GOAL & OBJECTIVES

• Upon completion, you will be better able to:
  1. Identify and discuss the key changes between the 2018 IRC and the 2021 IRC, specifically to building, energy, mechanical, fuel gas, plumbing and electrical requirements and provisions providing a safe living environment.
  2. Highlight increases in building safety and reduction of energy use.
  3. Identify improvements in plumbing, electrical and fuel gas safety.
  4. Discuss how changes will affect local construction practices.

This course will cover all aspects of the 2024 International Residential Code.
About You

What do you do on a typical day?

- Plans examiner
- Inspector
- Building official
- Permit tech
- Designer
- Builder
- Specialty contractor
- Architect & Engineer
- Manufacturer
- Other government position

How many years have you worked in the construction industry?

- 0-5
- 6-10
- 11-20
- 21-30
- 30+
About You

Where in the United States do you work?

- Northwest
- Midwest
- Northeast
- Central US
- Southwest
- South
- Southeast
- US territory
- Canada
- Other countries

COURSE OUTLINE

- Chapters 1 – 2: Admin and Definitions
- Chapters 3 – 9: Building
- Chapters 12 – 23: Mechanical
- Chapter 24: Fuel Gas
- Chapters 25 – 33: Plumbing
- Chapters 34 – 43: Electrical
- Appendices

Selection of Topics

- Provisions addressed based primarily on:
  - Frequency of application
  - Special significance
  - Change in application
Identifying Changes within the IRC

- Print editions of the 2024 IRC replace margin markings with QR codes to identify code changes.
- A QR code is placed at the beginning of a section with changes.

Administration and Definitions
Chapters 1 and 2

R103 Code Compliance Agency

- Section language updated from ‘Department of Building Safety’ to ‘Code Compliance Agency’
- Uses more generic language for states and local jurisdictions using terms other than a department of building safety
Section R104 reorganized
Reviewing for code compliance expanded to reflect the current manner that alternate materials, designs and methods are evaluated

R104.1 General
R104.2 Determination of compliance
R104.2.1 Listed compliance
R104.2.2 Alternative materials, design and methods of construction and equipment
R104.2.2.1 Approval authority
R104.2.2.2 Application and disposition
R104.2.2.3 Compliance with code intent
R104.2.2.4 Equivalency criteria
R104.2.2.5 Tests
R104.2.6 Reports
R104.2.6.1 Evaluation reports
R104.2.6.2 Other reports
R104.3 Modifications
R104.3.1 Flood hazard areas
R104.4 Applications and permits
R104.4.1 Warrant
R104.5 Identification
R104.6 Notices and orders

R104.7 Official Department records
R104.7.1 Approvals
R104.7.2 Inspections
R104.7.3 Code alternatives and modifications
R104.7.4 Tests
R104.7.5 Fees
R104.8 Liability
R104.8.1 Legal defense
R104.9 Approved materials and equipment
R104.9.1 Materials and equipment reuse
Where this code or a referenced standard requires equipment, materials, products or services to be listed and a listing standard is specified, the listing shall be based on the specified standard. Where a listing standard is not specified, the listing shall be based on an approved listing criteria. Listings shall be germane to the provision requiring the listing. Installation shall be in accordance with the listing and the manufacturer’s instructions, and where required to verify compliance, the listing standard and manufacturer’s instructions shall be made available to the building official.

- Listing and labelling language

An alternative material, design or method of construction shall be approved where the building official finds that the proposed alternative is satisfactory and complies with Sections 104.2.2 through 104.2.2.7, as applicable.

- Approval by building official language

An alternative material, design or method of construction shall, for the purpose intended, be not less than the equivalent of that prescribed in this code with respect to all of the following, as applicable:

1. Quality
2. Strength
3. Effectiveness
4. Durability
5. Safety, other than fire safety
6. Fire safety

- Equivalency requirements
**R104.2.5 Tests**

Tests conducted to demonstrate equivalency in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict performance of the end use configuration. Such tests shall be performed by a party acceptable to the building official.

- Testing requirements to prove equivalency. Requires building official approval of the group doing the testing.

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**R111 Service Utilities**

- Terms 'water system' and 'sewer system' are added for clarity.

---

**R202 Rainscreen System**

- Defined to clarify the difference between this specific system and having an airspace behind cladding.
R202 **Rainscreen System**

- An assembly applied to the exterior side of an exterior wall which consists of, at minimum, two layers and a cavity between them sufficient for the passive removal of liquid water and water vapor.
- Adds alternative to a required airspace behind siding and veneer.
Chapter 3 Reorganization

R301-R307 Structural including Passive Fire Resistance
R308-R311 Active Fire Resistance
R312-R317 Rooms and spaces
R318-R321 Means of egress
R322-R323 Accessibility/Elevators
R324-R328 Home Safety
R329-R332 Energy

Chapter 3 Building Planning Reorganization

Section 301 Design Criteria
Section R302 Fire-resistant Construction
Section R303 Protection of Foam Plastic
Section R304 Protection of Wood and Wood-based Products Against Decay
Section R305 Protection Against Subterranean Termites
Section R306 Flood-resistant Construction
Section R307 Storm Shelters
Section R308 Site Address
Section R309 Automatic Fire Sprinkler Systems
Chapter 3 Reorganization

<table>
<thead>
<tr>
<th>Topic</th>
<th>2024 IRC Section</th>
<th>2024 IRC Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means of Egress</td>
<td>R310</td>
<td>R319</td>
</tr>
<tr>
<td>Emergency Escape and Rescue Openings</td>
<td>R319</td>
<td>R320</td>
</tr>
<tr>
<td>Guards and Window Fall Protection</td>
<td>R320</td>
<td>R321</td>
</tr>
<tr>
<td>Accessibility</td>
<td>R322</td>
<td>R323</td>
</tr>
<tr>
<td>Elevators and Platform Lifts</td>
<td>R323</td>
<td>R324</td>
</tr>
<tr>
<td>Handrails</td>
<td>R325</td>
<td>R326</td>
</tr>
<tr>
<td>Guards and Window Fall Protection</td>
<td>R326</td>
<td>R327</td>
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<tr>
<td>Energy</td>
<td>R328</td>
<td>R329</td>
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<td>Solar Energy Systems</td>
<td>R329</td>
<td>R330</td>
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<tr>
<td>Energy Storage Systems</td>
<td>R330</td>
<td>R331</td>
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<tr>
<td>Stationary Engine Generation</td>
<td>R331</td>
<td>R332</td>
</tr>
<tr>
<td>Stationary Fuel Cell Power Systems</td>
<td>R332</td>
<td>R333</td>
</tr>
</tbody>
</table>

Structural Loads

Section R301

Wind Loads on Low-rise Buildings

- **MWFRS** – main wind-force resisting systems
- **C&C** – components and cladding

Some elements are both MWFRS and C&C and must be designed for governing conditions.
Wind Loads on Low-rise Buildings

- C&C loads
- Lateral loads on studs
- Fasteners of studs to framing
- Sheathing and its fasteners
- Gable endwall overhangs
- Suction on rafters/purlins
- Roof uplift connectors
  - <3:12 slope, or
  - Roof joists supported by ridge beam and exterior wall

Table R301.2.1(1) Components and Cladding

- Wind pressure increases with greater height in Exposure B while negative (suction) pressures are reduced on roofs

