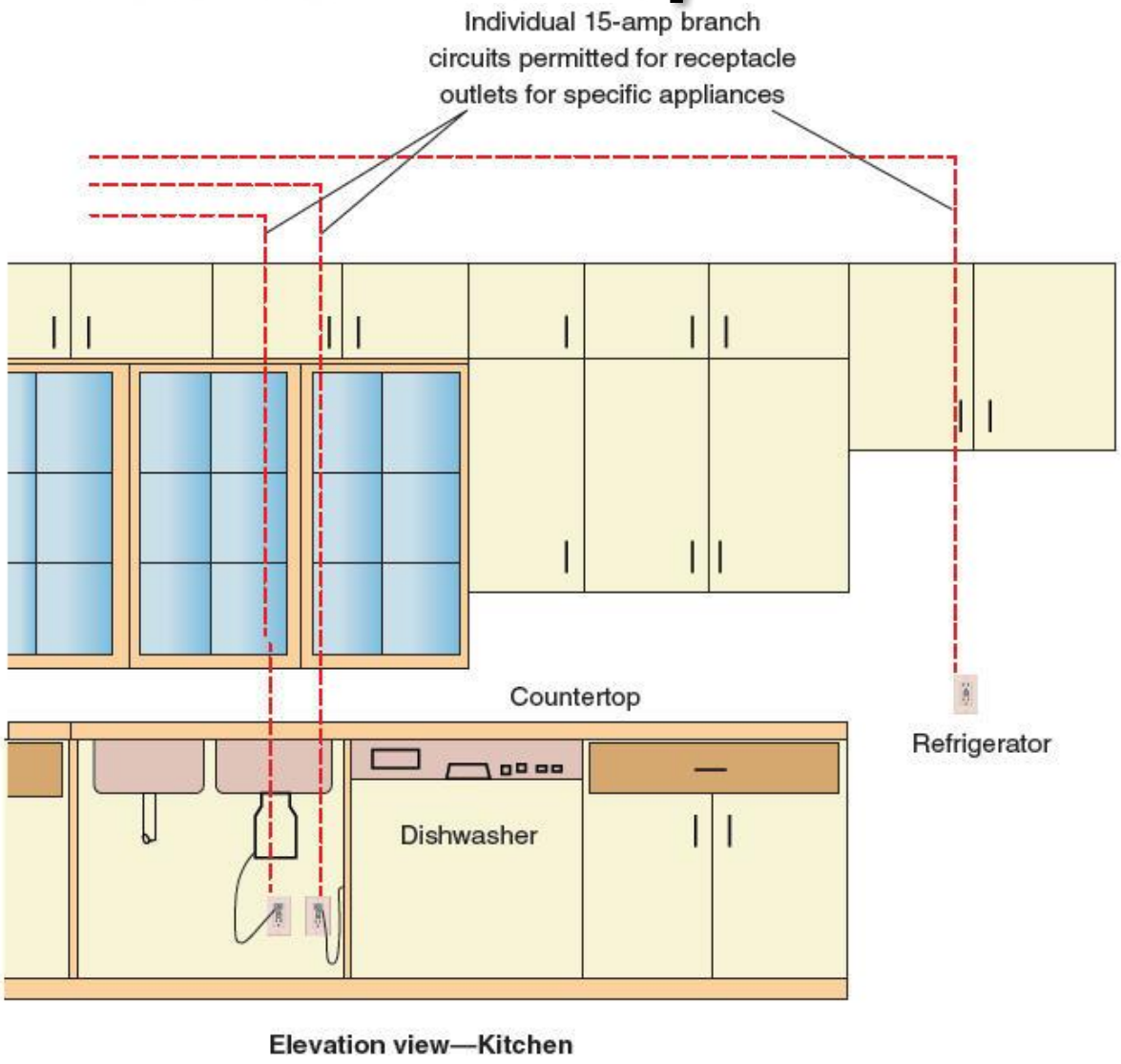
Cabinets with countertops or work surfaces are counted as wall space.



