

2018 IRC Update

Based on the 2018 International Residential Code,® (IRC®)

ICC LEARNING CENTER

The *International Residential Code*® (IRC®) establishes minimum regulations for residential construction. This handout will identify important changes in the IRC from 2015 to 2018 edition. Participants will be presented with those changes that will most impact their use of the code when they adopt these I-Codes. The learner will receive an overview of the most important code changes.

Goal

Participants will be able to use this document to identify changes between the 2015 and 2018 IRC allowing them to apply these code requirements to design, plan submittals and/or inspection.

The lecture and activity format allows participants to discuss the changes, reasons for the changes, and answer knowledge review questions. Information presented will allow participants to apply these new code requirements to design, plan review, and/or inspection.

Objectives

Upon completion, participants will be better able to:

- Identify the most significant differences between the 2015 and the 2018 IRC.
- Explain the differences between the current and previous edition.
- Identify changes in organization and code requirements.
- Identify the applicability of design, plan review and inspection requirements.

Content

Chapters of the IRC included in this handout:

- Chapter 1, Scope and Administration
- Chapter 3, Building Planning
- Chapter 4, Foundations
- Chapter 5, Floors
- Chapter 6, Wall Construction
- Chapter 7, Wall Covering
- Chapter 8, Roof-ceiling Construction
- Chapter 9, Roof Assemblies
- Chapter 10, Chimneys and Fireplaces
- Chapter N11, Energy Efficiency
- Chapter M13, General Mechanical System Requirements
- Chapter M16, Duct Systems
- Chapter M21, Hydronic Piping
- Chapter G24, Fuel Gas
- Chapter P 25, Plumbing Administration
- Chapter P27, Plumbing Fixtures
- Chapter P28, Water Heaters
- Chapter P29, Water Supply and Distribution
- Chapter P30, Sanitary Drainage
- Chapter P31, Vents
- Chapter E37, Branch Circuit and Feeder Requirements
- Chapter E39, Power and Lighting Distribution
- Chapter E41, Appliance Installation
- Appendix Q, Tiny Homes

Chapter 1: Scope and Administration			
Code Section		Section Title	Description of Change
2018	2015		
Modification R101.2	R101.2	Scope	All instances where the International Building Code (IBC) permits construction under the IRC are now listed in the exception to the scope of the IRC.
Clarification R105.1, R110.1, R202	R105.1, R110.1, R202	Change of Occupancy	A definition for “Change of Occupancy” has been added and the requirement for a certificate of occupancy when there is a change of occupancy or use has been clarified.

Chapter 3: Building Planning			
Code Section		Section Title	Description of Change
2018	2015		
Modification Table R301.2(1)	Table R301.2(1)	Climatic and Geographic Design Criteria	The requirement for a Manual J assessment or engineered equivalent has been in the International Residential Code for several editions. To assist the designer, jurisdictions will now include variables for Manual J assessments with other climatic and geographic design criteria available from the building department.
Modification R301.2.2.1	R301.2.2.1	Seismic Design Category	New seismic design category (SDC) maps are included in the 2018 IRC. One map contains the most conservative ‘good quality’ soil type, assuming Site Class C or D, and may increase the local SDC. The second map is allowed if the site is identified as being Site Class A, B or D by geotechnical report or known local soil conditions; this map may lower the design spectral response acceleration, S_{DS} , potentially lowering the seismic design category.
Modification R302.1	R302.1	Exterior Walls	References to the International Building Code (IBC) offer additional options and provide flexibility in determining the fire resistance rating of exterior wall assemblies. Table footnotes have been revised to clarify the correlation between gable end vents and the fire resistance requirements for projections.
Modification R302.2	R302.2	Townhouse Separation	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.
Modification R302.13	R302.13	Fire Protection of Floors above Crawl Spaces	Fire-resistant membrane protection is now required for the applicable floor framing materials above crawl spaces containing fuel-fired or electric-powered heating appliances.