<table>
<thead>
<tr>
<th>Zone</th>
<th>Effective Wind Area (ft²)</th>
<th>Ultimate Design Wind Speed, Vult (mph)</th>
<th>POS</th>
<th>NSG</th>
<th>POS</th>
<th>NSG</th>
<th>POS</th>
<th>NSG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat and Gable Roof 0 to 7 degrees</td>
<td>10</td>
<td>3.6</td>
<td>11.9</td>
<td>4</td>
<td>15.5</td>
<td>4.4</td>
<td>-17.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>3.8</td>
<td>17.4</td>
<td>3.7</td>
<td>11.6</td>
<td>4.5</td>
<td>-15.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>3.9</td>
<td>15.7</td>
<td>3.4</td>
<td>11.5</td>
<td>3.8</td>
<td>-12.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>4.0</td>
<td>15.0</td>
<td>3.3</td>
<td>11.2</td>
<td>3.6</td>
<td>-11.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>2.8</td>
<td>9.2</td>
<td>3.1</td>
<td>6.7</td>
<td>3.5</td>
<td>-10.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>3.6</td>
<td>18.4</td>
<td>4</td>
<td>20.5</td>
<td>4.6</td>
<td>-26.3</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>3.5</td>
<td>18.4</td>
<td>3.7</td>
<td>18.9</td>
<td>4.1</td>
<td>-19.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>5</td>
<td>13.7</td>
<td>3.4</td>
<td>15.3</td>
<td>3.8</td>
<td>-16.8</td>
<td></td>
</tr>
</tbody>
</table>

Table R301.2.1(2) Components and Cladding

- Exposure coefficients decreased for taller buildings

<table>
<thead>
<tr>
<th>Mean Roof Height</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>15</td>
<td>0.82</td>
</tr>
<tr>
<td>20</td>
<td>0.80</td>
</tr>
<tr>
<td>25</td>
<td>0.94</td>
</tr>
<tr>
<td>30</td>
<td>1.00</td>
</tr>
<tr>
<td>35</td>
<td>1.05</td>
</tr>
<tr>
<td>40</td>
<td>1.00</td>
</tr>
<tr>
<td>45</td>
<td>1.05</td>
</tr>
<tr>
<td>50</td>
<td>1.10</td>
</tr>
<tr>
<td>55</td>
<td>1.15</td>
</tr>
<tr>
<td>60</td>
<td>1.20</td>
</tr>
</tbody>
</table>
Figure R301.2.1 Components and Cladding

Gable Roof 27 to 45 degrees
(6:12 to 12:12 slope)

Figure R301.2.1 Components and Cladding

Hip Roof 7 to 45 degrees
(1.5:12 to 12:12 slope)

Figure R301.2.1.1 Wind Design Required

Areas of the gulf coast and Alaska that require structural design for wind loads are updated.
### Figure R301.2(2) Ultimate Wind Speed

Figure R301.2(2) Figure updated to match wind loads in the IBC and ASCE 7

### Wind Speed Comparison – RC II

### Coastal Wind Speeds

<table>
<thead>
<tr>
<th>Location</th>
<th>Risk Cat. IV</th>
<th>Risk Cat. III</th>
<th>Risk Cat. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar Harbor, Maine</td>
<td>121 mph</td>
<td>125 mph</td>
<td>129 mph</td>
</tr>
<tr>
<td>Hampton Beach, New Hampshire</td>
<td>125 mph</td>
<td>124 mph</td>
<td>125 mph</td>
</tr>
<tr>
<td>Boston, Massachusetts</td>
<td>129 mph</td>
<td>125 mph</td>
<td>126 mph</td>
</tr>
<tr>
<td>Hyannis, Massachusetts</td>
<td>141 mph</td>
<td>139 mph</td>
<td>124 mph</td>
</tr>
<tr>
<td>Newport, Rhode Island</td>
<td>139 mph</td>
<td>139 mph</td>
<td>124 mph</td>
</tr>
<tr>
<td>New Haven, Connecticut</td>
<td>133 mph</td>
<td>129 mph</td>
<td>120 mph</td>
</tr>
<tr>
<td>Southampton, New York</td>
<td>140 mph</td>
<td>138 mph</td>
<td>129 mph</td>
</tr>
<tr>
<td>Manhattan, New York</td>
<td>130 mph</td>
<td>127 mph</td>
<td>116 mph</td>
</tr>
<tr>
<td>Atlantic City, New Jersey</td>
<td>138 mph</td>
<td>135 mph</td>
<td>126 mph</td>
</tr>
<tr>
<td>Rehoboth Beach, Delaware</td>
<td>136 mph</td>
<td>131 mph</td>
<td>122 mph</td>
</tr>
<tr>
<td>Ocean City, Maryland</td>
<td>139 mph</td>
<td>136 mph</td>
<td>128 mph</td>
</tr>
<tr>
<td>Virginia Beach, Virginia</td>
<td>138 mph</td>
<td>132 mph</td>
<td>125 mph</td>
</tr>
<tr>
<td>Wrightsville Beach, North Carolina</td>
<td>160 mph</td>
<td>156 mph</td>
<td>146 mph</td>
</tr>
<tr>
<td>Folly Beach, South Carolina</td>
<td>153 mph</td>
<td>145 mph</td>
<td>131 mph</td>
</tr>
<tr>
<td>Sea Island, Georgia</td>
<td>149 mph</td>
<td>140 mph</td>
<td>129 mph</td>
</tr>
<tr>
<td>Jacksonville Beach, Florida</td>
<td>172 mph</td>
<td>162 mph</td>
<td>152 mph</td>
</tr>
<tr>
<td>Melbourne Beach, Florida</td>
<td>191 mph</td>
<td>183 mph</td>
<td>171 mph</td>
</tr>
<tr>
<td>Miami Beach, Florida</td>
<td>200 mph</td>
<td>200 mph</td>
<td>176 mph</td>
</tr>
<tr>
<td>Key West, Florida</td>
<td>160 mph</td>
<td>154 mph</td>
<td>146 mph</td>
</tr>
<tr>
<td>Clearwater, Florida</td>
<td>162 mph</td>
<td>146 mph</td>
<td>141 mph</td>
</tr>
<tr>
<td>Panama City Beach, Florida</td>
<td>181 mph</td>
<td>172 mph</td>
<td>159 mph</td>
</tr>
<tr>
<td>Gulf Shores, Alabama</td>
<td>177 mph</td>
<td>176 mph</td>
<td>157 mph</td>
</tr>
<tr>
<td>Biloxi, Mississippi</td>
<td>155 mph</td>
<td>152 mph</td>
<td>138 mph</td>
</tr>
<tr>
<td>Slidell, Louisiana</td>
<td>157 mph</td>
<td>154 mph</td>
<td>141 mph</td>
</tr>
<tr>
<td>Cameron, Louisiana</td>
<td>166 mph</td>
<td>159 mph</td>
<td>151 mph</td>
</tr>
<tr>
<td>Galveston, Texas</td>
<td>174 mph</td>
<td>157 mph</td>
<td>159 mph</td>
</tr>
<tr>
<td>Port Aransas, Texas</td>
<td>191 mph</td>
<td>172 mph</td>
<td>159 mph</td>
</tr>
<tr>
<td>Wrightsville Beach, North Carolina</td>
<td>177 mph</td>
<td>176 mph</td>
<td>157 mph</td>
</tr>
</tbody>
</table>
R301.2.1.1 Wind Speeds

- Wind speed can be found in the ASCE 7 Hazard Tool or approved equivalent.  
  asce7hazardtool.online

R301.2.2 Buildings with Seismic Provisions

Buildings that are an exception in the IRC scope are added to the seismic provisions for clarity.

Examples:
- Bed & Breakfasts,
- Adult Family Homes,
- Live/Work Units

R301.2.2.10 Seismic Restraint

Anchorage requirements are expanded to include seismic restraint for all appliances needing seismic restraint—not solely water heaters and thermal storage units.
R301.2.3 Snow Loads

- The snow load map is updated to show snow loads across the continental United States
- Use of ASCE 7 Hazard Tool OK
### R301.2.3 Snow Loads

#### Snow Loads

- General flood zone A
- Flood hazard zone B
- Flood hazard zone C
- Flood hazard zone D

#### Extreme Loads

- Wind
- Earthquake
- Hurricane

#### Ice Loads

- Snow
- Ice

### R302 Exterior Wall

- Above-grade wall
- Defines exterior boundaries of a building.
- Includes between-floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, gable end roof trusses, walls enclosing a mansard roof and basement walls with an average below-grade wall area < 50% of the total area of that enclosing side.