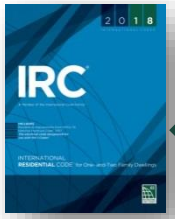
# E3901.3 Appliances on 15 Amp Circuits

Modification

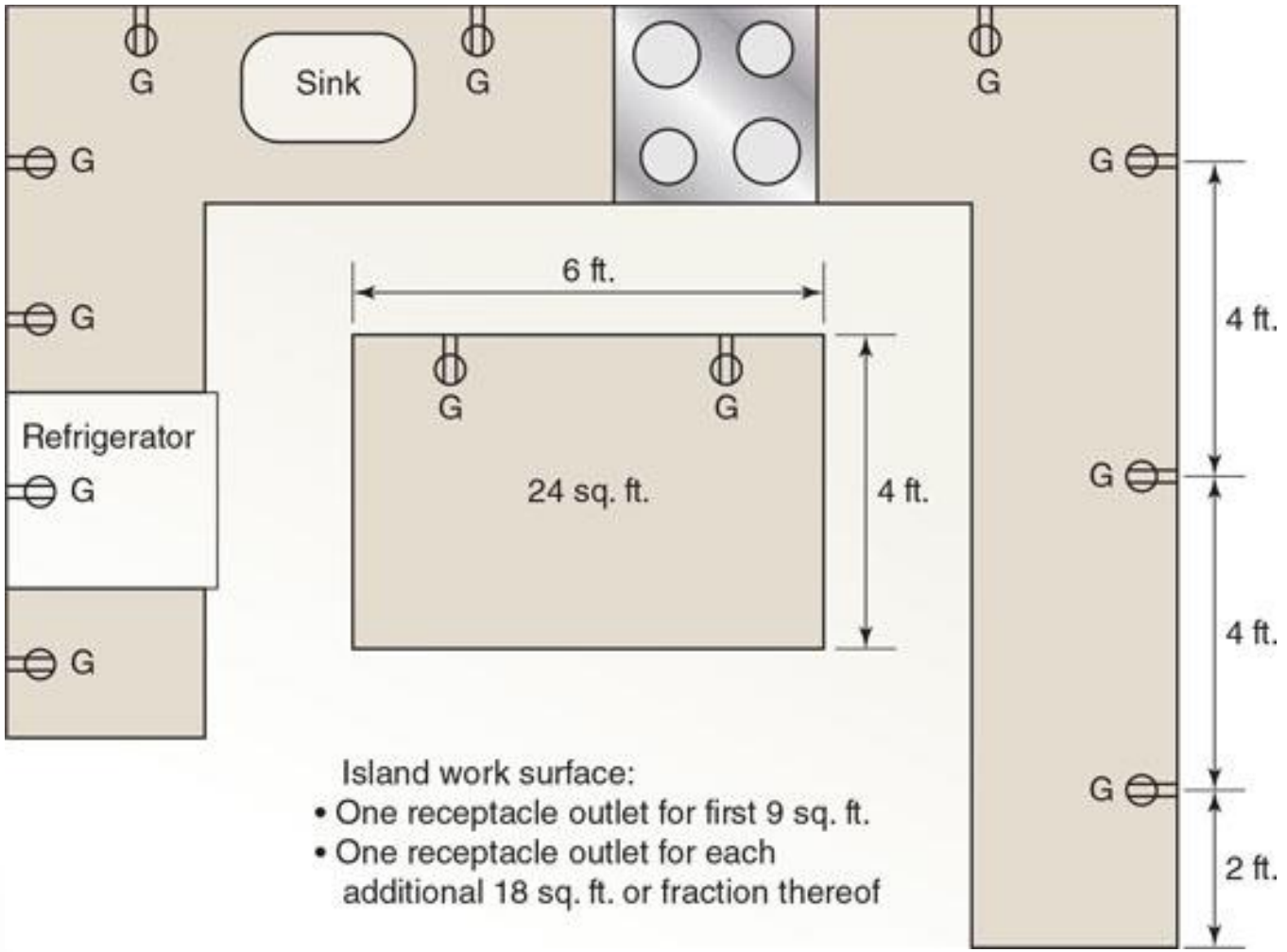
An individual 15-ampere branch circuit is permitted to serve any specific kitchen appliance




