Office of Education and Data Management

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Career Development

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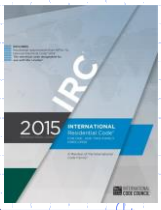
Significant Changes to the 2015 International Residential Code

Milton Gregory Grew, AIA

2018 CONNECTICUT STATE BUILDING CODE

SIGNIFICANT CHANGES TO THE 2015 INTERNATIONAL RESIDENTAL CODE



Presented by
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for
State of Connecticut
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Office of Education & Data Management
February 2018

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- Licensed architect since 1988
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- Connecticut Code Consultants
- AIA National Codes & Standards Committee
- ICC Building Code Action Committee
- ICC IEBC Code Development Committee

Disclaimer

- The opinions expressed in this presentation are solely those of the speaker and do not represent the State of Connecticut, State Building Inspector or any municipality.
- While I have tried to be thorough there may be errors or omissions.
- All code users should obtain and familiarize themselves with the codes.

2018 Connecticut State Building Code

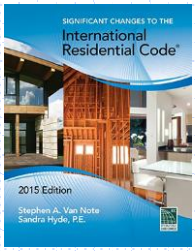
- 2015 International Building Code
- **2015 International Residential Code**
- 2015 International Plumbing Code
- 2015 International Mechanical Code
- 2015 International Existing Building Code
- 2017 National Electrical Code
- 2009 ICC A117.1
- 2018 CT State Amendments

Objectives

- Review significant changes from the 2012 to 2015 IRC
- Highlight Connecticut Amendments to 2015 IRC

Resources

Significant Changes – Soft cover or PDF download from ICC Store



- ICC has videos of key changes:

www.iccsafe.org/codes-tech-support/codes/2015-changes/key-changes-irc/

Tracking Changes in the 2015 IRC model code text

- Solid vertical line = technical change

R301.2.1 Wind design criteria. Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the ultimate design wind speed in Table R301.2(1) as determined from Figure R301.2(4)A. The structural provisions of this code for wind loads are not permitted where wind design is required

- Arrow = something was deleted

R322.1.8 Flood-resistant materials. Building materials and installation methods used for flooring and interior and exterior walls and wall coverings below the elevation required in Section R322.2 or R322.3 shall be flood damage-resistant materials that conform to the provisions of FEMA TB-2.

R322.1.9 Manufactured homes. The bottom of the frame of new and replacement *manufactured homes* on foundations that conform to the requirements of Section R322.2 or R322.3, as applicable, shall be elevated to or above the

Tracking Changes…

- Single asterisk = something moved from here

provided with footings that extend below the frost line.

Footings shall not bear on frozen soil unless the frozen condition is permanent.

* **R403.1.5 Slope.** The top surface of footings shall be level. The bottom surface of footings shall not have a slope exceeding one unit vertical in 10 units horizontal (10 per

- Double asterisk = new location

R404.1 Concrete and masonry foundation walls. Concrete foundation walls shall be selected and constructed in accordance with the provisions of Section R404.1.3. Masonry foundation walls shall be selected and constructed in accordance with the provisions of Section R404.1.2.

** **R404.1.1 Design required.** Concrete or masonry foundation walls shall be designed in accordance with accepted engineering practice where either of the following conditions exists:

Accessory Structures (R101.2 & R202 Definition)

- An accessory structure's allowable height has been increased from 2 to 3 stories.
- Accessory structures no longer have a building area limitation but still must be incidental to the dwelling on the same lot.

Electrical (R101.4.5 – CT add)

- IRC is the default electrical code for IRC occupancies.

(Add) **R101.4.5 Applicable electrical code.** The applicable electrical code requirements for buildings constructed under this code are those of chapters 34-43 of this code. The permit applicant may elect at the time of application for permit to follow the requirements of the 2017 NFPA 70 National Electrical Code portion of the 2018 State Building Code, as an alternative compliance to the electrical requirements of this code. The applicant must indicate this choice on the permit application and on all construction documents.

Appendices (R102.5 – CT amd)

- CT Adopted Appendices:
  - **E**: Manufactured Housing Used As Dwellings
  - **F**: Passive Radon Gas Controls Methods *(heavily amended)*
  - **G**: Piping Standards for Various Applications
  - **H**: Patio Covers
  - **K**: Sound Transmission
  - **O**: Automatic Vehicular Gates
  - **P**: Sizing of Water Piping System
  - **V**: Wind Speeds, Seismic Design Categories & Ground Snow Loads *(CT completely)*

Accessibility Exemptions (R104.10.2 – CT amd)

- Only OSBI involved in reviewing and approving.

(Add) **R104.10.2 Accessibility exemption.** Pursuant to subsection (b) of section 29-269 of the Connecticut General Statutes, any variation of or exemption from any provisions relating to accessibility to, use of and egress from, buildings and structures as required herein shall be permitted only when approved by the State Building Inspector... Pursuant to subsection (b) of section 29-269 of the Connecticut General Statutes, any person aggrieved by the joint decision of the State Building Inspector may appeal to the Codes and Standards Committee within 30 days after such decision has been rendered.

CT Removed Provision for Research Reports

- This paragraph was in 2016 CSBC and has been removed from 2018 CSBC.

(Add) **R104.11.2 Research reports.** Submission to the local building official of a valid research report prepared by an approved evaluation service that supports the efficacy of use of any material, appliance, equipment or method of construction not specifically provided for in this code, or that demonstrates compliance with this code, may be deemed evidence of compliance with this code.

Flood Hazard Areas (R105.3.1.1)

- It is the building official's responsibility to make a determination of substantial improvement to existing buildings in flood hazard areas.

Wind Design Criteria for Existing Structures (R105.3.1.1.1 – CT Add)

- Shoreline flood damaged dwellings may be subject to some upgrading of structure for wind resistance.

(Add) **R105.3.1.1.1 Wind design criteria for existing structures**. For structures where the proposed work is determined to be a substantial improvement or restoration under R105.3.1.1 and having a wind Exposure D, structural elements that are uncovered shall be required to be improved to meet the wind speed design criteria in R301.2.1.

Wind Design Criteria (R301.2.1.4 – CT Amd)

- CT amends sections regarding exposure category, wind direction and sectors, surface roughness
- Surface Roughness B and Exposure Category B will be used most often.

Component & cladding loads (Table R301.2(2))

- The component and cladding table has replaced basic wind speeds with ultimate design wind speeds.
- Roof slopes are divided into new categories for determining component and cladding loads.

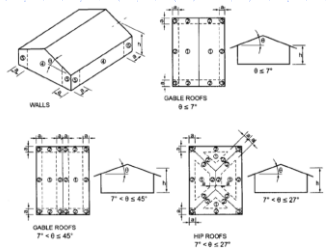
Component & cladding loads (Table R301.2(2))

TABLE R301.2(2)
COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (ASD) (psf)[a, b, c, d, e]