Chapter 3: Building Planning, Continued			
Code Section		Section Title	Description of Change
2018	2015		
Modification R308.4.2	R308.4.2	Glazing Adjacent to Doors	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.
Modification R308.4.4	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.
Clarification R308.4.7	R308.4.7	Glazing Adjacent to the Bottom Stair Landing	Figure R308.4.7 has been replaced with a new figure and the caption modified to more accurately reflect when safety glazing is required near the bottom landing.
Modification R310.1	R310.1	Emergency Escape and Rescue Openings	Emergency escape and rescue openings are no longer required for bedrooms in basements when the dwelling unit is protected with an automatic fire sprinkler system and other conditions are met.
Modification R310.3	R310.3	Area Wells for Emergency Escape and Rescue Doors	For emergency escape and rescue doors in basements, a change in terminology replaces "bulkhead enclosures" with "area wells" and provisions for ladders and steps for area wells are added.
Modification R311.7.1, R311.7.8	R311.7.1, R311.7.8	Handrail Projection	A new exception to the handrail projection limitation provides for adequate clearance behind the handrail when it passes the projection of a floor, landing or tread return.
Modification R311.7.3	R311.7.3	Maximum Stair Rise between Landings	The maximum rise of a flight of stairs has increased by 4 inches, from 147 to 151 inches.
Modification R311.7.11, R311.7.12	R311.7.11, R311.7.12	Alternating Tread Devices and Ships Ladders	Alternating tread devices and ships ladders are now permitted as a means of egress for lofts with an area that does not exceed 200 square feet.
Clarification R312.1	R312.1	Guards	The guard requirements only apply to the specific portion of a walking surface that exceeds 30 inches above grade.
Modification R314	R314	Smoke Alarms	The exemption for interconnection of alarms during alterations based on feasibility has been removed from the code.
Modification R315	R315	Carbon Monoxide Alarms	Interconnection is now required where multiple carbon monoxide alarms are required in a dwelling unit.

Chapter 3: Building Planning, Continued			
Code Section		Section Title	Description of Change
2018	2015		
Modification R322.3	R322.3	Coastal High-Hazard Flood Zones	In coastal high-hazard areas (V Zones) and Coastal A Zones, the IRC now provides specific guidance for the design and construction of concrete slabs, stairs, guards, decks and porches to reduce damage to the dwelling in a flood event.
Addition R324.6		Roof Access for Photovoltaic Solar Energy Systems	Requirements for roof access and pathways for firefighters have been introduced into the IRC provisions for rooftop mounted photovoltaic solar energy systems.
Addition R324.6.2.2		Solar Panels near Emergency Escape and Rescue Openings	Rooftop mounted photovoltaic solar energy panels and modules are not permitted to be installed below emergency escape and rescue openings.
Modification R325.3		Mezzanine Area Limitation	The area limitation for mezzanines has been increased from one-third to one-half of the area of the room containing the mezzanine under certain conditions.
Addition R325.6, R202		Habitable Attics	The definition of habitable attic has been revised and the technical requirements have been placed with mezzanines.

Chapter 4: Foundations			
Code Section		Section Title	Description of Change
2018	2015		
Modification Table R403.3(1)	Table R403.3(1)	Insulation requirements for frost protected footings	Insulation thickness requirements for Type II and IX extruded polystyrene (EPS) have changed. The minimum R-value for specific types of EPS has been clarified while requirements for horizontal insulation were added.
Modification Table R403.4	Table R403.4	Crushed stone footings	Table R403.4 is updated to include both the minimum depth and width of a crushed stone footing for a precast concrete wall.
Modification R408.3	R408.3	Unvented crawl space	Ventilation of the under-floor space is not required when an adequately-sized dehumidifier is provided.

Chapter 5: Floors			
Code Section		Section Title	Description of Change
2018	2015		
Modification R507	R507	Decks	Section R507 is reorganized for ease of use and additional provisions are added to simplify prescriptive construction of a deck.
Modification R507.2	R507.2, R507.3	Deck materials	Section R507.2 adds requirements for fasteners and fastener connections, flashing and alternative materials.
Addition R507.3		Deck footings	A new section on footing minimum size is added to help describe minimum prescriptive (non-engineered) requirements for an exterior deck footing based on snow load, soil quality, and footing shape and size.
Clarification R507.6	R507.5	Deck joists	Maximum joist spacing and total length have been clarified. In Table R507.6, maximum span length is listed followed by maximum cantilever length.
Clarification R507.7- R507.9	R507.2, R507.4	Decking, Vertical and Lateral Support	Decking material options and fastener systems are clarified. Vertical and horizontal support of an exterior deck is updated while support and attachment of ledgers is added to the decking section.