Elevation view—Kitchen

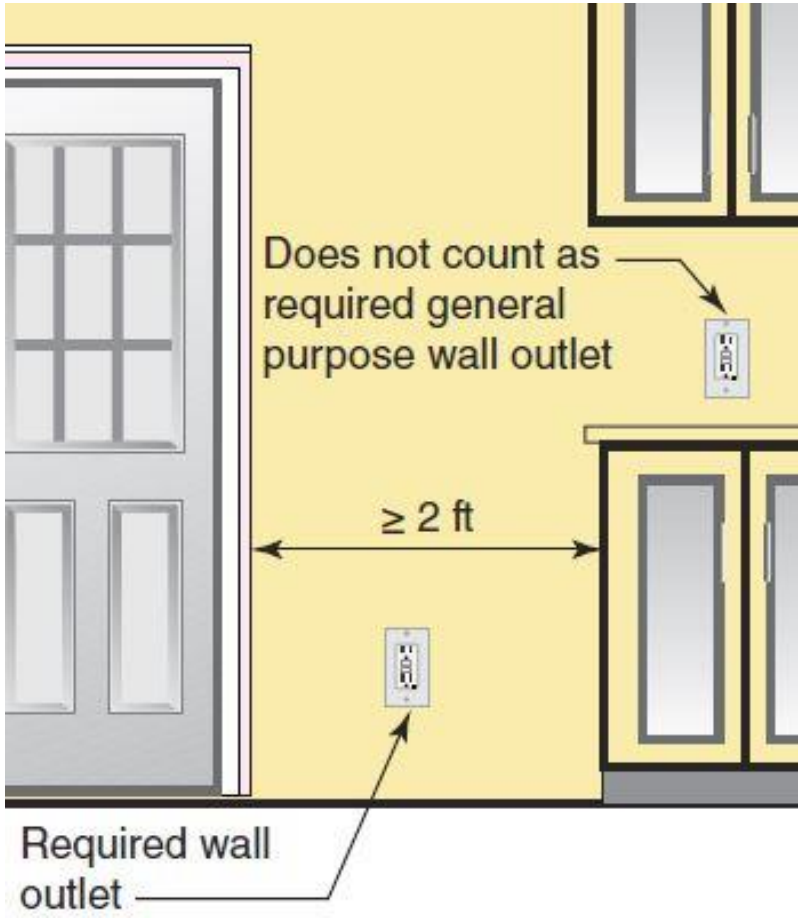


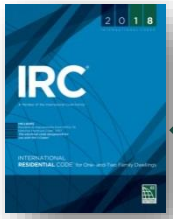
# E3901.4.2 Island receptacles



# E3901.4 Kitchen Countertop and Work Surface Receptacles

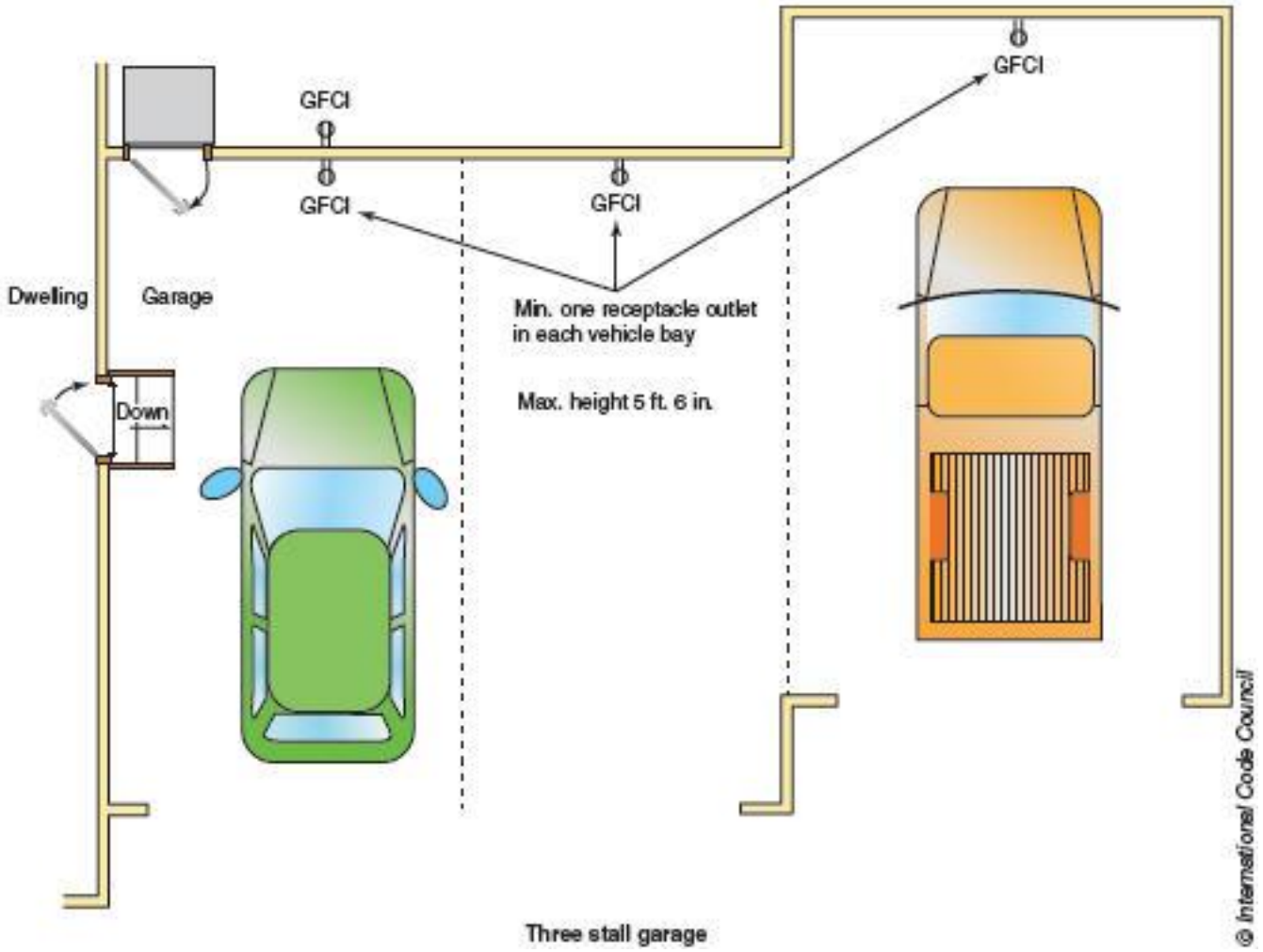
- Clarification: Countertop and work surface receptacles