### R310 Fire Protection

Sections R302, R303, R310
R302.1 Exterior Walls

Measurement of fire separation distance when there are multiple dwellings or townhouse buildings on the same lot is added.

R302.1 Exterior Walls

- For FSD, dwellings and townhouses on the same lot shall be assumed to have an imaginary line between them.
- FSD and requirements of Section R302.1 do not apply to walls separating townhouse units (party walls).

R302.3 Two-family dwellings

Two-family dwellings have updated fire resistance requirements for improved clarity.
### R302.3.5 Stacked Dwelling Units

Details are added for stacked two-family dwelling units.

### R302.3.6 Shared Accessory Rooms

- Shared accessory rooms and their fire separation requirements are added to the IRC.
- These accessory rooms must be separate from both dwelling units.
- Intended for laundry, storage spaces and similar spaces.

### Shared Accessory Room Separation

<table>
<thead>
<tr>
<th>Separation</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the dwelling units and attics</td>
<td>≥ 1/2-inch gypsum board or equivalent, Accessory room side wall</td>
</tr>
<tr>
<td>From habitable rooms above or below the accessory room</td>
<td>≥ 5/8-inch Type X gypsum board or equivalent</td>
</tr>
<tr>
<td>Structures supporting floor/ceiling assemblies used for separation required by this section</td>
<td>≥ 1/2-inch gypsum board or equivalent</td>
</tr>
</tbody>
</table>
R302.3.6.1 Opening protection

- Openings from a shared accessory room into a sleeping room not be permitted
- Other openings equipped with a self-closing or automatic-closing device and:
  - Solid wood doors not less than 1-3/8 inches in thickness
  - Solid or honeycomb core steel doors not less than 1-3/8 inches thick
  - Fire door assembly with a 20-minute fire protection rating

R302.3.6.2 Duct penetration

- Ducts penetrating the walls or ceilings separating the dwelling from the shared accessory room
  - Shall not have openings into the shared accessory room
  - Constructed of a minimum No. 26gage sheet steel
  - Other approved material

R302.13 Floor Protection

Exception added for wood floor assemblies less than 600 square feet
R303.1, R303.8 Foam Plastics

New standards for foam plastic materials and their applications are added.

R310 Smoke Alarms

- Adds requirement for smoke alarms to meet manufacturers installation instructions
- Clarifies locations for smoke alarms

Flood Hazards
Section R306
R306.2 Flood Hazard Areas

Accessory structures and detached garages are allowed in flood hazard areas with floors below the required lowest floor.

R306.2 Flood Elevation Requirements

- Detached garage and accessory structure floor elevation requirements added
- Either:
  - At or above DFE or BSE + 1 ft
  - Below DFE and only used for parking or storage with additional requirements

R306.3 Coastal High Hazard Areas

- New language addresses stem walls in Coastal A zones
- Stem walls in Coastal A zones measure the lowest horizontal structural member at the top of the foundation wall
Rooms, Means of Egress
Sections R315-R320

R315, R202 Sleeping Lofts

- Maximum area requirements added for sleeping lofts along with a definition
- Considered portion of story below

R202 Sleeping Lofts

A space on an intermediate level or levels between the floor and ceiling of a story, open on one or more sides to the room in which the space is located, and in accordance with Section R326.
R315, R202 Sleeping Lofts

- Qualify as sleeping loft if:
  - Area < 70 ft²
  - Ceiling height for < one-half of floor area > 7 ft tall
  - Ceiling height min. 3 ft tall
  - Floor area limited to areas with 3 ft tall ceiling height
  - Permanent means of egress
  - Floor below min. 7 ft ceiling height

R315 Exception – Small Sleeping Lofts

- Need not comply with Section R326 if all are true:
  - Max depth < 3 feet
  - Floor area < 35 square feet
  - Not provided with a permanent means of egress

R317 Garages

EV charging stations and automotive lift requirements are added to the IRC to address installation of the equipment
R317.6, R317.7 EV Charging and Lifts

- EV charging stations must be installed per NEC, listed and labeled per UL 2202 with supply equipment listed and labeled per UL 2594
- Automotive lifts must be listed and labeled per ALI ALCTV

R318.7.6 Stairway Landings

Introduces the term flight of stairs in lieu of stairway as it pertains to landings.

R318.7.6 Stair Landings

- Stair landings have all exceptions grouped into one section
- Top landings may be on the opposite side of a door
- Landings may be up to 7½ inches below the threshold
- No top landing required with less than 3 risers
- Exterior stairs to grade must have a bottom landing
R318.7.9 Stairways in Existing Buildings

Alterations to existing stairs not required to comply with where the existing space and construction does not allow a reduction in pitch or slope.

R318.8 Ramps

Handrails requirements for ramps are deleted and the ramp section is relocated.

R320 Handrails

Handrail height and continuity are merged into one single section on handrails.
Accessibility, Elevators
Sections R322-R323

R322 Accessibility
A direct reference links care facilities to accessibility requirements in the IBC.

R322.3 Care Facility Accessibility
- R322.1 Dwelling units or sleeping units.
- R322.2 Live/work units.
- R322.3 Care facilities:
  - Where permitted
  - May use IRC for design
  - Must be accessible per Chapter 11 of the International Building Code in the care facility portion of the building.
R323 Elevators and Hoistways

- Hoistways added to elevator and platform lift section
- Private residence elevators to conform to ASME A17.1/CSA B44, Section 5.3
- Hoistway enclosures and opening protection to meet ASME A17.1 Sections 5.3.1.1 and 5.3.1.8

Home Safety
Sections R324-R325

R324 Screens

- The trigger of 16 square feet in Exception 2 allowing absence of screens with single or multi-layered glazing is deleted
- Any size glazed area in sloped glazing close to vertical does not require a screen
R325 Light, Ventilation and Heating

Light and ventilation are separated into their own sections.

Energy
Sections R329-R330

R329.6.4 BIPV Systems

Building-integrated photovoltaic (BIPV) systems should be marked from below to identify hazardous areas for emergency responders.
R330.4 Energy Storage System Locations

- ESS may be stored in basements and utility spaces if specific requirements are met to protect building occupants.
- Openings and penetrations in ESS storage spaces shall be protected similar to garages.

Image courtesy of Fine Homebuilding/Kate Francis.

R330.8 Impact Protection

Energy Storage Systems must be protected from potential vehicle impact regardless of where they are located (exterior, garage, carport).

R330.8 Impact Protection

- ESS must be protected in garages from impact by cars and trucks.
R330.8 Impact Protection

- Back wall minimum clearances

- Side wall minimum clearances
R330.8 Impact Protection

- Side walls with bump-outs

Foundations
Chapter 4

R401.4 Soil Tests

For lots with poor soils, a geotechnical report is required to include the site class and $S_{150}$ in high seismic areas
• Adds requirement for a concrete slab in a basement or crawl space when walls retain more than 4 feet of backfill.