	ZONE	EFFECTIVE WIND AREA (feet²)	ULTIMATE DESIGN WIND SPEED, V_{ult} (mph)															
			110		115		120		130		140		150		160		170		180	
Roof 0 to 7 degrees	1	10	10.0	-13.0	10.0	-14.0	10.0	-15.0	10.0	-18.0	10.0	-21.0	9.9	-24.0	11.2	-27.0	12.6	-31.0	14.2	-35.0
	1	20	10.0	-12.0	10.0	-13.0	10.0	-15.0	10.0	-17.0	10.0	-20.0	9.2	-23.0	10.6	-26.0	11.9	-30.0	13.3	-34.1
	1	50	10.0	-12.0	10.0	-13.0	10.0	-14.0	10.0	-17.0	10.0	-19.0	8.5	-22.0	10.0	-26.0	10.8	-29.0	12.2	-32.9
	1	100	10.0	-11.0	10.0	-13.0	10.0	-14.0	10.0	-16.0	10.0	-19.0	7.8	-22.0	10.0	-25.0	10.0	-28.0	11.3	-32.0
	2	10	10.0	-21.0	10.0	-23.0	10.0	-26.0	10.0	-30.0	10.0	-35.0	9.9	-40.0	11.2	-46.0	12.6	-52.0	14.2	-58.7
	2	20	10.0	-19.0	10.0	-21.0	10.0	-23.0	10.0	-27.0	10.0	-31.0	9.2	-36.0	10.6	-41.0	11.9	-46.0	13.3	-52.4
	2	50	10.0	-16.0	10.0	-18.0	10.0	-19.0	10.0	-23.0	10.0	-26.0	8.5	-30.0	10.0	-34.0	10.8	-39.0	12.2	-44.1
	2	100	10.0	-14.0	10.0	-15.0	10.0	-16.0	10.0	-19.0	10.0	-22.0	7.8	-26.0	10.0	-30.0	10.0	-33.0	11.3	-37.9
	3	10	10.0	-33.0	10.0	-36.0	10.0	-39.0	10.0	-46.0	10.0	-53.0	9.9	-61.0	11.2	-69.0	12.6	-78.0	14.2	-88.3
	3	20	10.0	-27.0	10.0	-29.0	10.0	-32.0	10.0	-38.0	10.0	-44.0	9.2	-50.0	10.6	-57.0	11.9	-65.0	13.3	-73.1
	3	50	10.0	-19.0	10.0	-21.0	10.0	-23.0	10.0	-27.0	10.0	-32.0	8.5	-36.0	10.0	-41.0	10.8	-47.0	12.2	-53.1
	3	100	10.0	-14.0	10.0	-15.0	10.0	-16.0	10.0	-19.0	10.0	-22.0	7.8	-26.0	10.0	-30.0	10.0	-33.0	11.3	-37.9
0 to 27 degrees	1	10	10.0	-11.0	10.0	-13.0	10.0	-14.0	10.5	-16.0	12.2	-19.0	14.0	-22.0	15.9	-25.0	17.9	-28.0	20.2	-32.0
	1	20	10.0	-11.0	10.0	-12.0	10.0	-13.0	10.0	-16.0	11.1	-18.0	12.8	-21.0	14.5	-24.0	16.4	-27.0	18.4	-31.1
	1	50	10.0	-11.0	10.0	-12.0	10.0	-13.0	10.0	-15.0	10.0	-18.0	11.1	-20.0	12.7	-23.0	14.3	-26.0	16.0	-29.9
	1																	-22.0	12.6	-25.0
	2																	-44.0	17.9	-49.0
	3																	-40.0	16.4	-45.0

- 0 – 7 deg = up to 1.5:12 (2012: 0 – 10)
- >7 – 27 deg = up to 6:12 (2012: >10 – 30)
- >27 – 45 deg = up to 12:12 (2012: >30 – 45)
- Wall

Component & cladding loads (Figure R301.2(7))



For SI: 1 foot = 304.8 mm, 1 degree = 0.0175 rad.
Note: a = 4 feet in all cases.

FIGURE R301.2(7)
COMPONENT AND CLADDING PRESSURE ZONES

Sunrooms (R301.2.1.1.1)

- 2015 IRC requires sunrooms to comply with AAMA/NPEA/NSA 2100-12 "*Specifications for Sunrooms*" which contains requirements for habitable and nonhabitable sunrooms.
- Sunroom: glazing >40% of enclosing walls & roof; either stick built wood or prefab parts.

Sunrooms (R301.2.1.1.1)

- 5 categories of sunrooms that affect performance requirements:
  - **I**: Thermally isolated; open or enclosed; screens or plastic film; nonhabitable; unconditioned.
  - **II**: Thermally isolated; enclosed walls; plastic or glass, translucent or transparent openings; nonhabitable; unconditioned.
  - **III**: Thermally isolated; enclosed walls; plastic or glass, translucent or transparent openings; fenestration rqmts for air/water & structural rqmts; nonhabitable; unconditioned.
  - **IV**: Thermally isolated; enclosed walls; separate heat/cool system or controls; fenestration rqmts for air/water/thermal; structural rqmts; nonhabitable; conditioned.
  - **V**: Enclosed walls; open to main structure incl. heat/cool; fenestration rqmts for air/water/thermal; habitable; conditioned

Sunrooms (R301.2.1.1.1)

I

II

III

Sunrooms (R301.2.1.1.1)

IV

V

Sunrooms (R301.2.1.1.1)

MINIMUM REQUIREMENTS	CATEGORY I	CATEGORY II	CATEGORY III	CATEGORY IV	CATEGORY V
Structural design in accordance with the code.	X	X	X	X	X
Fenestration products must comply with AAMA/WDMA/CSA 101/I.S.2/A440 (includes resistance to air leakage, water penetration, forced entry, etc., as well as structural design pressure rating).		X	X	X	X
Comply with the *International Energy Conservation Code®* (IECC®) or IRC Chapter 11.				X	X
Comply with the foundation/footings, site location, and emergency escape and rescue openings requirements of the code.	X	X	X	X	X
Emergency escape and rescue openings are permitted to open onto a sunroom.	X				
Comply with the natural lighting requirements of the code.	X	X	X	X	X
Openings for natural lighting are permitted to open onto a sunroom.	X				
Comply with the requirements of the code for stairway and egress illumination.		X	X	X	X
Required to have exit lighting.		X	X	X	X
Receptacle outlets as required by NFPA 70, Article 314.				X	X

Figure R301.2.1.1.1
SUNROOM MINIMUM REQUIREMENTS

Table from 2015 IRC Commentary

Protection of Openings in Wind Borne Debris Regions (R301.2.1.2)

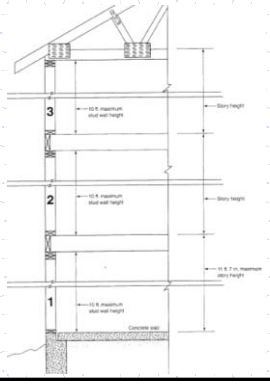
- Increases height from 2 to 3 stories (45' mean roof hgt) for use of wood structural panels to protect openings.

Wind Exposure Category (R301.2.1.4)

- **Category A** has been deleted (large city center with taller buildings). Was removed from IBC & ASCE 7.
- **Category B** unchanged. Most locations.
- **Category C** unchanged. Open terrain.
- **Category D** now applies to open water, mud & salt flats, unbroken ice fields for a distance of at least 5,000 ft & hurricane-prone regions on or near ocean shore. Extends 600 ft in from edge of unobstructed area. Wind takes some time to slow down due to new obstructions.

Story Height for Wall Const. (R301.3)

- Story height of wood & steel wall framing, insulated concrete, and SIP walls may not exceed 11′-7″.
- Masonry wall height is limited to 13′-7″.



Story Height for Wall Const. (R301.3)

TABLE R602.3(5)
SIZE, HEIGHT AND SPACING OF WOOD STUDS[a]

STUD SIZE (inches)	BEARING WALLS					NONBEARING WALLS	
	Laterally unsupported stud height[a] (feet)	Maximum spacing when supporting a roof-ceiling assembly or a habitable attic assembly, only (inches)	Maximum spacing when supporting one floor, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing when supporting two floors, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing when supporting one floor height[a] (inches)	Laterally unsupported stud height[a] (feet)	Maximum spacing (inches)
2 × 3[b]	—	—	—	—	—	10	16
2 × 4	10	24[c]	16[c]	—	24	14	24
3 × 4	10	24	24	16	24	14	24
2 × 5	10	24	24	—	24	16	24
2 × 6	10	24	24	16	24	20	24

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

a. Listed heights are distances between points of lateral support placed perpendicular to the plane of the wall. Bearing walls shall be sheathed on not less than one side or bridging shall be installed not greater than 4 feet apart measured vertically from either end of the stud. Increases in unsupported height are permitted where in compliance with Exception 2 of Section R602.3.1 or designed in accordance with accepted engineering practice.

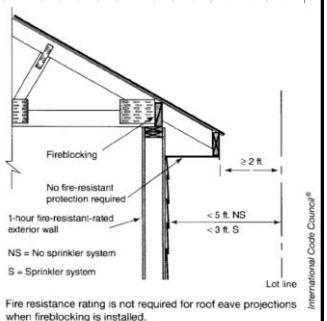
b. Shall not be used in exterior walls.

c. A habitable attic assembly supported by 2 × 4 studs is limited to a roof span of 32 feet. Where the roof span exceeds 32 feet, the wall studs shall be increased to 2 × 6 or the studs shall be designed in accordance with accepted engineering practice.

See Table R602.3.1

Exterior Walls (R302.1)

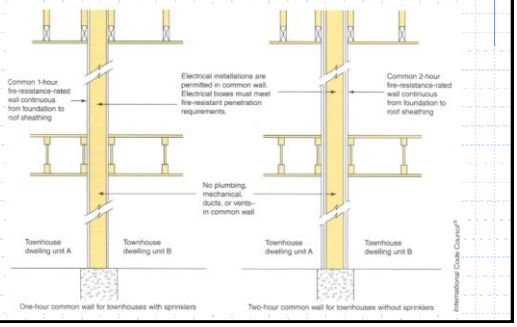
- Unprotected roof overhangs are now permitted to project to within 2 ft of the property line (FSD) when fireblocking is installed between the top of the wall and the roof sheathing. See footnotes in Table R302.1(1).