in kitchen areas cannot be counted as a required general-purpose wall space receptacle outlet.

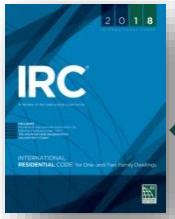


# E3901.9 Garage Receptacle Outlet Location

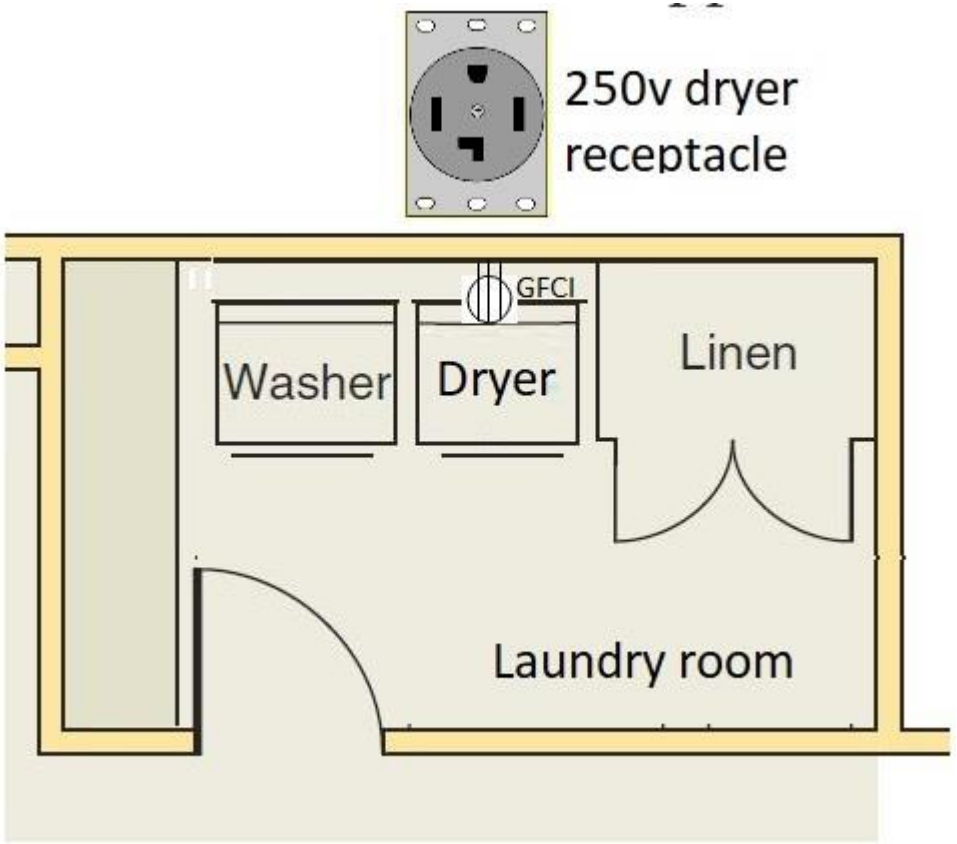
A receptacle outlet must be located in each vehicle bay in a garage.