Concrete Footings

Figure R403.1(1) Plain Concrete Footings with Masonry and Concrete Stem Walls in SDC A, B AND C

• Adds table to clarify where continuous footings need to be below interior braced wall lines.
### R403.1.2 Continuous Footings in SDC D

<table>
<thead>
<tr>
<th>Building Plan Dimensions</th>
<th>1-Story</th>
<th>2-Story</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 feet or less</td>
<td>D0 D1</td>
<td>D0 D1</td>
</tr>
<tr>
<td>&gt; 50 feet</td>
<td>D0 D1</td>
<td>D0 D1</td>
</tr>
<tr>
<td>2-story</td>
<td>D0 D1</td>
<td>D0 D1</td>
</tr>
<tr>
<td>2-story</td>
<td>D0 D1</td>
<td>D0 D1</td>
</tr>
</tbody>
</table>

**Table R403.1.2 Continuous Footing Requirements in SDC D0, D1, D2**

<table>
<thead>
<tr>
<th>SDC</th>
<th>1-Story</th>
<th>2-Story</th>
</tr>
</thead>
<tbody>
<tr>
<td>D0</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>D1</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>D2</td>
<td>Required</td>
<td>Required</td>
</tr>
</tbody>
</table>

**Footnotes, Table R403.1.2 Continuous Footing Requirements in SDC D0, D1, D2**

- **R** = Continuous solid or fully grouted masonry or concrete footings in accordance with Section R403.1.3.4 required.
- **NR** = Continuous footings not required.

a. Buildings shall be permitted to have interior braced wall panels supported on continuous foundations at intervals not exceeding 50 feet provided that the following conditions are all met:
1. The height of cripple walls does not exceed 4 feet.
2. First-floor braced wall panels are supported on doubled floor joists, continuous blocking or floor beams.
3. The distance between bracing lines does not exceed twice the building width measured parallel to the braced wall line.
R502.11 Roll Bracing

- Details for bracing a floor when attaching a guard are added
  - Blocking for joists perpendicular to the floor edge
  - Blocking for joists parallel to the floor edge
  - Blocking added between floor joists

Guard posts aligned with joists perpendicular to the floor edge

Roll bracing for guard posts not aligned with joists
R502.11 Roll Bracing

Roll bracing for joists parallel to the floor edge

R506.2 Post-tensioned Slabs

A referenced standard for post-tensioned slabs on ground is added to the IRC

R506.2.3 Vapor Retarder

- The minimum thickness of vapor retarders is changed back to 6 mil
The deck beam span table is updated by integrating supported deck joist spans and cantilevers.

Table R507.5(1) Max Deck Beam Span – 40 psf LL

<table>
<thead>
<tr>
<th>Beam Species</th>
<th>Joist Span Length (feet &amp; feet)</th>
<th>Maximum Deck Beam Span Length (foot-inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern pine</td>
<td>6 &amp; 1.5</td>
<td>6 &amp; 0</td>
</tr>
<tr>
<td></td>
<td>6 &amp; 0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>8 &amp; 2</td>
<td>8 &amp; 1</td>
</tr>
<tr>
<td></td>
<td>8 &amp; 1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>10 &amp; 2.5</td>
<td>10 &amp; 1</td>
</tr>
<tr>
<td></td>
<td>10 &amp; 1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>12 &amp; 3</td>
<td>12 &amp; 0</td>
</tr>
<tr>
<td></td>
<td>12 &amp; 0</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>14 &amp; 0</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

EXAMPLE

Deck Beam Span

- GSL = 40 psf
- Assume 2 plies of Southern Pine 2x10
  - If joist span is 10’ with no cantilever
  - Maximum beam span is 9’ 8”
  - If joist span is 10’ with 2.5’ cantilever
  - Maximum beam span is 8’ 8”
**EXAMPLE**

**Deck Beam Span**

Interpolation – only joints with no cantilever

- Assume
  - GSL = 40 psf
  - 3 plies of Southern Pine 2x8
  - 11' joint spans
- **Solution**
  - 10' joists: Maximum beam length = 10'-3"
  - 12' joists: Maximum beam length = 9'-6"
  - 11' joists: Maximum beam length = \((10'-3" + 9'-6")/2 = 9'-10"\)

**R507.5.1 Deck Beam Bearing**

Deck beam bearing requires all plies of a beam to be supported by a post or wall

**R507.5.2 Deck Beam Connections**
**Post Size at Beam Splice**

- 6x6 or larger required

---

**Post Size for Bearing at Notch**

<table>
<thead>
<tr>
<th>Beam Pins</th>
<th>Min. Notched Deck Post Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4x6</td>
</tr>
<tr>
<td>2</td>
<td>6x6</td>
</tr>
<tr>
<td>3</td>
<td>6x8</td>
</tr>
</tbody>
</table>

---

**R507.9.1 Deck Ledger Flashing and WRBs**

- When ledgers attach to existing walls without water-resistant barriers, a water-resistant barrier is installed behind the ledger and ledger flashing.
Flashing

EXAMPLE

Flash with detail of flashing

R507.2.4 & R703.4 Flashing

Courtesy of Journal of Light Construction

R507.9.1.3 Ledger to Band Joist Details

Requirements for predrilled holes with lag screws are added for clarity

Walls
Chapter 6
Table R602.3(1) Roof Sheathing Fastener Schedule

- Fastener spacing applies where roof framing SG ≥ 0.42.
- Where roof framing ≤ 0.42 SG ≤ 0.35, fastening of roof sheathing shall be with RSRS-03 (2½” × 0.131” × 0.281” head) nails.

Table R602.3(1) – Roof Framing Lumber Specific Gravity

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation of Building Elements</th>
<th>Number and Type of Fasteners</th>
<th>Spacing of Fasteners</th>
<th>Spacing of Intermediate Supports</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>SPF-12&quot;</td>
<td>SPF</td>
<td>2½” × 0.131” × 0.281” head</td>
<td>4 3/4&quot;</td>
</tr>
<tr>
<td>13</td>
<td>SPF-14½”</td>
<td>SPF</td>
<td>2½” × 0.131” × 0.281” head</td>
<td>4 3/4”</td>
</tr>
</tbody>
</table>

CODE CHANGE

128

SPF vs SPF(S)

Design Values – NDS Supplement
Grade Stamps – ASNC Facsimile
aws.org
alsc.org
R602.10.2.2 Braced Wall Panel Placement

The figure showing the location of braced wall panels relative to the end of a braced wall line is updated for clarity.

R602.10.3.1 Wall Height

Terminology for wall height is clearly defined and updated in the bracing tables with a new figure added for clarity.

Wall height is the vertical distance from the lower edge of the bottom plate to the upper edge of the upper top plate.
### R602.10.3.1 Wall Height

**Table R602.10.3(2)**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Adjustment Based on:</th>
<th>Story/Supporting</th>
<th>Condition</th>
<th>Applicable Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Wall Height (Section R602.10.3.1)</td>
<td>Any story</td>
<td>8 feet</td>
<td>All methods</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9 feet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 feet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11 feet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 feet</td>
<td></td>
</tr>
</tbody>
</table>

**Table R602.10.3(4)**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Adjustment Based on:</th>
<th>Story/Condition</th>
<th>Applicable Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wall Height (Section R602.10.7.1)</td>
<td>Any story</td>
<td>≤ 10 feet</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; 10 feet and ≤ 12 feet</td>
</tr>
</tbody>
</table>

**Table R602.10.5 Minimum Length of Braced Wall Panels**

Braced wall panels contributing length calculations are clarified to be based on the full-height sheathed panel section.

b. Use the actual length where it is greater than or equal to the minimum length. The actual length of Methods CS-G, CS-WSP, CS-WSP, PFH, PFH, and CS-PF is the length of the full-height sheathed panel section.

<table>
<thead>
<tr>
<th>Method (See Table R602.10.4)</th>
<th>Contributing Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-G</td>
<td>Actual*</td>
</tr>
<tr>
<td>CS-WSP, CS-SFB</td>
<td>Actual*</td>
</tr>
<tr>
<td>PFH</td>
<td>1.5 × Actual*</td>
</tr>
<tr>
<td>CS-PF</td>
<td>1.5 × Actual*</td>
</tr>
<tr>
<td>SDC A, B, C</td>
<td>SDC D0, D1, D2</td>
</tr>
</tbody>
</table>
R602.10.6 Construction Methods – Alternative BWPs

Header shall not extend over more than one opening

Extent of Portal Frame

Figure R602.10.6(3) Single Portal Frame at Garage (PFG)

- For determining the ends of a portal frame, a king stud is nailed on either end of the header
- A note is added to each figure to limit header length to a single opening

Extent of Portal Frame

Figure R602.10.6(2) Portal Frame with Hold-downs
Braced wall panel (BWP) length is from the outer edge of the outermost stud to the opening.