Chapter 6: Wall Construction			
Code Section		Section Title	Description of Change
2018	2015		
Addition Table R602.3(6)		Alternate Stud Height	To help clarify when studs greater than 10 feet long may be used, an exception is added to Section R602.3.1 as well as a reference to new Table R602.3(6) which applies only to 11- and 12-foot tall walls in one- and two-story buildings.
Modification Tables R602.7(1), R602.7(2)	Tables R602.7(1), R602.7(2)	Girder and Header Spans	Girder and header spans are updated assuming No. 2 Southern Pine rather than No. 1 Southern Pine as used in the 2015 IRC. A footnote is added to clarify that headers and girders are assumed to be braced; for headers with pony walls above, a further reduction in span is taken for 2x8 and larger headers.
Modification Table R602.7.5	Table R602.7.5	Support for headers	The 2015 IRC full height stud table is significantly altered. 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.
Modification Table R602.10.3 (4)	Table R602.10.3 (4)	Seismic Adjustment Factors	Attempts to clarify roof and ceiling dead loads in the top story of a multi-story dwelling and use of the BV-WSP bracing method have been added. Table R602.10.3(4) now allows use of Methods WSP and CS-WSP with brick veneer in the second story of a dwelling.

Chapter 6: Wall Construction, Continued			
Code Section		Section Title	Description of Change
2018	2015		
Modification R602.10.4.1	R602.10.4.1	Mixing bracing methods	Mixing of continuous sheathing methods with an intermittent alternate bracing method is clarified. Braced wall line(s) containing an alternate method must have sufficient bracing length for an intermittent method, not just for the continuous sheathing method when the alternate method is Method PFH, PFG or ABW.
Modification R602.10.6.5	R602.10.6.5	Method BV-WSP	An attempt to clarify use of the BV-WSP method is made. New limits are added to Section R602.10.6.5.
Modification Tables R603.3.1, R603.3.1.1 (2)	Tables R603.3.1, R603.3.1.1 (2)	Cold-Formed Steel Wall Construction	Cold-formed steel connection tables are updated for wind speeds less than 140 miles per hour. Values in the IRC tables now match AISI S230, Standard for Cold-Formed Steel Framing - Prescriptive Method for One- and Two-Family Dwellings.

Chapter 7: Wall Covering			
Code Section		Section Title	Description of Change
2018	2015		
Modification R703.2	R703.2	Water-resistive barrier	Water-resistive barrier materials other than No. 15 asphalt felt must be installed following the manufacturer's installation instructions. The exemption for detached accessory buildings is deleted.
Modification R703.3.1	R703.3.1, R703.11.1.4	Soffit installation	Requirements for wood structural panel soffits are added to Section R703.3.1 and vinyl soffit requirements are clarified.
Modification R703.8.4	R703.8.4	Veneer anchorage through insulation	Masonry veneer is explicitly allowed to attach to through insulation into the underlying wood structural panels. Attachment must follow Table R703.8.4(2).
Modification R703.11.2	R703.11.2	Vinyl siding installation over foam plastic sheathing	Testing has been done on vinyl siding over insulation in an attempt to determine fastener requirements for vinyl siding attachment in high wind regions. New Table R703.11.2 gives design wind pressures for vinyl siding resisting all wind loads without reliance on wood structural panel sheathing.

Chapter 8: Roof-Ceiling Construction			
Code Section		Section Title	Description of Change
2018	2015		
Modification R802	R802	Roof Framing	Section R802, Design and construction of roofs, has been clarified by dividing the content into three separate sections on roof ridges, rafters and ceiling joists.
Modification R802.1.5.4	R802.1.5.4	Labeling	Each stick of fire-retardant-treated lumber and individual wood structural panel will be labeled with eight specific items of information
Modification R806.2	R806.2	Minimum vent area	The minimum vent area exception is clarified, stating that net free ventilation may be less than 1/150 only if two required conditions are met. Lower vents must be located in the bottom third of the attic space.

Chapter 9: Roof Assemblies			
Code Section		Section Title	Description of Change
2018	2015		
Addition R905.17		Building Integrated Photovoltaic Panels	New Section R905.17 addresses installation and attachment of building-integrated photovoltaic (BIPV) roof panels.

Chapter 10: Chimneys and Fireplaces			
Code Section		Section Title	Description of Change
2018	2015		
Addition R1005.8		Chimney insulation shield	Factory-built chimneys, which have been required to maintain a minimum clearance to insulation, are now required to have an insulation shield to provide the clearance to the insulation.

Chapter 11: Energy Efficiency			
Code Section		Section Title	Description of Change
2018	2015		
Clarification N1101.6, Tables N1101.10.3 (1) and N1101.10.3 (2)	N1101.6, Tables N1101.10.3 (1) and N1101.10.3 (2)	Fenestration Definitions and U-Factors	The definitions for skylights and vertical fenestration have been moved under the definition for fenestration, and a definition for opaque door has been added.