Townhouse Separation (R302.2)

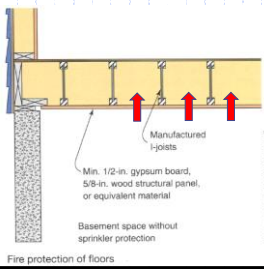
- Provisions for structurally independent fire-resistant-rated walls have been removed in favor of common wall provisions.
- Common walls rated 2 hours w/o fire sprinklers

Townhouse Separation (R302.2)



Fire Protection of Floors (R302.13)

- Clarified that penetrations are permitted.



Fire protection of floors

Stairway Illumination (R303.7 & R303.8)

- Interior & exterior stairway illumination provisions have been placed in separate sections. Conflicting language has been removed.
- Code no longer prescribes location of light source for interior stairs, allowing design flexibility.
- No minimum illumination level for exterior stairs.

Stairway Illumination (R303.7 & R303.8)

R303.7 Interior stairway illumination. Interior stairways shall be provided with an artificial light source to illuminate the landings and treads. The light source shall be capable of illuminating treads and landings to levels of not less than 1 foot-candle (11 lux) as measured at the center of treads and landings. There shall be a wall switch at each floor level to control the light source where the stairway has six or more risers.

Exception: A switch is not required where remote, central or automatic control of lighting is provided.

R303.7.1 Light activation. Where lighting outlets are installed in interior stairways, there shall be a wall switch at each floor level to control the lighting outlet where the stairway has six or more risers. The illumination of exterior stairways shall be controlled from inside the *dwelling* unit.

Exception: Lights that are continuously illuminated or automatically controlled.

R303.8 Exterior stairway illumination. Exterior stairways shall be provided with an artificial light source located at the top landing of the stairway. Exterior stairways providing access to a *basement* from the outdoor *grade* level shall be provided with an artificial light source located at the bottom landing of the stairway.

Minimum habitable room area (R304.1)

- Requirement for one habitable room with a minimum floor area of 120 SF has been removed from IRC.
- New language: "Habitable rooms shall have a floor area of not less than 70 square feet." (Exception: Kitchens)

Minimum habitable room area (R304.1)

Small dwelling complying with minimum area requirements

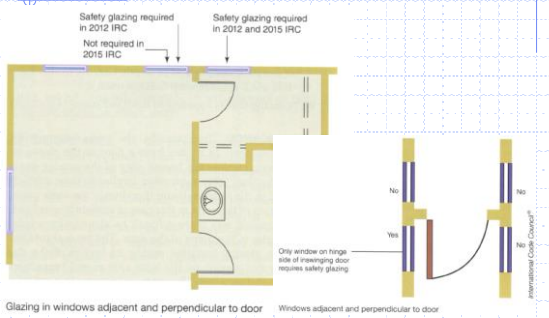
Ceiling Height (R305)

- Min. ceiling height for bathrooms, toilet rooms & laundry rooms reduced to 6'-8".
- The exception for allowing beams, girders, ducts or other obstructions to project to within 6'-4" is expanded to include basements w/ habitable space.

Glazing Adjacent to Doors (R308.4.2)

- Glazing installed perpendicular to a door in a closed position & within 24" of the door only requires safety glazing if it is on the hinge side of an in-swinging door.

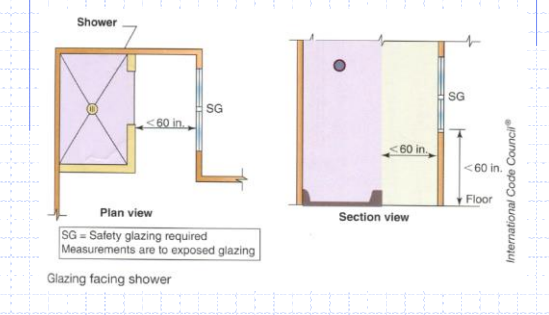
Glazing Adjacent to Doors (R308.4.2)



Glazing & Wet Surfaces (R308.4.5)

- The exception from the safety glazing requirements for glazing that is 60" or more from the water's edge of a bathtub, hot tub, spa, whirlpool or swimming pool has been expanded to include glazing that is an equivalent distance from the edge of a shower, sauna or steam room.

Glazing & Wet Surfaces (R308.4.5)



Emergency Escape & Rescue Openings – EERO (R310)

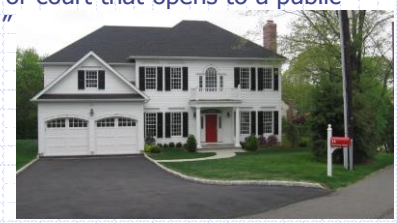
- Section has been reorganized. Separate provisions spell out the requirements for windows & doors used for emergency escape & rescue.
- No technical changes.

EERO for Additions, Alterations & Repairs (R310.5, R310.6)

- Remodeling a basement does not trigger installing in EERO
- Creation of new bedroom requires EERO
- Addition of a basement does not require EERO if there is access to existing basement w/ EERO
- CT deletes R310.6 – Alterations or repairs of existing basements. CT's R310.1(2) says the same thing.

Means of Egress (R311.1)

- Added "The required egress door shall open directly into a public way or to a yard or court that opens to a public way."



Stair Headroom (R311.7.2 – CT Amd)

- Lowered from 6'-6" to 6'-4" for existing or replacement stairways serving basements or attics being converted to habitable space.

Stair Risers (R311.7.3, R311.7.5.1)

- Vertical rise between landings has increased from 12' to 147"
- Fully open risers permitted up to 30" high rise, then reduced to less than 4" opng.
- Open risers permitted on spiral stairs.

Alternating Tread Devices & Ship Ladders (R311.7.11, R311.7.12)

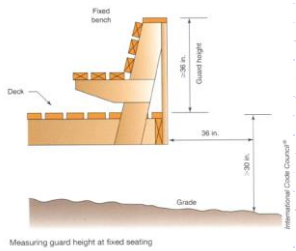
- Brought in same provisions as in IBC.
- Cannot be used as an element of MOE.
- Can be used where MOE is not required or required MOE serving that space is located elsewhere.

Ramps (R311.8)

- Ramps that do not serve the required egress door are now permitted to have a slope not greater than 1:8.

Guard Height (R312.1.2)

- Removed requirement to measure deck guard height from adjacent fixed seating.



Measuring guard height at fixed seating

Smoke Alarms (R314)

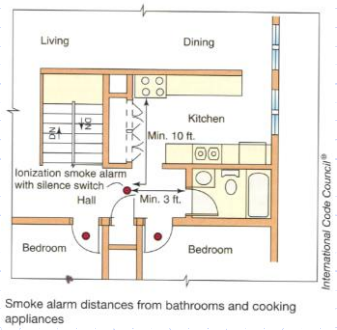
- New provisions address smoke alarms installed new bathrooms and cooking appliances.
- R314.3(4): *Smoke alarms shall be installed not less than 3 feet horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by Section R314.3.*

Smoke Alarms (R314)

R314.3.1: *Smoke alarms shall not be installed in the following locations unless this would prevent placement of a smoke alarm in a location required by Section R314.3.*

1. *Ionization smoke alarms shall not be installed less than 20 feet horizontally from a permanently installed cooking appliance.*
2. *Ionization smoke alarms with an alarm-silencing switch shall not be installed less than 10 feet horizontally from a permanently installed cooking appliance.*
3. *Photoelectric smoke alarms shall not be installed less than 6 feet horizontally from a permanently installed cooking appliance.*

Smoke Alarms (R314)



Smoke alarm distances from bathrooms and cooking appliances

Mezzanines (R325)

- New provisions place limitations on the construction of mezzanines related to ceiling height and openness consistent with the IBC, so as not to be considered a story.
- Definition (R202): MEZZANINE. *An intermediate level or levels between the floor and ceiling of any story.*

Mezzanines (R325)

- Clear height above or below: 7 ft min.
- Aggregate area not more than 1/3 of the area of the room in which it is located and open to.
- Openness with walls not more than 42", except when not more than 10% of the mezzanine, or except 2 stories w/ sprinklers & 2 MOE

Mezzanines (R325)

Swimming Pools, Spas & Hot Tubs (R326 – CT Amd)

- IRC model text points to ISPSC.
- CT is adding all text from previous 2012 IRC Appendix G.
- Updated ANSI reference standards.

Minimum Footing Sizes (R403.1.1)

- The table for minimum footing sizes has been expanded into 3 tables based on the type of construction being supported: light frame, light frame w/ veneer, and concrete or masonry.
- Tables apply to concrete footings only.
- Footing sizes increase for homes with a crawl space or basement.