### Wall Finishes

Chapter 7

- The term responsive vapor retarder is added
- Use of continuous insulation without a vapor retarder on the exterior side of walls is allowed in some climate zones
RESPONSIVE VAPOR RETARDER: A vapor retarder material complying with a vapor retarder class of Class I or Class II, but which also has a vapor permeance of 1 perm or greater in accordance with ASTM E96, water method (Procedure B).

**Table R702.7(5) Continuous Insulation**

<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>Permitted Condition(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Continuous insulation with R-value ≥ 4.5</td>
</tr>
<tr>
<td>5</td>
<td>Continuous insulation with R-value ≥ 6.5</td>
</tr>
<tr>
<td>6</td>
<td>Continuous insulation with R-value ≥ 8.5</td>
</tr>
<tr>
<td>7</td>
<td>Continuous insulation with R-value ≥ 11.5</td>
</tr>
<tr>
<td>8</td>
<td>Continuous insulation with R-value ≥ 14</td>
</tr>
</tbody>
</table>

**R703.2 Water-resistive Barrier**

Provide a continuous WRB behind the exterior wall veneer.
R703.2 Water-resistive Barrier

Provide a continuous WRB behind deck ledgers.

R703.2 Water-resistive Barrier, Exception

Exception:
WRB not required in unconditioned detached tool sheds, storage sheds, playhouses, and other similar accessory structures if:
1. Exterior wall covering is limited to siding that is attached direct to studs.
2. Exterior walls are uninsulated.
3. Interior side of exterior walls has no wall covering or wall finishes.

Exterior Wall Coverings – Vinyl Siding

- Vinyl siding minimum fastening is clarified
- Minimum clearance to wall framing is added
R703.3 Siding Clearances – Vinyl Siding

R703.3.1 Siding clearance at wall and adjacent surfaces. Unless otherwise specified by the cladding manufacturer or this code, polypropylene, insulated vinyl, and vinyl claddings shall have clearance of at least 6 inches from the ground and at least ½-inch from other adjacent surfaces (decks, roofs, slabs).

R703.4 Flashing

Flashing application language is revised for clarity.

R703.6.1 Furring over WRBs for Shakes and Shingles

An option is added for gapped horizontal furring over a water-resistive barrier for installation of wood shakes or shingles.
R703.7.3 Water Resistive Barriers for Stucco

- Water-resistive barrier options for stucco used in dry climates are modified
- The WRB must be separated from stucco by:
  - Drainage space
  - Waterproof layer
  - Foam insulation or material designed to drain water away from the wall and stucco
- A requirement for flashing is added

R703.11, R703.14 Vinyl and Propylene Siding

Details for installation of vinyl and polypropylene siding are added to clarify requirements at edges of openings for attachment of a starter strip.

R703.18 Fiber-mat Reinforced Backer Units

- Cementitious backer board may be used in exterior wall applications

CODE CHANGE

Fiber-mat reinforced cementitious backer units

Fiber-mat reinforced cementitious backer units used on exterior walls as a substrate for the application of exterior finish materials shall comply with ASTM C1325. Installation shall be in accordance with manufacturer’s installation instructions. Backer units shall be installed using corrosion-resistant fasteners. Finish materials shall be installed in accordance with manufacturer’s instructions.
R704 Exterior Soffits and Fascia

- Aluminum soffits address in Section R704
- Requirements for fascia are added in Section R704.4 mirroring soffit requirements

---

R902.1 Roof Assemblies

Provisions for classification of roof assemblies are clarified.
R905 Wind Resistance – Clay, Concrete and Slate Roofs

- Roof cladding must resist component and cladding loads.
- Cladding sections reference Figure R301.2.1.1, Regions Where Wind Design is Required, and Table R301.2.1(1), Components and Cladding Loads.

Table R905.6.5 Classification of Slate Shingles

<table>
<thead>
<tr>
<th>Maximum Ultimate Design Wind Speed, $V_{ult}$ (mph)</th>
<th>Maximum Basic Wind Speed, $V_{bas}$ (mph)</th>
<th>ASTM D3161 Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>110</td>
<td>A, B or C</td>
</tr>
<tr>
<td>90</td>
<td>116</td>
<td>A, B or C</td>
</tr>
<tr>
<td>100</td>
<td>129</td>
<td>A, B or C</td>
</tr>
<tr>
<td>110</td>
<td>142</td>
<td>A, B or C</td>
</tr>
<tr>
<td>120</td>
<td>155</td>
<td>F</td>
</tr>
<tr>
<td>130</td>
<td>168</td>
<td>F</td>
</tr>
<tr>
<td>140</td>
<td>181</td>
<td>F</td>
</tr>
<tr>
<td>150</td>
<td>194</td>
<td>F</td>
</tr>
</tbody>
</table>

R905.7, R905.8 Wood Shakes and Shingles

- Wind resistance requirements are added.
- Sheathing requirements are updated for wood shingles and shakes.
- Figure R301.2.1.1, Regions Where Wind Design is Required, and Table R301.2.1(1), Components and Cladding Loads are referenced.
R905.9, R905.10, R905.11 – Wind Resistance

- Explicit requirements for wind resistance are added for built-up and modified bitumen roofing and for metal roof panels
- Cladding sections reference Figure R301.2.1.1, Regions Where Wind Design is Required, and Table R301.2.1(1), Components and Cladding Loads

R905.12, R905.13, R905.14

Single-ply Liquid and Sprayed Roofing

- Requirements for single-ply roofing are updated
-wind resistance requirements are added for liquid-applied and sprayed polyurethane foam roofing
- Cladding sections reference Figure R301.2.1.1, Regions Where Wind Design is Required, and Table R301.2.1(1), Components and Cladding Loads
- New testing standard options are added (UL 580 and UL 1897)

### TABLE R905.12 Single-ply Roofing Material Standards

<table>
<thead>
<tr>
<th>Material</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorosulfonated polyethylene (CSP) or polyisobutylene (PIB)</td>
<td>ASTM D5019</td>
</tr>
<tr>
<td>Ethylene propylene diene monomer (EPDM)</td>
<td>ASTM D4837</td>
</tr>
<tr>
<td>Polyvinyl chloride (PVC) or (PVC/KEE)</td>
<td>ASTM D6754</td>
</tr>
<tr>
<td>Polyurethane foam (PIF) or (PIF/KEE)</td>
<td>ASTM D4434</td>
</tr>
<tr>
<td>Thermoplastic polyethylene (TPO)</td>
<td>ASTM D6878</td>
</tr>
</tbody>
</table>
R905.15, R905.16 BIPV Roofs

Building-integrated photovoltaic (BIPV) roof panel and shingle provisions are updated to provide minimum deck sheathing and attachment requirements.

R908.3 Roof Replacement

Self-adhering underlayment may be left on when reroofing, if the underlayment meets certain requirements.

R909 Roof Coatings

- A new section lists the ASTM standard applicable to each roof coating referenced in the IRC.

SECTION R909
ROOF COATINGS

R909.1 General. The installation of a roof coating on a roof covering shall comply with the requirements of Section R902, R904, and this section. Roof coatings shall be installed in accordance with the manufacturer’s installation instructions.