Chapter 11: Energy Efficiency, Continued			
Code Section		Section Title	Description of Change
2018	2015		
Modification N1102.1	N1102.1	Building Thermal Envelope for Log Homes	Log homes are now exempt from the prescriptive building thermal envelope requirements when designed in accordance with ICC-400, <i>Standard on the Design and Construction of Log Structures</i> .
Modification N1102.1.2 and N1102.1.4	N1102.1.2 and N1102.1.4	Insulation and Fenestration Requirements	The prescriptive U-factors for fenestration have been lowered to improve the energy efficiency of dwellings and townhouses.
Modification N1102.2.2	N1102.2.2	Reduction of Ceiling Insulation	When applying the exception for insulation in ceilings without attics, the insulation must extend to the outside of the top plate.
Clarification N1102.2.5	N1102.2.5	Mass Walls	The mass wall provisions have been itemized in a numbered list to bring accuracy and clarity to the technical requirements.
Modification N1102.2.6	N1102.2.6	Cold-Formed Steel Framing R-Values	Conflicting entries have been removed from the table establishing cold-formed steel R-values equivalent to those for wood framing.
Modification N1102.4	N1102.4	Testing for Air Leakage	A new standard for air-leakage testing, RESNET/ICC 380, is now referenced in the IRC to provide flexibility for the testing industry.
Addition N1103.3.6 and N1103.3.7		Ducts Buried within Ceiling Insulation	New provisions address the methods, minimum coverage requirements and thermal benefits for ducts buried within ceiling insulation, and when those ducts are considered inside the building thermal envelope.
Modification N1104.1	N1104.1	Lighting	The required percentage of permanent lighting fixtures having high-efficacy lamps has increased from 75 to 90 percent.
Modification N1106.3, N1106.4	N1106.3, N1106.4	Maximum Energy Rating Index	The maximum rating index values based on climate zone have increased slightly to make the ERI provisions less restrictive and improve the flexibility of the energy provisions.

Chapter M13: General Mechanical System Requirements			
Code Section		Section Title	Description of Change
2018	2015		
Deletion M1305.1.1	M1305.1.1	Access to Furnaces within Compartments	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.
Modification M1305.1.3.2	M1305.1.4.2	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.

Chapter 15: Exhaust Systems			
Code Section		Section Title	Description of Change
2018	2015		
Modification M1502.3.1	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.
Modification M1502.4.2	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.
Modification M1503.6	M1503.6	Makeup Air for Kitchen Exhaust Systems	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.

Chapter M16: Duct Systems			
Code Section		Section Title	Description of Change
2018	2015		
Modification M1601.1.2	M1601.1.2	Underground Duct Systems	Underground ducts, including both direct-burial ducts and those encased in concrete, require sealing and testing.

Chapter M21: Hydronic Piping			
Code Section		Section Title	Description of Change
2018	2015		
Modification M2101.10	M2101.10	Pressure Tests for Hydronic Piping	Compressed air testing of PEX hydronic piping is now allowed when testing is in accordance with the manufacturer's instructions.
Modification M2103.2	M2103.2	Thermal Barrier for Radiant Floor Heating Systems	For hydronic floor heating systems, the minimum insulation R-values have been removed from Section M2103.2 and a reference to the energy provisions of Chapter 11 has been added.

Chapter G24: Fuel Gas			
Code Section		Section Title	Description of Change
2018	2015		
Modification G2406.2	G2406.2	Prohibited Locations for Appliances	A gas-fired clothes dryer is now allowed to be installed in a bathroom and toilet room where a permanent opening communicates with other permitted spaces.
Modification G2411.2, G2411.3	G2411.2, G2411.3	Electrical Bonding of CSST	The existing provisions for electrical bonding apply to CSST without an arc-resistant jacket or coating and a new section addresses electrical continuity and bonding of arc-resistant CSST.
Modification G2414.4.2, G2414.10.1	G2414.4.2, G2414.10.1	Schedule 10 Steel Gas Piping	The code now allows Schedule 10 steel pipe to be used for fuel gas piping.
Modification G2415.11	G2415.11	Protection against Corrosion	Reorganization of this section includes new provisions to address corrosion protection of underground steel gas piping and protection for steel risers other than anodeless risers.
Clarification G2420.5.1	G2420.5.1	Shutoff Valve Location	Shutoff valves located behind movable appliances are considered as meeting the requirement for access.
Addition 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.
Deletion G2442.2	G2442.2	Forced Air Furnace Duct Size	The prescriptive duct size requirements for forced air furnaces have been deleted in favor of other sizing methods specific to the appliance.
Modification G2447.2	G2447.2	Commercial Cooking Appliances	Commercial cooking appliances are now permitted in dwelling units when installed in accordance with an engineered design and the manufacturer's instructions.