Minimum Footing Sizes (R403.1.1)

Two-story house with basement foundation:

Light-frame construction
Soil-bearing strength = 2000 psf
Snow Load = 30 psf
28 ft. wide building with interior load-bearing wall (see footnote b)
Footnote b allows buildings with roof widths smaller than 32 ft. to subtract 2 in. from the footing width for every 2 ft. of width less than 32 ft.

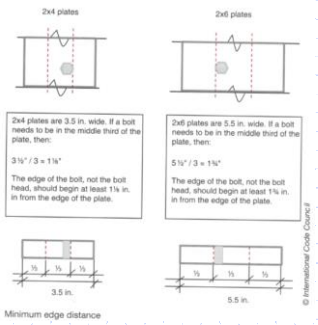
Minimum Footing Width		
2012	2015	
12×6	17" − 2×2" = 13" 13×6	Larger footing width required

4-inch brick veneer over light-frame construction
Soil-bearing strength = 2000 psf
Snow Load = 30 psf
32 ft. wide building with interior load-bearing wall

Minimum Footing Width		
2012	2015	Larger footing width required
16×6	21×6	

Foundation Anchorage (R403.1.6)

- Anchor bolts are now required to be placed in the middle third of sill plates.



Retaining Walls (R404.4)

- Retaining walls, freestanding walls not supported at the top with more than 48" of unbalanced backfill or resist additional lateral loads with more than 24" of unbalanced backfill must be designed "*in accordance with accepted engineering practice*".

Floor Joist Spans (Table R502.3.1(1),R502.3.1(2))

- Changes to lumber capacities
- Spans for Southern Pine (SP) decreased.
- Spans for Douglas-Fir-Larch (DFL) and Hemlock Fir (HF) have increased.
- 2015 IRC span tables now in agreement with wood standards' span tables.

Decking (R507.1, R507.5)

- New Table R507.4 provides maximum deck joist spacing depending on type of decking and its orientation.

TABLE R507.4
MAXIMUM JOIST SPACING

MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Perpendicular to joist	Diagonal to joist[a]
$1\frac{7}{8}$-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.3	In accordance with Section R507.3

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

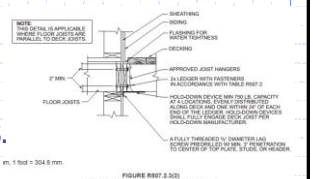
Deck Ledger Connection (R507.2)

- The deck ledger section is reorganized to better describe minimum requirements for connection of deck ledgers to band joists. No real technical changes.

Deck Lateral Load Connection (R507.2.4)

- When the prescriptive deck lateral load connection that appeared in previous editions is chosen, IRC now requires the 2 hold-down devices to be within 2 ft of the end of the deck.
- A new lateral load connection option prescribes 4 hold-downs installed below the deck structure.

Deck Lateral Load Connection (R507.2.4)



VS.

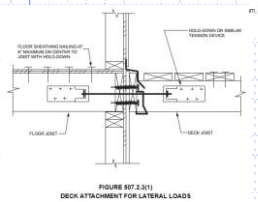
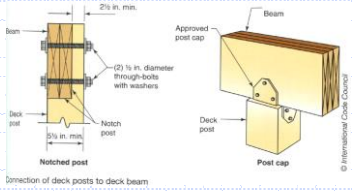


FIGURE 807.2.3(1)
DECK ATTACHMENT FOR LATERAL LOADS

Deck Joists & Beams (R507.5, R507.6, R507.7)

- New Table R507.5 Deck Joist Spans
- New Table R507.6 Deck Beam Spans
- R507.7 Joist to beam bearing



Connection of deck posts to deck beam

Deck Posts (R507.8)

- New section establishes minimum sizes of wood posts supporting decks & describes requirements for connection to footing.

R507.8 Deck posts.

For single-level wood-framed decks with beams sized in accordance with Table R507.6, deck post size shall be in accordance with Table R507.8.

TABLE R507.8
DECK POST HEIGHT[a]

DECK POST SIZE	MAXIMUM HEIGHT[a]
4 x 4	8'
4 x 6	8'
6 x 6	14'

For SI: 1 foot = 304.8 mm.

a. Measured to the underside of the beam.

Deck Posts (R507.8)

R507.8.1 Deck post to deck footing.

Posts shall bear on footings in accordance with Section R403 and Figure R507.8.1. Posts shall be restrained to prevent lateral displacement at the bottom support. Such lateral restraint shall be provided by manufactured connectors installed in accordance with Section R507 and the manufacturers' instructions or a minimum post embedment of 12 inches (305 mm) in surrounding soils or concrete piers.

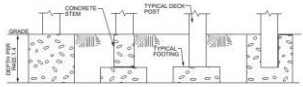


FIGURE R507.8.1
TYPICAL DECK POSTS TO DECK FOOTINGS

Fastening Schedule - Roof (Table R602.3(1))

- The Fastening Schedule now contains multiple nail size options. Clarification of roof rafter connections at ridge, valley and hip has been added.

Fastening Schedule - Roof (Table R602.3(1))

TABLE R602.3(1) Fastening Schedule for Structural Members

Item	Description of Building Elements	Number and Type of Fastener[a, b, c]	Spacing and Location of Fasteners
	Roof		
1	Blocking between ceiling joists or rafters to top plate, ~~toe nail~~	~~3-8d~~ 4-8d box (2½" × 0.113"); or 3-8d common (2½" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail
2	Ceiling joists to top plate, ~~toe nail~~	~~3-8d~~ 4-8d box (2½" × 0.113"); or 3-8d common (2½" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Per joist, toe nail
3	Ceiling joist not attached to parallel rafter, laps over partitions, ~~face nail~~ (See Sections R802.3.1, R802.3.2, Table R802.5.1(9))	~~3-10d~~ 4-10d box (3" × 0.128"); or 3-16d common (3½" × 0.162"); or 4-3" × 0.131" nails	Face nail
4	Ceiling joist attached to parallel rafter, (heel joint) (See Sections R802.3.1, R802.3.2, Table R802.5.1(9))	Per Table R802.5.1(9)	Face nail
5	Collar tie to rafter, face nail or 1¼" × 20 gage ridge strap to rafter	~~3-10d~~ 4-10d box (3" × 0.128"); or 3-10d common (3" × 0.148"); or 4-3" × 0.131" nails	Face nail each rafter
6	Rafter or roof truss to plate, ~~toe nail~~	3-16d box nails (3½" × 0.135"); or 3-10d common nails (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131 nails	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss[i]
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2" ridge beam, ~~toe nail face nail~~	4-16d box (3½" × 0.135"); or 3-10d common (3½" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	Toe nail
		3-16d box (3½" × 0.135") 2-16d common (3½" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	End nail

(Footnotes not shown for brevity and clarity.)

Fastening Schedule - Wall (Table R602.3(1))

- The Fastening Schedule now contains multiple nail size options. Clarification of double top plate splicing has been added.
- Coordinated with IBC Table 2304.10.1.

Fastening Schedule - Wall (Table R602.3(1))

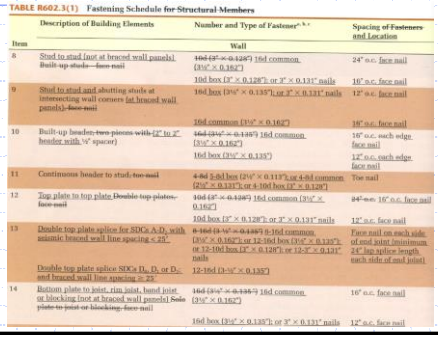
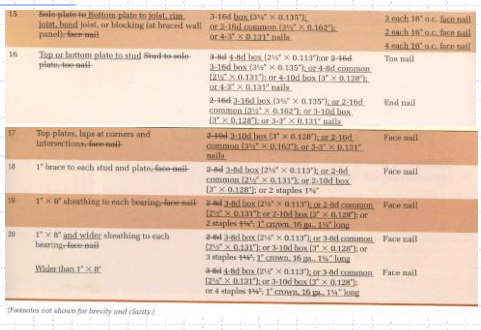