R909.2 Material standards. Roof coating materials shall comply with one of the standards in Table R909.1.
**R909 Roof Coatings**

**TABLE R909.2 Roof coating material standards**

<table>
<thead>
<tr>
<th>Coating Material</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrylic coating</td>
<td>ASTM D6083</td>
</tr>
<tr>
<td>Asphaltic emulsion coating</td>
<td>ASTM D1227</td>
</tr>
<tr>
<td>Asphalt coating</td>
<td>ASTM D2823</td>
</tr>
<tr>
<td>Asphalt roof coating</td>
<td>ASTM D2824</td>
</tr>
<tr>
<td>Aluminum pigmented asphalt coating</td>
<td>ASTM D4974</td>
</tr>
<tr>
<td>Silicone coating</td>
<td>ASTM D6947</td>
</tr>
<tr>
<td>Moisture-cured polyurethane coating</td>
<td>ASTM D9094</td>
</tr>
</tbody>
</table>

---

**M1307.2 Anchorage of Appliances**

Anchorage information for hot water heaters and other appliances is moved to Section R301.2.2.10

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**M1404, Chapter 44 Refrigeration Cooling Equipment**

Refrigeration equipment must be listed and labeled using UL 484, UL1995 or UL/CSA 60335

---
M1404, Chapter 44
Refrigeration Cooling Equipment

SECTION M1404
REFRIGERATION COOLING EQUIPMENT

M1404.1 Compliance. Refrigeration cooling equipment shall be listed and labeled in accordance with UL 484, UL 1995, or UL/CSA 60335-2-40, Section M1411.

CHAPTER 44
REFERENCED STANDARDS
UL 484-2019: Standard for Room Air Conditioners

M1411 Approved Refrigerants

Requirements are added for identification of refrigerants

M1411.2 Refrigeration system listing. Refrigeration systems using Group A2L refrigerants shall be listed and labeled to UL 60335-2-40/CAN/CSA C22.2 No. 60335-2-40. Refrigeration systems using Group A1 refrigerants shall be listed to UL 60335-2-40/CAN/CSA C22.2 No. 60335-2-40 or UL 1995/CSA C22.2 No. 236. The equipment shall be installed in accordance with the listing.

M1411.3 Refrigeration system installation. Refrigeration systems shall be installed in accordance with the manufacturer’s installation instructions. After installation, the manufacturer’s installation instructions, owner’s manuals, service manuals, and any other product literature provided with the equipment shall be attached to the indoor unit or left with the homeowner.

M1411.4 Field installed accessories. All field installed accessories shall be installed in accordance with the accessory and equipment manufacturer’s installation instructions. Accessories installed in the ductwork of Group A2L refrigeration systems shall not contain electric heating elements, open flames, or devices switching electrical loads greater than 1.3 kW.
M1411 Approved Refrigerants

**CODE CHANGE**

M1411.5 Signs and identification. Each refrigeration system using Group A2L refrigerant shall have the following information legibly and permanently indicated on a markable label provided by the equipment manufacturer:

1. Contact information of the responsible company that installed the refrigeration system,

2. The system refrigerant charge and the refrigerant number.

M1411.6 Refrigerant charge. All refrigeration systems shall have a refrigerant charge in compliance with the equipment manufacturer’s installation instructions and the requirements of the listing. Group A2L refrigerant charge for an individual refrigeration system shall not exceed 34.5 lbs (15.7 kg).

M1411.7 Group A2L refrigerant piping testing. The piping system containing Group A2L refrigerant shall be tested in accordance with the manufacturer’s installation instructions and the requirements of the listing.

M1502.6 Makeup Air and Closets

- Minimum opening size requirements added for closet door transfer air grill
- Min. of 100 square inches
- Installations exhausting more than 200 cfm must have makeup air (any location)

M1504.3 Exhaust Openings

- Two exceptions added for exhaust openings:
  - Opening less than a foot from another opening
  - Factory-built combination terminals
M1504.3 Exhaust Openings

NOTE: Always install the stale air duct from unit on top.

Exhaust stale indoor air, at very high speed

Intake of fresh outdoor air, by the bottom of the dual outside port

Exterior wall

Fresh air duct to unit (5" or 6" dia.)

M1505.5 Local Exhaust Rates

Requirements for local exhaust in a toilet room or bathroom are moved to the section with fans having single or variable speeds and a tested pressure at 0.25-inch water column
M1602.2 Return Air Openings

- Requirements for return air openings for closets and mechanical, boiler and furnace room doors are expanded
- Closet: ≤ 30 cfm with undercut or grill of 30 sq. in.
- Furnace room: sealed appliances or pressure differential limited to ≤ 0.01-in. WC by undercut or grill

M2002.4 Discharge Pipe

- Requirements for a discharge pipe are added to mirror requirements within the International Mechanical Code

M2103.3 Piping Joints

- Reference is added for ASTM F3226 for press-connect fittings for piping and tubing systems, including copper and copper alloys
The section on corrosive and flammable products is rewritten to require a mechanical room or direct vented appliances.
G2414.6 Workmanship and Defects

G2414.6 (403.6) Workmanship and defects. Gas pipe, tubing and fittings at the time of installation shall meet the following requirements (See Section G2417.1.2):
1. Gas pipe, tubing and fittings shall be clear and free from cutting burns and visible defects in structure or threading.
2. Gas pipe, tubing and fittings shall be thoroughly cleaned to remove chip, scale and debris and shall be thoroughly brushed, and chip and scale blown.
3. Visible defects in pipe, tubing and fittings shall not be repaired.
4. Defective pipe, tubing and fittings with visible defects shall be replaced.

G2414.9 Metallic Joints and Fittings

G2414.9 (403.9) Metallic piping joints and fittings. The type of piping joint used shall conform to the following:
1. It shall be suitable for the pressure-temperature conditions.
2. It shall be selected giving consideration to joint tightness and mechanical strength under the service conditions.
3. It shall be able to sustain the maximum temperature expansion or contraction, vibration, fatigue, internal pressure or the weight of the pipe and its contents, and any additional forces caused by temperature expansion or contraction, vibration, fatigue, or to the weight of the pipe and its contents.

G2417.3.1 Purging Abandoned Piping

Purging of fuel gas piping that will be abandoned in place is required.
P2503.5.2 DWV Final Test

- Changes final test requirement to a visual test.
- Water tightness must be evaluated.

During construction – test with water or vacuum
Final inspection – visual check only required
P2709.3 Shower Receptor Installation

Shower receptors must be tested for watertightness.

P2712.2 Dishwasher Connection

Previous options for connecting the dishwasher to the wastewater line:

- Loop required
- Kitchen sink
- Head of food waste disposer
- Reserve dishwasher discharge pipe or tube

OR

- Loop required
- Kitchen sink
- Dishwashing machine
- Wax filling in sink lap joint
- Reserve dishwasher discharge pipe or tube

A standpipe is added as an option for connecting the dishwasher to the wastewater line:

- Dishwasher discharge pipe - must have loop
- Discharge tube - must drain to standpipe with air break
- Standpipe
P2801.6.3 Appliance, Equipment and Insulation in Pans

If an appliance is subject to water damage, it must be elevated above its pan.

P2801.7 Water Heater Bracing

The requirement for seismic bracing now references IRC Section R301.2.2.10 directly.

P2801.8 Lead Content

**CODE CHANGE**

P2801.8 Lead Content. Water heaters shall comply with NSF 372 and shall have a weighted average lead content of 0.25% or less.
P2903.6 Existing Pipe Used for Grounding

- Metal pipe currently used for grounding may not be replaced with nonmetallic pipe until other means of grounding is installed.