Chapter P25: Plumbing Administration			
Code Section		Section Title	Description of Change
2018	2015		
Modification P2503.7	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.

Chapter P26: General Plumbing Requirements			
Code Section		Section Title	Description of Change
2018	2015		
Modification P2602.1	P2602.1	Connections to Public Sewer or Private Sewage Disposal System	The International Private Sewage Disposal Code (IPSDC) is referenced for installation of private sewage disposal systems where there are no state or local requirements for such systems.

Chapter P27: Plumbing Fixtures			
Code Section		Section Title	Description of Change
2018	2015		
Modification P2704	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.
Modification P2713.1	P2713.1	Bathtub Overflow	Bathtub overflow outlets are no longer required.

Chapter P28: Water Heaters			
Code Section		Section Title	Description of Change
2018	2015		
Modification P2801.6	P2801.6	Plastic Pan for Gas-Fired Water Heaters	Plastic safety pans are now allowed under gas water heaters provided the material falls within the prescribed flame spread and smoke developed indices.

Chapter P29: Water Supply and Distribution			
Code Section		Section Title	Description of Change
2018	2015		
Modification P2902.5.4, P2904.	P2902.5.4, P2904.	Backflow Protection for Fire Sprinkler Systems	Sections P2902.5.4 and P2904.1 are revised and coordinated to clarify that stand-alone and multipurpose fire sprinkler systems complying with Section P2904 or NFPA 13D do not require backflow protection under most circumstances.
Modification P2903.5	P2903.5	Water Hammer Arrestors	A water hammer arrestor is now required where quick-closing valves are used in the water distribution system.
Addition P2906.6.1	P2906.6.1	Saddle Tap Fittings on Water Distribution Piping	Saddle tap fittings are no longer permitted on water distribution system piping.
Modification P2906.18.2	P2906.18.2	Joints between PVC and CPVC Piping	A single solvent-cement transition joint is now an acceptable method for connecting a CPVC water distribution system to a PVC water service pipe.

Chapter P30: Sanitary Drainage			
Code Section		Section Title	Description of Change
2018	2015		
Modification P3003.2	P3003.2	Prohibited Joints for Sanitary Drainage	A solvent cement joint is now permitted for joining ABS and PVC piping at the connection of the building drain to the building sewer.
Modification P3005.1.6	P3005.1.6	Reduction in Pipe Size	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.

Chapter P31: Vents			
Code Section		Section Title	Description of Change
2018	2015		
Modification P3103.1	P3103.1	Vent Pipe Terminations	The provisions for vent terminals have been reorganized and a new option has been added to allow a 2-inch vent extension through a sloped roof when the vent is covered.
Modification P3111	P3111	Combination Waste and Vent System	Food waste disposers and drinking fountains are now permitted to connect to a combination waste and vent system.
Modification P3114.8	P3114.8	Prohibited Installations for Air Admittance Valves	An air admittance valve cannot be used to resolve the problem of an open vent terminal that is too close to a building air intake.

Chapter E37: Branch Circuit and Feeder Requirements			
Code Section		Section Title	Description of Change
2018	2015		
Addition 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.

Chapter E39: Power and Light Distribution			
Code Section		Section Title	Description of Change
2018	2015		
Modification E3901.2	E3901.2	Wall Space for Receptacle Distribution	Cabinets with countertops are now considered wall space in determining required locations for general purpose receptacle outlets.
Modification E3901.3	E3901.3	Appliances on 15 Amp Circuits	An individual 15-ampere branch circuit is permitted to serve any specific kitchen appliance.
Addition E3902.4		GFCI Protection for Crawl Space Lighting Outlets	Ground-fault circuit-interrupter (GFCI) protection is now required for lighting outlets of crawl spaces.
Addition E3905.2.1		Nonmetallic-Sheathed Cable and Metal Boxes	Where entering a metal box, nonmetallic-sheathed cable must extend into the box at least 1/4 inch and extend past the cable clamp.

Chapter E41: Appliance Installation			
Code Section		Section Title	Description of Change
2018	2015		
Modification E4101.3	E4101.3	Cord- and-Plug-Connected Appliances	The maximum cord lengths for range hoods and built-in dishwashers have increased and the code clarifies that the receptacle outlet for the dishwasher has to be in the space adjacent to the appliance.

Appendix Q: Tiny Houses			
Code Section		Section Title	Description of Change
2018	2015		
Appendix Q Addition		Tiny Houses	A new Appendix Q covers provisions for tiny houses, defined as dwellings with a maximum floor area of 400 square feet.