TABLE R602.3(1) Fastening Schedule for Structural Members

Item	Description of Building Elements	Number and Type of Fastener[a, b, c]	Spacing of Fasteners and Location
	Wall		
8	Stud to stud (not at braced wall panels) Built-up studs—face nail	~~10d (3" × 0.128")~~ 16d common (3½" × 0.162")	24" o.c. face nail
		10d box (3" × 0.128") or 3" × 0.131" nails	16" o.c. face nail
9	Stud to stud and abutting studs at intersecting wall corners (at braced wall panels), face nail	16d box (3½" × 0.135"); or 3" × 0.131" nails	12" o.c. face nail
		10d common (3½" × 0.162")	16" o.c. face nail
10	Built-up header, two pieces with ~~2"~~ to 2" header with ½" spacer)	~~16d (3½" × 0.135")~~ 16d common (3½" × 0.162")	16" o.c. each edge face nail
		16d box (3½" × 0.135")	12" o.c. each edge face nail
11	Continuous header to stud, ~~toe nail~~	~~4-8d~~ 3-8d box (2½" × 0.113"); or 4-8d common (2½" × 0.131"); or 4-10d box (3" × 0.128")	Toe nail
12	Top plate to top plate ~~Double top plates, face nail~~	~~10d (3" × 0.128")~~ 16d common (3½" × 0.162")	~~24" o.c.~~ 16" o.c. face nail
		10d box (3" × 0.128"); or 3" × 0.131" nails	12" o.c. face nail
13	Double top plate splice for SDCs A-D, with seismic braced wall line spacing < 25'	~~8-16d (3-½" × 0.135")~~ 8-16d common (3½" × 0.162"); or 12-16d box (3½" × 0.135"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails	Face nail on each side of end joint (minimum 24" lap splice length each side of end joint)
	Double top plate splice SDCs D$_0$, D$_1$ or D$_2$ and braced wall line spacing ≥ 25'	12-16d (3-½" × 0.135")	
14	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels) ~~Sole plate to joist or blocking, face nail~~	~~16d (3½" × 0.135")~~ 16d common (3½" × 0.162")	16" o.c. face nail
		16d box (3½" × 0.135"); or 3" × 0.131" nails	12" o.c. face nail

Fastening Schedule - Wall (Table R602.3(1))



15	~~Sole plate to~~ Bottom plate to joist, rim joist, band joist, or blocking (at braced wall panel) ~~face nail~~	~~3-16d~~ box (3½" × 0.135"); or 2-16d common (3½" × 0.162"); or 4-3" × 0.131" nails	3 each 16" o.c. face nail 2 each 16" o.c. face nail 4 each 16" o.c. face nail
16	Top or bottom plate to stud ~~Stud to sole plate, toe nail~~	~~3-8d~~ 4-8d box (2½" × 0.113")or ~~2-16d~~ 3-16d box (3½" × 0.135"); or 4-8d common (2½" × 0.131"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	Toe nail
		~~2-16d~~ 3-16d box (3½" × 0.135"); or 2-16d common (3½" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	End nail
17	Top plates, laps at corners and intersections, ~~face nail~~	~~2-10d~~ 2-10d box (3" × 0.128"); or 2-16d common (3½" × 0.162"); or 3-3" × 0.131" nails	Face nail
18	1" brace to each stud and plate, ~~face nail~~	~~2-8d~~ 2-8d box (2½" × 0.113"); or 2-8d common (2½" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples 1⅞"	Face nail
19	1" × 6" sheathing to each bearing ~~face nail~~	~~2-8d~~ 2-8d box (2½" × 0.113"); or 2-8d common (2½" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples ~~1¾"~~; 1" crown, 16 ga., 1½" long	Face nail
20	1" × 8" and wider sheathing to each bearing, ~~face nail~~	~~2-8d~~ 3-8d box (2½" × 0.113"); or 3-8d common (2½" × 0.131"); or 3-10d box (3" × 0.128"); or 3 staples ~~1¾"~~; 1" crown, 16 ga., 1⅝" long	Face nail
	Wider than 1" × 8"	~~3-8d~~ 4-8d box (2½" × 0.113"); or 3-8d common (2½" × 0.131"); or 3-10d box (3" × 0.128"); or 4 staples ~~1¾"~~; 1" crown, 16 ga., 1⅝" long	Face nail

(Footnotes not shown for brevity and clarity.)

Fastening Schedule - Floor (Table R602.3(1))

- The Fastening Schedule now contains multiple nail size options. Clarification of joist-to-band-joist (rim board) connection has been added.
- Coordinated with IBC Table 2304.10.1.

Fastening Schedule - Floor (Table R602.3(1))

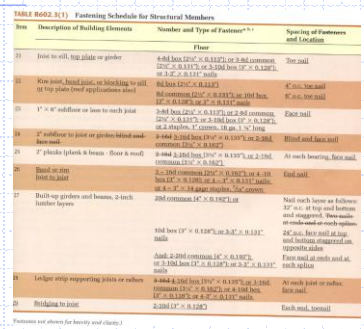


TABLE R602.3(1) Fastening Schedule for Structural Members

Item	Description of Building Elements	Number and Type of Fastener[a, b, c]	Spacing of Fasteners and Location
		Floor	
21	Joist to sill, top plate or girder	4-8d box (2½" × 0.113"); or 3-8d common (2½" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail
22	Rim joist, band joist, or blocking to sill or top plate (roof applications also)	8d box (2½" × 0.113"); 8d common (2½" × 0.131"); or 10d box (3" × 0.128"); or 3" × 0.131" nails	6" o.c. toe nail
23	1" × 6" subfloor or less to each joist	3-8d box (2½" × 0.113"); or 2-8d common (2½" × 0.131"); or 3-10d box (3" × 0.128"); or 2 staples, 1" crown, 18 ga., 1 ¼" long	Face nail
24	2" subfloor to joist or girder, blind and face nail	2-16d 3-10d box (3½" × 0.135"); or 2-16d common (3½" × 0.162")	Blind and face nail
25	2" planks (plank & beam - floor & roof)	2-16d 2-10d box (3½" × 0.135"); or 2-16d common (3½" × 0.162")	At each bearing, face nail
26	Band or rim joist to joist	3 – 10d common (3½" × 0.162"); or 4 – 10d box (3" × 0.128"); or 4 – 3" × 0.131" nails; or 4 – 3" × 14 gage staples, 7/16" crown	End nail
27	Built-up girders and beams, 2-inch lumber layers	20d common (4" × 0.192"); or	Nail each layer as follows: 32" o.c. at top and bottom and staggered. Two nails at ends and at each splice.
		10d box (3" × 0.128"); or 3-3" × 0.131" nails	24" o.c. face nail at top and bottom staggered on opposite sides
		Amd: 2-20d common (4" × 0.192"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Face nail at ends and at each splice
28	Ledger strip supporting joists or rafters	3-16d 4-10d box (3½" × 0.135"); or 3-16d common (3½" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	At each joist or rafter, face nail
29	Bridging to joist	2-10d (3" × 0.128")	Each end, toenail

[a] Fasteners are shown for basicity and clarity.

Stud Size, Height & Spacing (R602.3.1)

- Deleted 2012 IRC Table R602.3.1 for Max. Allowable Length of Wood Studs…
- The process for determining whether walls studs, a wall, or a story must be engineered based on stud height now checks:
  - Table R602.3(5) – next slide
  - Section R602.10 - Wall Bracing
  - Section R602.3.1, Exception 2 (N/A in CT)

Stud Size, Height & Spacing (R602.3.1)

TABLE R602.3(5)
SIZE, HEIGHT AND SPACING OF WOOD STUDS[a]

STUD SIZE (inches)	BEARING WALLS					NONBEARING WALLS	
	Laterally unsupported stud height[a] (feet)	Maximum spacing when supporting a roof-ceiling assembly or a habitable attic assembly, only (inches)	Maximum spacing when supporting one floor, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing when supporting two floors, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing when supporting one floor height[a] (inches)	Laterally unsupported stud height[a] (feet)	Maximum spacing (inches)
2 × 3[b]	—	—	—	—	—	10	16
2 × 4	10	24[c]	16[c]	—	24	14	24
3 × 4	10	24	24	16	24	14	24
2 × 5	10	24	24	—	24	16	24
2 × 6	10	24	24	16	24	20	24

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

a. Listed heights are distances between points of lateral support placed perpendicular to the plane of the wall. Bearing walls shall be sheathed on not less than one side or bridging shall be installed not greater than 4 feet apart measured vertically from either end of the stud. Increases in unsupported height are permitted where in compliance with Exception 2 of Section R602.3.1 or designed in accordance with accepted engineering practice.

b. Shall not be used in exterior walls.

c. A habitable attic assembly supported by 2 × 4 studs is limited to a roof span of 32 feet. Where the roof span exceeds 32 feet, the wall studs shall be increased to 2 × 6 or the studs shall be designed in accordance with accepted engineering practice.

Headers (R602.7)

- Girder & header span tables moved from Chapter 5 to 6, header section.
- Multi-ply & single header tables are combined.
- New section describing rim board headers is added.