P2906.1 CPVC and CPVC/AL/CPVC Pipe

- Solvent cements are allowed above and below ground.
- Joint made while cement is wet.
- ASTM F3328 used for construction of joints using one-step solvent cement.
E3404.11 Equipment Identification

- Equipment marking by applying labels is clarified
- Reconditioned equipment must have the original trademark destroyed and the organization responsible for the recondition identified by permanent label
- Date of reconditioning added
- Term 'Reconditioned' added

E3404.14 Reconditioned Equipment

Requirements for reconditioned equipment are added
Section addresses whether reconditioned equipment is permitted

E3404.14 Reconditioned equipment
E3404.14.1 Equipment required to be listed
E3404.14.2 Equipment not required to be listed
E3404.14.3 Approved equipment

E3501, E3905.6.3, E4106  Paddle Fans

- Requirements for paddle fans are clarified
- Clearance requirements in bathrooms are added
**CODE CHANGE**

**E3501, E3905.6.3, E4106  Paddle Fans**

**ATTACHMENT FITTING, WEIGHT-SUPPORTING (WSAF) (WEIGHT-SUPPORTING ATTACHMENT FITTING).**
A device that, by insertion into a weight-supporting ceiling receptacle, establishes a connection between the conductors of the attached utilization equipment and the branch-circuit conductors connected to the weight-supporting ceiling receptacle.

**RECEPTACLE, WEIGHT-SUPPORTING CEILING (WSCR) (WEIGHT-SUPPORTING CEILING RECEPTACLE).**
A contact device installed at an outlet box for the connection and support of luminaries or ceiling-suspended (paddle) fans using a weight-supporting attachment fitting (WSAF).

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**E3607.2 Grounding Electrode**

- Additional locations are prohibited as locations to connect the grounding conductor
- A grounded conductor shall not be connected to:
  - Normally non-current-carrying metal parts of equipment
  - Equipment grounding conductor(s)
  - Be reconnected to ground on the load side of the service disconnecting means

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**E3702.15 Branch Circuits**

- 10-ampere circuits are now allowed in specific installations
E3702.15 Branch Circuits

TABLE E3702.15(1) Branch-Circuit Requirements—Summary

<table>
<thead>
<tr>
<th>Circuit Rating</th>
<th>30 amp</th>
<th>20 amp</th>
<th>15 amp</th>
<th>10 amp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductors</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Maximum overcurrent-protection device rating</td>
<td>15A</td>
<td>15A</td>
<td>15A</td>
<td>10A</td>
</tr>
<tr>
<td>Outlet devices: Lampholders permitted</td>
<td>Any Type</td>
<td>Any Type</td>
<td>Any Type</td>
<td>NA</td>
</tr>
<tr>
<td>Receptacle rating (amperes)</td>
<td>NA</td>
<td>15A max</td>
<td>15 or 20A</td>
<td>30A</td>
</tr>
<tr>
<td>Maximum load (amperes)</td>
<td>15A</td>
<td>15A</td>
<td>10A</td>
<td>10A</td>
</tr>
</tbody>
</table>

a. These gages are for copper conductors.
b. NA = Not Allowed.

E3702.15 Branch Circuits

TABLE E3702.15(2) Branch-Circuit Requirements—Summary

<table>
<thead>
<tr>
<th>Circuit Rating</th>
<th>30 amp</th>
<th>20 amp</th>
<th>15 amp</th>
<th>10 amp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductors</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Minimum size (AWG) circuit conductors</td>
<td>30A</td>
<td>20A</td>
<td>15A</td>
<td>10A</td>
</tr>
<tr>
<td>Maximum overcurrent-protection device rating</td>
<td>NA</td>
<td>30A</td>
<td>Any Type</td>
<td>15 or 20A</td>
</tr>
<tr>
<td>Outlet devices: Lampholders permitted</td>
<td>NA</td>
<td>15A max</td>
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<td>NA</td>
</tr>
<tr>
<td>Receptacle rating (amperes)</td>
<td>NA</td>
<td>15A max</td>
<td>15 or 20A</td>
<td>30A</td>
</tr>
<tr>
<td>Maximum load (amperes)</td>
<td>15A</td>
<td>15A</td>
<td>10A</td>
<td>10A</td>
</tr>
</tbody>
</table>

a. These gages are for aluminum and copper-clad conductors.
b. NA = Not Allowed.

E3704.2 Feeder Loads

• The feeder load calculation table adds EV cars and other vehicles to the calculation procedure.
• EV supply equipment (EVSE) load shall be 7200 watts or the nameplate rating of the equipment, whichever is greater.
E3704.2 Feeder Loads

- **Lighting and Receptacle Load Calculation Procedure**
  - 100 percent of first 3,000 VA or less
  - 35 percent of that in excess of 3,000 VA.

- **Lighting and Receptacle Load**
  - A unit load of not less than 3 VA per square foot of total floor area shall constitute the lighting load.
  - 1,500 VA shall be added for each 20-ampere branch circuit serving receptacles in the kitchen, dining room, pantry, breakfast area and laundry area.

- **Appliances and Motors**
  - Nameplate rating load of all fastened-in-place appliances, 1/4 horsepower or greater, or 500 watts or greater, that are fastened in place,
  - Other than dryers, ranges, air-conditioning and space-heating equipment, and electric vehicle supply equipment (EVSE).

- **Fixed Motors**
  - Full-load current of motors plus 25 percent of the full load current of the largest motor.

- **Electric Clothes Dryer**
  - The dryer load shall be 5,000 VA for each dryer circuit or the nameplate rating load of each dryer, whichever is greater.

- **Demand Factors**
  - Shall be as allowed by Table E3704.2(2).

- **Cooking Appliances**
  - The nameplate rating of ranges, wall-mounted ovens, counter-mounted cooking units and other cooking appliances rated in excess of 1.75 kVA shall be summed.

- **Electric Vehicle Supply Equipment (EVSE)**
  - The electric vehicle supply equipment load shall be 7,200 watts (volt-amperes) or the nameplate rating of the equipment, whichever is greater.

- **The Largest of the Heating or Cooling Load**
  - Largest of the following two selections:
    1. 100 percent of the nameplate rating(s) of the air conditioning and cooling, including heat pump compressors.
    2. 100 percent of the fixed electric space heating.

- **Motors on a Lighting Circuit**
  - Should be included in the minimum lighting load.

- **Clarification for Unused Areas**
  - Should be added for unused areas of a house or townhouse.
E3901.4 Countertop and Work Surface Receptacles

Islands and countertops may no longer have receptacle outlets below the counter.

E3901.9 Basements, Garages and Accessory Buildings

Receptacle outlets supplying a security system may not be the only outlet in an unfinished space.

E3902.12 Appliance Outlets

GFCI protection must be contained in receptacle outlets or their branch circuit for most kitchen appliances.
E3902.12 Appliance Outlets – GFCI Protected

1. Drinking water coolers and bottle fill stations
2. High pressure spray washing machines
3. Sump pumps
4. Dishwashers
5. Electric ranges
6. Wall-mounted ovens
7. Counter-mounted cooking units
8. Clothes dryers
9. Microwave ovens

E3902.14 Outdoor Outlets

- Outdoor outlets must be GFCI protected with a few exceptions
- Exceptions:
  - Lighting outlets
  - Not readily-accessible receptacles dedicated to electric snow melting or deicing
  - HVAC equipment (expires 9-1-2026)

E3902.15 Crawl Space Lighting Outlets

2018 IRC requirements to have GFCI protection of light outlets in a crawl space is deleted
E3902.18 GFCI Protection Not Required

- A list of receptacles that don’t require GFCI protection is added
- Receptacles not readily accessible and dedicated to electric snow-melting or deicing equipment
- A receptacle supplying premises security system
- Listed weight-supporting ceiling receptacles in combination with compatible WSAF installed to support a ceiling luminaire or ceiling-suspended fan
- Factory-installed receptacles not readily accessible and mounted internally to bathroom exhaust fan assemblies

E3903 Lighting Outlets

- Light switches may not rely on battery power without backup
- Dimmer control of lighting outlets on stairs not permitted unless listed control devices can meet minimum brightness for the interior stairway illumination

E3905.13 Fastener Penetration

A new section is added limiting screw fastener penetration into boxes
E3908.8.1 Grounded conductor connections to electric ranges and clothes dryers.