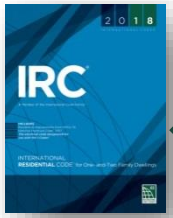


# E3902 GFCI Protection for 250-Volt Receptacles

- GFCI protection is required for up to 250-volt receptacles in the identified areas.
- The 20-amp limitation has been removed.



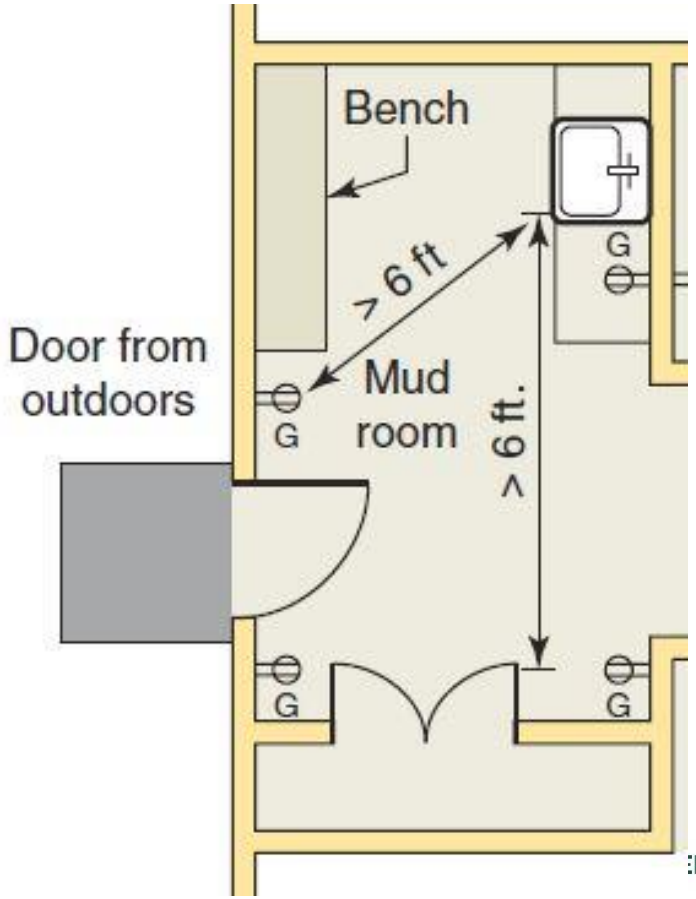



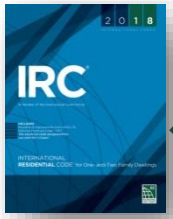

In the list of 11 specific areas requiring GFCI protection, this code section now applies to all receptacle outlets from 125 to 250 volts with no limitation on amperage.