Headers (R602.7)

TABLE R602.7(1)
GIRDER SPANS[a] AND HEADER SPANS[b] FOR EXTERIOR BEARING WALLS
(Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[g] and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)[c]															
		30				50				70							
		Building width[d] (feet)															
		20		28		36		20		28		36		20		28		36	
		Span	NJ[f]	Span	NJ[f]	Span	NJ[f]	Span	NJ[f]	Span	NJ[f]	Span	NJ[f]	Span	NJ[f]	Span	NJ[f]	Span	NJ[f]
Roof and ceiling	1-2 × 8	4-6	1	3-10	1	3-5	1	3-9	1	3-2	1	2-10	2	—	—	—	—	—	—
	1-2 × 10	5-8	1	4-11	1	4-4	1	4-9	1	4-1	1	3-7	2	—	—	—	—	—	—
	1-2 × 12	6-11	1	5-11	2	5-3	2	5-9	2	4-8	2	3-8	2	—	—	—	—	—	—
	2-2 × 4	3-6	1	3-2	1	2-10	1	3-2	1	2-9	1	2-6	1	2-10	1	2-6	1	2-3	1
	2-2 × 6	5-5	1	4-8	1	4-2	1	4-8	1	4-1	1	3-8	2	4-2	1	3-8	2	3-3	2
	2-2 × 8	6-10	1	5-11	2	5-4	2	5-11	2	5-2	2	4-7	2	5-4	2	4-7	2	4-1	2
	2-2 × 10	8-5	2	7-3	2	6-6	2	7-3	2	6-3	2	5-7	2	6-6	2	5-7	2	5-0	2
	2-2 × 12	9-9	2	8-5	2	7-6	2	8-5	2	7-3	2	6-6	2	7-6	2	6-6	2	5-10	3
	3-2 × 8	8-4	1	7-3	1	6-5	2	7-2	1	6-3	2	5-8	2	6-5	2	5-8	2	5-1	2
Roof, ceiling and one center-bearing floor	2-2 × 8	5-9	2	5-0	2	4-6	2	5-2	2	4-6	2	4-1	2	4-9	2	4-2	2	3-9	2
	2-2 × 10	7-0	2	6-2	2	5-6	2	6-4	2	5-6	2	5-0	2	5-9	2	5-1	2	4-7	3
	2-2 × 12	8-1	2	7-1	2	6-5	2	7-4	2	6-5	2	5-9	3	6-8	2	5-10	3	5-5	3
	3-2 × 8	7-2	1	6-3	2	5-8	2	6-5	2	5-8	2	5-1	2	5-11	2	5-2	2	4-8	3
Roof, ceiling and one clear span floor	2-2 × 8	5-0	2	4-4	2	3-10	2	4-10	2	4-2	2	3-9	2	4-6	2	3-11	2	3-6	2
	2-2 × 10	6-1	2	5-3	2	4-8	2	5-11	2	5-1	2	4-7	3	5-6	2	4-9	2	4-3	3
	2-2 × 12	7-1	2	6-1	3	5-5	3	6-10	2	5-11	3	5-4	3	6-4	2	5-6	3	5-0	3
	3-2 × 8	6-3	2	5-5	2	4-10	2	6-1	2	5-3	2	4-8	2	5-7	2	4-11	2	4-5	2
	3-2 × 10	7-7	2	6-7	2	5-11	2	7-5	2	6-5	2	5-9	2	6-10	2	6-0	2	5-4	2

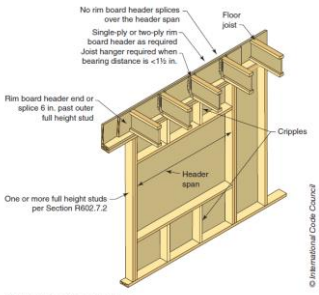
Headers (R602.7)

TABLE R602.7(3)
GIRDER AND HEADER SPANS[a] FOR OPEN PORCHES
(Maximum span for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b])

SIZE	SUPPORTING ROOF						SUPPORTING FLOOR	
	GROUND SNOW LOAD (psf)							
	30		50		70			
	DEPTH OF PORCH[c] (feet)							
	8	14	8	14	8	14	8	14
2-2 × 6	7-6	5-8	6-2	4-8	5-4	4-0	6-4	4-9
2-2 × 8	10-1	7-7	8-3	6-2	7-1	5-4	8-5	6-4
2-2 × 10	12-4	9-4	10-1	7-7	8-9	6-7	10-4	7-9
2-2 × 12	14-4	10-10	11-8	8-10	10-1	7-8	11-11	9-0

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.
a. Spans are given in feet and inches.
b. Tabulated values assume #2 grade lumber, wet service and incising for refractory species. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.
c. Porch depth is measured horizontally from building face to centerline of the header. For depths between those shown, spans are permitted to be interpolated.

Headers (R602.7)



Rim board header construction

Headers (R602.7)

R602.7.5 Supports for headers. Headers shall be supported on each end with one or more jack studs or with approved framing anchors in accordance with Table R602.7(1) or R602.7(2). The full-height stud adjacent to each end of the header shall be end nailed to each end of the header with four-16d nails (3.5 inches × 0.135 inches). The minimum number of full-height studs at each end of a header shall be in accordance with Table R602.7.5.

TABLE R602.7.5
MINIMUM NUMBER OF FULL HEIGHT STUDS AT EACH END OF HEADERS IN EXTERIOR WALLS

HEADER SPAN (feet)	MAXIMUM STUD SPACING (inches) [per Table R602.3(5)]	
	16	24
≤ 3′	1	1
4′	2	1
8′	3	2
12′	5	3
16′	6	4

Bracing Rqmts Based on Wind Speed (Table R602.10.3(1))

- Table values have changed slightly due to use of ultimate design wind speed to calculate required bracing length.
- Changed from 4 winds speeds (85, 90, 100, 110) to 5 (110, 115, 120, 130, 140)
- All bracing methods are now specifically listed in the table.

Bracing Rqmts Based on Wind Speed (Table R602.10.3(1))

TABLE R602.10.3(1) Bracing Requirements Based on Wind Speed

- Exposure Category B
- 30-Foot Mean Roof Height
- 10-Foot Eave-to-Ridge Height
- 10-Foot Wall Height
- 2 Braced Wall Lines

Ultimate Design Wind Speed (mph)	Story Location	Braced Wall Line Spacing (feet)	Minimum Total Length (Feet) of Braced Wall Panels Required Along Each Braced Wall Line[a]			
			Method LIB[b]	Method GB	Methods DWB, WSP, SFB, PBS, PCP, HPS, BV-WSP, ABW, PFH, PFG, CS-SFB	Methods CS-WSP, CS-G, CS-PF
≤115		10	3.5	3.5	2.0	2.0
		20	6.5	6.5	3.5	3.5
		30	9.5	9.5	5.5	4.5
		40	12.5	12.5	7.0	6.0
		50	15.0	15.0	9.0	7.5
		60	16.0	16.0	10.5	9.0
		10	7.0	7.0	4.0	3.5
		20	12.5	12.5	7.5	6.5
		30	18.0	18.0	10.5	9.0
		40	23.5	23.5	13.5	11.5
		50	29.0	29.0	16.5	14.0
		60	34.5	34.5	20.0	17.0
		10	NP	10.0	6.0	5.0
		20	NP	16.5	11.0	9.0
		30	NP	27.0	15.5	13.0
		40	NP	35.0	20.0	17.0
		50	NP	43.0	24.5	21.0
		60	NP	51.0	29.0	25.0

(Portions of table not shown for brevity and clarity.)

Contributing Length of CS-PF Panels (Table R602.10.5)

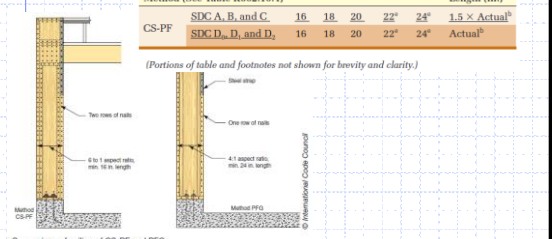
- The contributing length of continuously sheathed portal frames (Method CS-PF) in low seismic regions has increased by 50%.
- Based on testing and number of fasteners.

Contributing Length of CS-PF Panels (Table R602.10.5)

TABLE R602.10.5 Minimum Length of Braced Wall Panels

Method (See Table R602.10.4)		Minimum Length[a] (in.) Wall Height 8 ft.	9 ft.	10 ft.	11 ft.	12 ft.	Contributing Length (in.)
CS-PF	SDC A, B, and C	16	18	20	22[c]	24[c]	1.5 × Actual[b]
	SDC D_0, D_1, and D_2	16	18	20	22[c]	24[c]	Actual[b]

(Portions of table and footnotes not shown for brevity and clarity.)