For existing branch circuit installations only, if an equipment grounding conductor is not present in the outlet or junction box the frame of the appliance shall be permitted to be connected to the grounded conductor if all the conditions in the following list items (1), (2), and (3) are met and the grounded conductor complies with either list item (4) or (5):

1. The supply circuit is 120/240-volt, single-phase, 3-wire; or 208Y/120-volt derived from a 3-phase, 4-wire, wye connected system.
2. The grounded conductor is not smaller than 10 AWG copper or 8 AWG aluminum or copper-clad aluminum.
3. Grounding contacts of receptacles furnished as part of the equipment are bonded to the equipment.
4. The grounded conductor is insulated, or the grounded conductor is uninsulated and part of a Type SE service-entrance-cable and the branch circuit originates at the service equipment.

E3905.13 Fastener Penetration

The grounded conductor is part of a Type SE service-entrance cable that originates in equipment other than a service. The grounded conductor shall be insulated or field covered within the supply enclosure with listed insulating material, such as tape or sleeving to prevent contact of the uninsulated conductor with any normally noncurrent-carrying metal parts.

E3908.8.1 Frames of Ranges and Dryers

Replacement of existing electric ranges and clothes dryers require a grounded conductor connection.
E4001.2, E4002.3 Snap Switches

Adds requirements for snap switch terminations

E4002.11 Receptacles Near Bathtubs and Showers

Provision reworded for clarity on the minimum distance from a bathtub or shower to a receptacle

E4004.10 Luminaires in Fire-rated Construction

- Luminaires in fire-rated wall and ceiling assemblies must be listed for use in fire-rated construction or be in an enclosure that is listed.
- Luminaires marked "FOR USE IN NONFIRE-RATED INSTALLATIONS" shall not be used in fire-rated installations.
E4206.13 Swim Pool Heat Pumps and Chillers

Swimming pool heat pumps and chillers must be listed and rated for their use.

E4208.4 Emergency Shutoff

Hot tubs and spas in and around single-family homes do not require an emergency shut off switch.

E4208.5 Low-voltage Contact Limit

Equipment exceeding the low-voltage contact limit. Except for self-contained spas and hot tubs, equipment with ratings exceeding the low-voltage contact limit shall be located at least 1.5 m (5 ft) horizontally from the inside walls of a spa or hot tub, unless separated from the spa or hot tub by a solid fence, wall, or other permanent barrier.
E4208.6 Receptacles

E4208.6 Receptacles supplying power to spas and hot tubs. Receptacles that provide power for a spa or hot tub shall not exceed 150 volts to ground and shall be GFCI protected.

Appendices Reorganized

- Administrative Appendices AA, AB
- Building Appendices BA-BO
- PMG Appendices CA-CH
- Energy Appendices NA-NE
Appendix BB Non-sewered Sanitation Systems

A prefabricated sanitation system that is not connected to a private sewage disposal system or sewer system is added as an option.

Appendix BC Accessory Dwelling Units (ADUs)

- Appendix on ADUs is added
- Contains limits to ADU location
- Conditions where they may be built

**CODE CHANGE**

**BC101**

**GENERAL**

**BC101.1 Scope.** ADUs proposed for existing residential construction shall be in accordance with this appendix, other applicable requirements in this code and the existing building together with the ADUs and shall not exceed the scoping limitations of Section R101.2.
Appendix BC Accessory Dwelling Units (ADUs)

BC101.1.1 Prohibited Conditions. An ADU shall not be permitted within:
1. Live/work units located in townhouses.
2. Owner-occupied lodging houses with five or fewer guestrooms.
3. A care-facility with five or fewer persons receiving medical care or custodial care within a dwelling unit.
4. A care-facility with five or fewer persons receiving care within a single-family dwelling.

Appendix BC Accessory Dwelling Units (ADUs)

BC101.2 Conditions: ADUs shall be permitted without requiring a change of occupancy to either a two- or multi-family dwelling where in compliance with all of the following:
1. An ADU shall be permitted within an existing single-family detached dwelling or within an existing townhouse unit, that is within the scope of the IRC.
2. The owner of a property containing an ADU shall reside in either the primary dwelling unit or the ADU, as of the date of permit approval.
3. An ADU shall have a separate house number from the primary dwelling unit.
4. ADUs shall be secondary in size and function to the primary dwelling unit and shall comply with all of the following limits:
   4.1 Not less than 190 square feet (17.65 m²) in area.
   4.2 Not more than 50 percent of the area of the primary dwelling unit.
   4.3 Not more than 1,200 square feet (111 m²) in area.
5. An ADU shall be provided with a separate entrance than that serving the primary dwelling unit either from the exterior of the building or from a common hallway located within the building.
6. An ADU shall have a maximum number of two bedrooms.
7. The location of a detached ADU shall comply with Section R302.
8. An ADU shall be provided with adequate provisions for electricity, water supply and sewage disposal.
BC102
DEFINITIONS
BC201.1 Definitions. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein.
ACCESSORY DWELLING UNIT (ADU). An addition or alteration that is an additional, subordinate dwelling unit on the same lot, that is entirely within a dwelling unit, attached to a dwelling unit, or in a detached structure.

BC103
PERMITS
BC103.1 Required. Any owner or owner's agent who intends to construct an ADU within an existing or proposed building or structure shall first make application to the building official and obtain the required permit.

BC104
ADU PLANNING
BC104.1 Design. Except as modified by this section, building planning shall be in accordance with Chapter 3 and building structure shall comply with the IRC.

BC104.1.2 Means of egress. The path of egress travel from an ADU to a public way or to a yard or court that opens to a public way shall be independent of, and not pass through the primary dwelling unit.

BC104.1.3 Fire separation. For ADUs adjoining the primary dwelling unit, the 1-hour fire-resistance rated wall and floor assembly provisions of Section R302.3 shall not be required provided that both of the following conditions have been met:
1. The interconnection of smoke alarms per Section R314.4 activates the smoke alarms in both the primary dwelling unit and the ADU.
2. The interconnection of carbon monoxide alarms per Section R315.5 activates the carbon monoxide alarms in both the primary dwelling unit and the ADU.

BC104.1.4 Smoke and carbon monoxide alarms. For ADUs adjoining the primary dwelling unit, the interconnectivity of smoke alarms and carbon monoxide alarms may be independent for the primary dwelling unit and the ADU provided that a 1-hour fire-resistance rating is provided for walls and floor assemblies as per R302.3.
APPENDIX BC ACCESSORY DwELLING UNITS (ADUS)

BC105 UTILITIES

BC105.1 Heating, ventilation and air-conditioning systems. A primary dwelling unit and an ADU shall be provided with:
1. A separate heating system.
2. Separate ducting for heating and cooling systems. Return air openings for heating, ventilation and air-conditioning shall not be taken from another dwelling unit.
3. Separate climate controls.

BC105.2 Electrical systems. A primary dwelling unit and an ADU shall be provided with:
1. Ready access to the service disconnecting means serving the dwelling unit.
2. Ready access for each occupant to all overcurrent devices protecting the conductors supplying the dwelling unit in which they reside.

APPENDIX BN EXTENDED PLATE WALL CONSTRUCTION

Extended plate construction forms a new alternative for wood-framed walls.
Appendix BN Extended Plate Wall Construction

Appendix BN Extended Plate Wall Construction

Appendix BO - Existing Buildings

Requirements for existing buildings are expanded
Appendix BO - Existing Buildings

A101.1 General. The purpose of these provisions is to encourage the continued use or reuse of legally existing buildings and structures. These provisions are intended to permit work in existing buildings that is consistent with the purpose of this code. Compliance with these provisions shall be deemed to meet the requirements of this code. Structural elements and systems shall comply with Section R102.7.1 and the provisions of this Appendix. Repairs, alterations, additions, and relocation of existing buildings and structures shall comply with the provisions of this code for new construction, except as modified by this appendix.