ICC LEARNING CENTER

# E3902.10 GFCI Protection for Indoor Damp and Wet Locations

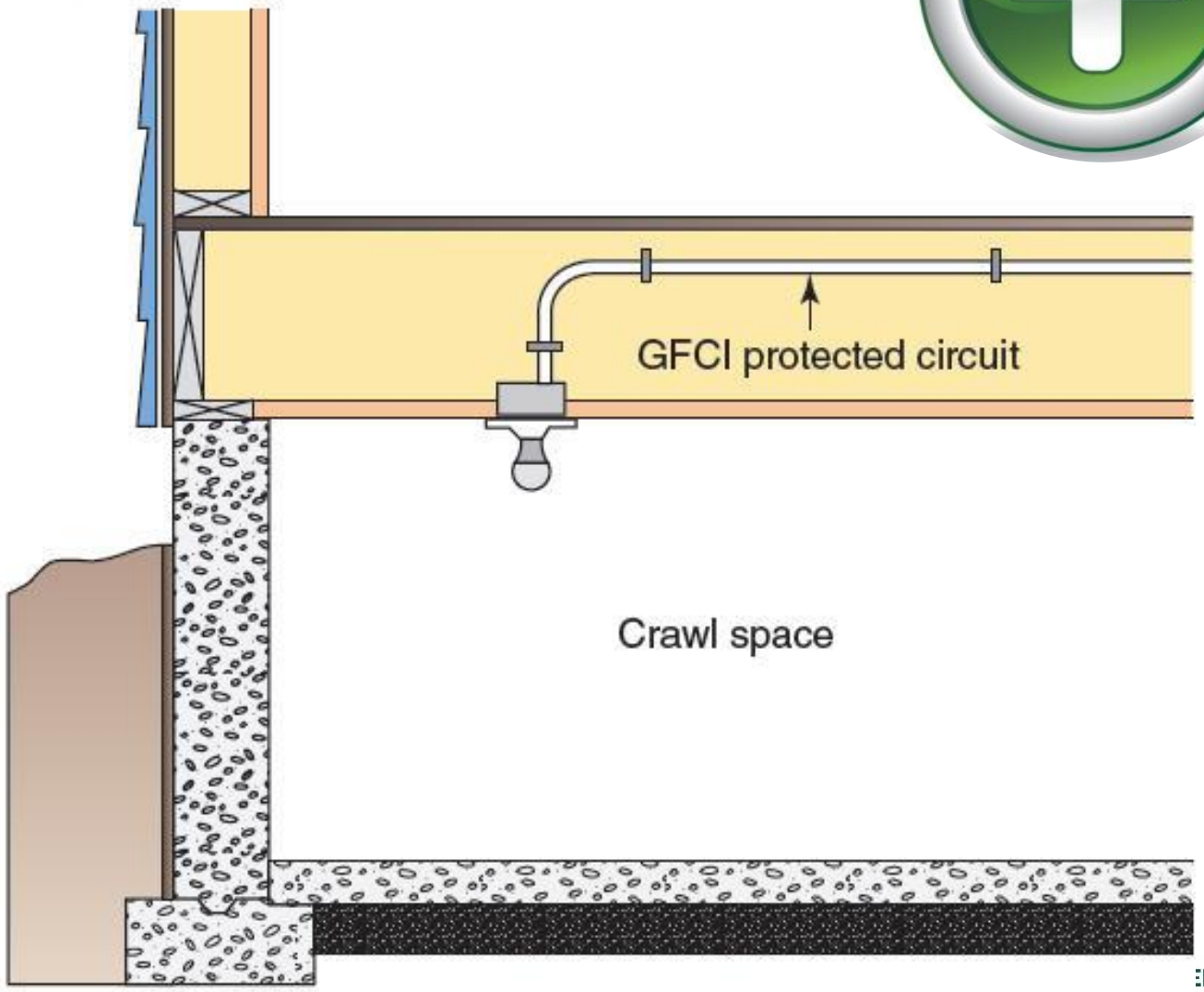
- GFCI protection is now required for damp and wet locations not included in the other 10 areas requiring GFCI protection.