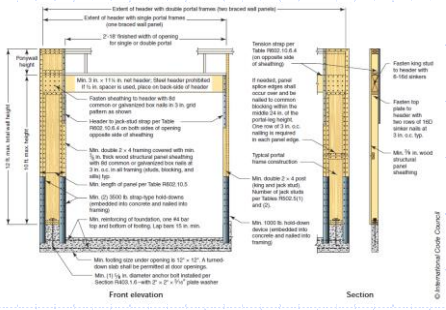


Comparison of nailing of CS-PF and PFG

Method PFH: Portal Frame w/ Hold-Downs (R602.10.6.2)

- Min. req'd capacity capacity of the hold-downs is lowered to 3,500 lbs from 4,200 in 2012 IRC.
- New testing confirms 2 sill plates are sufficient instead of 3 req'd in 2012 IRC.

Method PFH: Portal Frame w/ Hold-Downs (R602.10.6.2)



Simplified Wall Bracing (R602.12)

- Now allowed for up to 3-story dwellings, wind exp. B or C w/ ult design wind speed of 130 mph or less.

Masonry Walls (R606)

- Sections R606, R607, R608 & R609 have been organized into one section providing requirements for masonry construction.
- Masonry unit requirements now defined, same as IBC.
- *Masonry veneer in Chapter 7 & masonry foundations in Chapter 4.*

Exterior Covering (R703)

- Numerous changes regarding standards for siding & veneer materials and attachment methods.

Ceiling Joist & Rafter Tables (Tables R802.4, R802.5)

- Changes to Southern Pine, Douglas Fir-Larch, and Hemlock Fir capacities have changes the maximum spans.
- Shorter spans for SP; slightly longer spans for DF-L & HF.
- New design values apply only to new construction.

Attic Ventilation (R806.1)

- The 2012 IRC exception allowing the building official to waive ventilation requirements due to atmospheric or climatic conditions has been deleted.

Underlayment for Roofing (R905.1.1)

- Reorganizes underlayment provisions and adds 3 new tables for unlayment type, application, & attachment.
- Easier to locate provisions & highlights key differences

Photovoltaic Shingles (R905.16)

- Additional requirements and limits for PV shingles have been added.

Photovoltaic shingle

Rooftop-Mounted PV Systems (R907)

- Specific requirements for roof mounted PV panels and modules have been added.
- Mirror provisions in 2015 IBC.

Energy Compliance Paths (N1101.13)

- Compliance paths have been clarified.
- Mandatory provisions combined with **either** the prescriptive **or** the performance provisions are deemed compliant.

Permanent Energy Certificate (N1101.14)

- Code now requires the permanent energy certificate to be placed on a wall in proximity to the furnace, in a utility room, or in another approved location.

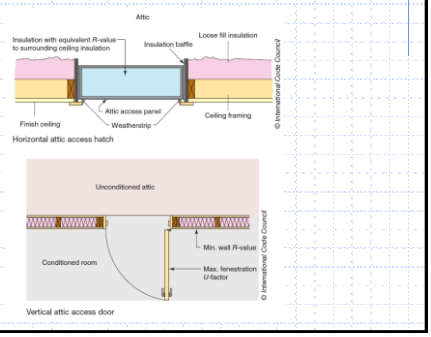
R-Value – Insulated Siding (N1102.1.3)

- Insulated siding is considered continuous insulation & can be used in calculating wall insulation when R-2 minimum.
- The labeled R-value is reduced by 0.6 for the calculation.

Access Hatches & Doors (N1102.2.4)

- Clarification that vertical doors that access unconditioned attics & crawl spaces do not require an R-value to match wall insulation.
- Must comply with fenestration U-factor requirements in Table N1102.1.2.

Access Hatches & Doors (N1102.2.4)



Floor Framing Cavity Insulation (N1102.2.8)

- Added option for air space above floor insulation.

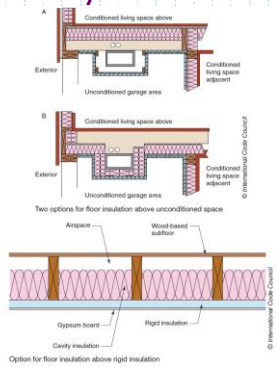


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TABLE N1102.4.1.1 (402.4.1.1)
AIR BARRIER AND INSULATION INSTALLATION

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.
Windows, skylights and doors	The space between window/door jambs and framing, and skylights and framing shall be sealed.	
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
Floors (including above garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing; and extends from the bottom to the top of all perimeter floor framing members.
	Exposed earth in unvented crawl spaces shall be	Where provided instead of floor insulation.

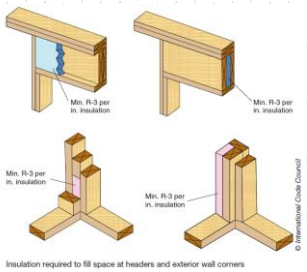
Reformatted Table N1102.4.1.1

		of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation, insulation shall be permanently attached to the crawl space walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	
Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.	
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the drywall.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.	
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC 400.

Insulation @ Corners & Headers (Table N1102.4.1.1)

- Insulation requirements only apply when there is space to install insulation. Must be minimum R-3 per inch.



Insulation required to fill space at headers and exterior wall corners

Wood-Burning Fireplace Doors (N1102.4.2, Table N1102.4.1.1)

- New wood-burning fireplaces shall have tight-fitting flue dampers **or doors**.
- Doors to be tested & listed.
- Requirement for gasketed doors has been removed.

Air Leakage Testing (N1102.4.1.2 – CT Amd)

- CT requires 3 ACH maximum.
- CT Exceptions:
  - DU's >850 SF: Threshold 5 ACH
  - DU's ≤850 SF: Threshold 6.5 ACH
  - Testing & protocol provisions involving multiple units

Duct Sealing & Testing (N1103.3)

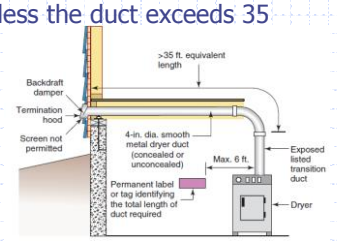
- Duct sealing and testing provisions have been reorganized to clarify the application.
- Maximum duct leakage rates are now prescriptive rather than mandatory to accommodate design flexibility.

Dryer Exhaust Duct Power Ventilators (M1502.4.4)

- Code now recognizes the use of dryer exhaust duct power ventilators (DEDPVs) to increase the allowable exhaust duct length for clothes dryers.

Dryer Duct Length Identification (M1502.4.6)

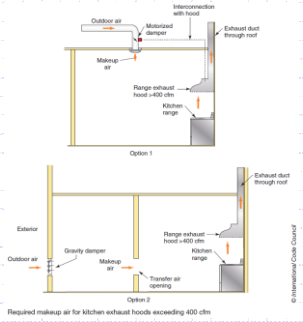
- Label identifying the concealed length of the dryer exhaust duct no longer required, unless the duct exceeds 35 feet.



Makeup Air for Range Hoods (M1503.4)

- Automatic operation of a mechanical damper is no longer required for supplying makeup air for kitchen exhaust systems exceeding 400 cfm.
- Transfer openings are permitted to obtain makeup air from rooms other than the kitchen.
- CT Amendment gives a 400 CFM credit for amount of MUA required.

Makeup Air for Range Hoods (M1503.4)



Required makeup air for kitchen exhaust hoods exceeding 400 cfm

Exhaust Duct Length (M1506.2)

- New prescriptive table for sizing exhaust ducts.

TABLE M1506.2 Duct Length

Duct Type	Flex Duct							Smooth-Wall Duct						
Fan airflow rating [CFM @ 0.25 inch wc[a]]	50	80	100	125	150	200	250	300	50	80	100	125	150	200	250	300
Diameter[b] (inches)	Maximum length[c, d, e] (feet)															
3	X	X	X	X	X	X	X	X	5	X	X	X	X	X	X	X
4	56	4	X	X	X	X	X	X	114	31	10	X	X	X	X	X
5	NL	81	42	16	2	X	X	X	NL	152	91	51	28	4	X	X
6	NL	NL	158	91	55	18	1	X	NL	NL	NL	168	112	53	25	9
7	NL	NL	NL	NL	161	78	40	19	NL	NL	NL	NL	NL	148	88	54
8 and above	NL	NL	NL	NL	NL	189	111	69	NL	NL	NL	NL	NL	198	133	

a. Fan airflow rating shall be in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.
b. For non-circular ducts, calculate the diameter as four times the cross-sectional area divided by the perimeter.
c. This table assumes that elbows are not used. Fifteen feet (5 m) of allowable duct length shall be deducted for each elbow installed in the duct run.
d. NL = no limit on duct length of this size.
e. X = not allowed. Any length of duct of this size with assumed turns and fittings will exceed the rated pressure drop.