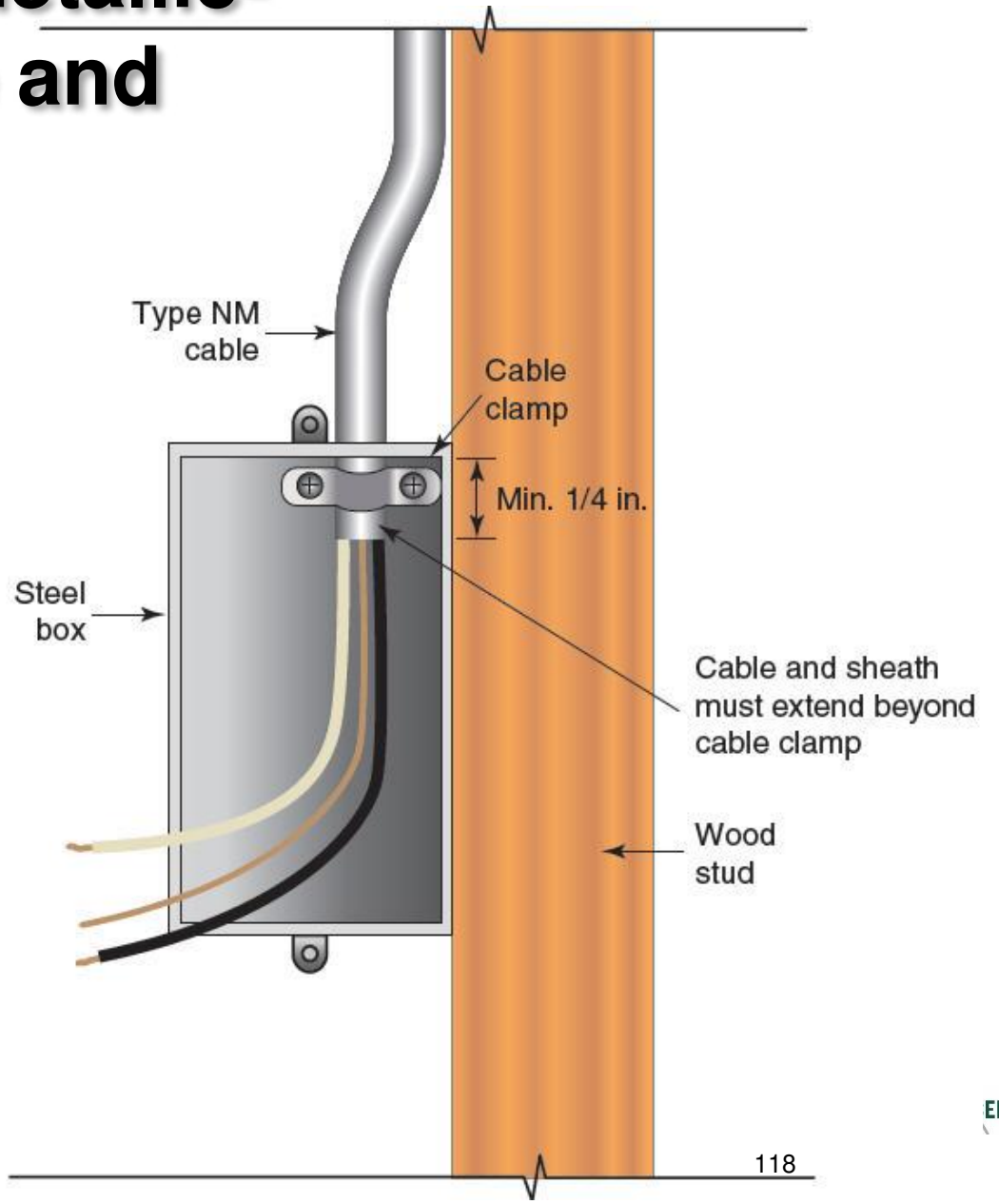

Receptacles that are farther than 6 feet from the sink, but still considered part of the wet or damp area

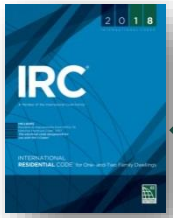
# E3905.2.1 GFCI Protection for Crawl Space Lighting Outlets



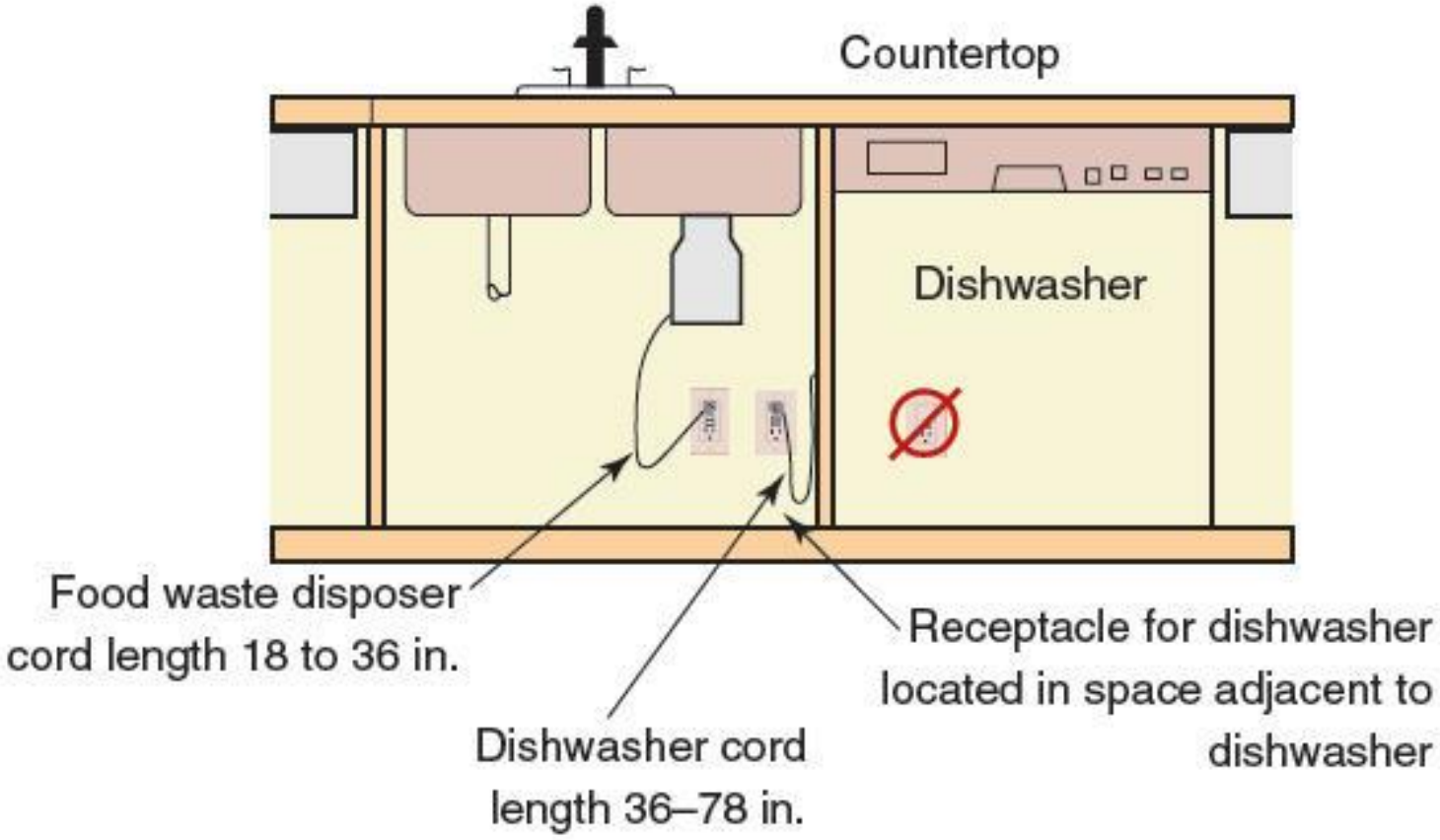
# E3905.2.1 Nonmetallic-Sheathed Cable and Metal Boxes

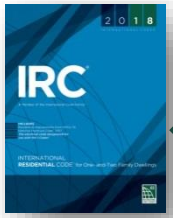
Addition:
Where entering a metal box, nonmetallic-sheathed cable must extend into the box at least 1/4 inch and extend past the cable clamp



# E4101.3 Cord- and-Plug-Connected Appliances



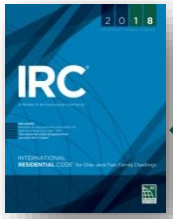




Modification

# Table E4101.3

**TABLE E4101.3 Flexible Cord Length**

| Appliance | Minimum Cord Length (inches) | Maximum Cord Length (inches) |
|---|---|---|
| Electrically operated in-sink waste disposal | 18 | 36 |
| Built-in dishwasher | 36 | ~~48~~78 |
| Trash compactor | 36 | 48 |
| Range hoods | 18 | ~~36~~48 |



# Discussion Activity