Electrical Bonding of Corrugated Stainless Steel Tubing (G2411)

- CT amends this section.
- CT keeps the IRC model code language for bonding to apply to CSST not listed with an arc resistant jacket or coating system.

(Add) **G2411.3 Arc-resistant CSST.** This section applies to corrugated stainless steel tubing (CSST) that is listed with an arc-resistant jacket or coating system in accordance with ANSI LC 1/CSA 6.26. The CSST shall be electrically continuous and bonded to an effective ground fault current path. Where any CSST component of a piping system does not have an arc-resistant jacket or coating system, the bonding requirements of Section G2411.2 shall apply. Arc-resistant-jacketed CSST shall be considered to be bonded where it is connected to an appliance that is connected to the appliance grounding conductor of the circuit that supplies that appliance.

Maximum Gas Demand (G2413.2)

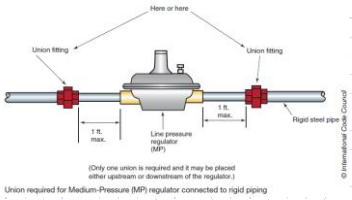
- Table G2415.2 (Approx. Gas Input for Typ. Appliances) has been deleted.
- Code requires actual maximum input rating of the appliances to be known and used for gas pipe sizing purposes.

Protection of Concealed Gas Piping (G2415.7)

- Completely rewritten to address more than just bored holes & notches.
- Now addresses piping parallel to & within framing members.
- New text requires that protection extend well beyond the edge of members that are bored or notched.
- Does not apply to black steel or galv steel piping

Medium-Pressure Regulators (G2421.2)

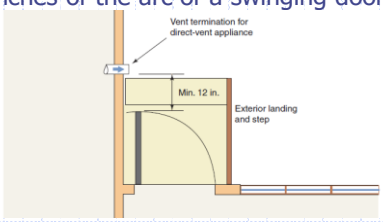
- Medium-Pressure (MP) line regulators installed in rigid piping must have a union installed to allow removal.



Union required for Medium-Pressure (MP) regulator connected to rigid piping

Door Clearance to Vent Terminals (G2426.7.1)

- Requirement added that an appliance vent terminal is not permitted within 12 inches of the arc of a swinging door.



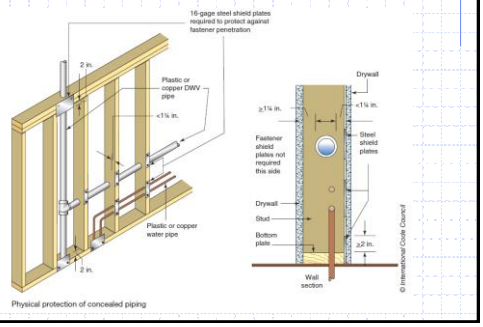
Drain, Waste & Vent Systems Testing (P2503.5)

- The head pressure for a water test on DWV systems has been reduced from 10 ft to 5 ft.
- Reasoning is that 5 ft head test is sufficient to reveal any leaks or defects.
- Easier for installer & inspector to observe the water level inside the pipe without using a ladder.

Protection Against Physical Damage (P2603.2.1)

- Where piping (other than C.I. or galv) is installed thru holes or notches, the minimum clearance has been reduced from 1-1/2 to 1-1/4".
- Protection required for piping less than 1-1/4" from the edge of framing member.

Protection Against Physical Damage (P2603.2.1)



Physical protection of concealed piping

Nonpotable Water Systems (P2901, P2910 – P2913)

- New sections P2910 – P2913 are taken from IgCC to provide guidance on collection, storage & distribution of various types of nonpotable water for residential buildings.

Purple piping is required for nonpotable water distribution.

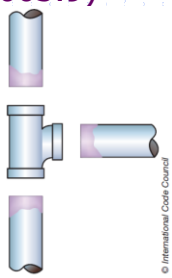
Lead Content of Drinking Water Pipe & Fittings (P2906.2)

- Code has a more stringent limitation for lead content in pipe, pipe fittings, joist, valves, faucets, and fixture fittings that convey water for drinking and cooking.
- Complies w/ newer federal law.

2015 CODE: **P2905.2 P2906.2 Lead Content.** The lead content in pipe and fittings used in the water-supply system shall ~~have lead content of~~ be not greater than 8 percent ~~lead~~.

P2906.2.1 Lead Content of Drinking Water Pipe and Fittings. Pipe, pipe fittings, joints, valves, faucets, and fixture fittings utilized to supply water for drinking or cooking purposes shall comply with NSF 372 and shall have a weighted average lead content of 0.25 percent lead or less.

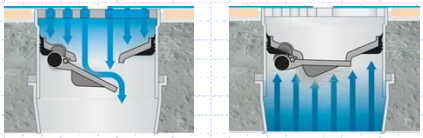
Solvent Cementing of PVC Joints (P3003.9)



Purple primer is no longer required for joints of non-pressure PVC DWV piping 4 inches or less in diameter.

Trap Seal Protection Against Evaporation (P3201.2)

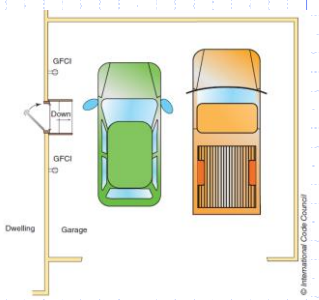
- Can now be accomplished in a variety of ways, including trap seal primer valves supplied with nonpotable water and barrier-type trap seal protection devices.



Example: Kessel Multistop. Not an endorsement.

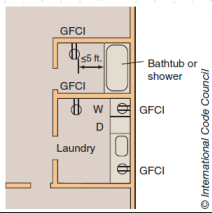
Receptacle Outlets for Garages (E3901.9)

- Garage receptacle outlets must be served by a separate branch circuit that does not supply other outlets. At least one receptacle for each car space.



GFCI Protection (E3902.8, E3902.9, E3902.10)

- Laundry areas now require GFCI.
- Receptacles within 6 ft of bathtubs & showers, & for DW also require GFCI.



GFCI protection required for 125-volt, 15- and 20-amp receptacle outlets in laundry areas and near showers or bathtubs

Low-Voltage Luminaires Adjacent to Swimming Pools (E4203.4.3)

2015 CODE: E4203.4.3 Low-Voltage Luminaires. Listed low-voltage luminaires not requiring grounding, not exceeding the low-voltage contact limit, and supplied by listed transformers or power supplies that comply with Section E4206.1 shall be permitted to be located less than 5 feet (1524 mm) from the inside walls of the pool. [680.22(B)(6)]

Bonding of Outdoor Hot Tubs & Spas (E4204.2)

- New exception to equipotential bonding for listed self-contained hot tubs.

Exceptions:

1. Equipotential bonding of perimeter surfaces shall not be required for spas and hot tubs where all of the following conditions apply:
   - 1.1. The spa or hot tub is listed as a selfcontained spa for aboveground use.
   - 1.2. The spa or hot tub is not identified as suitable only for indoor use.
   - 1.3. The installation is in accordance with the manufacturer's instructions and is located on or above grade.
   - 1.4. To top rim of the spa or hot tub is not less than 28 in. (711 mm) above all perimeter surfaces that are within 30 in. (762 mm), measured horizontally from the spa or hot tub. The height of nonconductive external steps for entry to or exit from the self-contained spa is not used to reduce or increase this rim height measurement.

Appendix V – CT Add

(Add) **APPENDIX V – WIND SPEEDS, SEISMIC DESIGN CATEGORIES and GROUND SNOW LOADS**

Municipality	Ultimate Wind Speed, V_{ult}	Nominal Wind Speed, V_{asd}	Seismic Design Category[1] Site (Soil) Class A-D	Site (Soil) Class E	Ground Snow Load, *Pg* (psf)
Andover	130	101	B	B	30
Ansonia	125	97	B	B	30
Ashford	130	101	B	B	35
Avon	120	93	B	B	35
Barkhamsted	120	93	B	B	40
Beacon Falls	125	97	B	B	30
Berlin	125	97	B	B	30
Bethany	125	97	B	B	30

And it goes through all the municipalities.....

Thank You for Your Attention!!

Milton Gregory Grew, AIA

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