



10,000 LAKES CHAPTER
INTERNATIONAL CODE COUNCIL



SIGNIFICANT CHANGES to the 2015 Minnesota Residential Codes (MR 1303, 1309 and 1322)

The following information contains simplified explanations of significant changes to the 2015 Requirements for Radon Control Systems (Minnesota Provisions to the Minnesota State Building Code, MR 1303).

1303.2401 Gas permeable material (definition). Changed Item #3 for other materials, systems or floor designs to require the system to be professionally engineered to provide depressurization under the entire soil gas membrane.
1303.2402 Single vent pipe, Subp. 5. Added requirement for minimum R-4 insulation on vent pipe routed through unconditioned space. Applies to both passive and active systems.
1303.2403 Radon gas vent pipe fan. When an active system (i.e. using a fan) is installed, the radon fan shall be rated for continuous operation and provide a minimum 50 cfm at ½ inch w.c. In addition, a system monitoring device (audible alarm, manometer etc.) and switch-controlled luminaire and receptacle outlet near the fan shall be installed.

The following information contains simplified explanations of significant changes to the 2015 Minnesota Residential Code (2012 International Residential Code adopted with Minnesota Amendments, MR 1309).

1300.0120 Permits, Subp. 4. (1) Changed floor area for when permits are required for detached accessory structures from 120 s.f. to 200 s.f. (2) Changed fence height for when permits are required from 6 ft. to 7 ft.
1300.0120 Permits, Subp. 13. Added MS 15.41 requiring the permit to specify the name and address of the applicant, and the general contractor. Also requires the construction permits to be posted in a conspicuous and accessible place at the premises or site of construction.
R302.1 Exterior walls. Added new table Table R302.1(2): Exterior Walls–Dwellings with Fire Sprinklers for reduced separation distances.
R302.2 Townhouses. Restructured requirements, including new Table R302.6: Dwelling/Garage Separation.
R308.4.6 Glazing adjacent stairs and ramps. Restructured requirements changed the maximum height of a hazardous location to 36 inches vertically above the plane of the adjacent walking surface of stairs and ramps.
R308.4.7 Glazing adjacent to the bottom stair landing. Restructured requirements changed the maximum height of a hazardous location to 36 inches vertically above the bottom stair landing.
R310.1 Emergency escape and rescue required. Added exception for basements that are protected with an automatic sprinkler system.
R312.2 Window fall protection. Window fall protection is required in dwelling units where the lowest part of the opening is located more than 72 inches above finished grade/floor. Operable sections of windows shall not permit openings that allow passage of a 4 inch diameter sphere where such openings are located within 36 inches of the finished floor.
R313.2 Automatic fire systems. Fire sprinkler systems are required in one-family dwellings 4,500 s.f. and larger (excluding garage) and all multi-family dwellings.
R314 Smoke Alarms. Listed wireless alarms are allowed in lieu of hardwired interconnected alarms.
R315 Carbon monoxide alarms. Carbon monoxide alarms are required in dwelling units that have attached garages or when fuel-fired appliances are installed. They shall be installed outside of and not more than 10 feet from each separate sleeping area or bedroom and on each level containing sleeping areas or bedrooms.

R319 Site address. Address numbers shall be minimum 4 inches high, with stroke width of ½ inch and contrast with the background.
R402.2 Concrete. Added provision in Table R402.2 specifying footings have to meet a compressive strength of 5000 psi under all weathering potentials. Footnote “g” on the table allows the use of 2500 psi with an approved admixture that provides a water and vapor resistance at least equivalent to 5000 psi concrete.
R404.1 Concrete and masonry foundation walls. Section was rewritten for clarity on concrete and masonry foundation walls, including changes to Table R404.1(1): Maximum Anchor Bolt and Blocking Spacing for Supported Foundation Wall. Added a column indicating spacing of blocking perpendicular to floor joists in inches.
R405 Foundation drainage. A filter membrane is required for perforated pipe foundation drains.
R406.2 Waterproofing. Exterior foundation walls that retain earth and enclose below grade interior spaces, floors, and crawl spaces shall be waterproofed. Dampproofing is no longer allowed.
R501.3 Fire protection of floors. New requirement for floor assemblies to be provided with a ½ inch gypsum wallboard membrane or equivalent on the underside of the floor, unless it is constructed of dimensional lumber of 2 inch x 10 inch nominal dimension or greater.
R502.1.3 End-jointed lumber. Requires end-jointed lumber used in an assembly required elsewhere in the code to have a fire-resistive rating to have designation of “Heat-Resistant Adhesive” or “HRA” included in its grade mark.
R502.1.7 Structural composite lumber. Added requirement for structural composite lumber to be established and monitored to ASTM D 5456.
R502.6 Bearing. Added requirement for ends of joist, beam or girder to bear on masonry or concrete directly, or have a sill plate of 2 inch minimum nominal thickness under the joist, beam or girder. The sill plate shall provide a minimum nominal bearing area of 48 square inches.
R507.2 Deck ledger connection to band joist, R507.2.1 Placement of lag screws or bolts in deck ledgers and band joists. These sections contain new prescriptive requirements for deck ledgers and band joists, including corresponding tables and figures.
R507.2.2 Alternate deck ledger connections. New alternate to prescriptive requirements based on accepted engineering practices.
R507.2.3 Deck lateral load connection. New prescriptive provision for the lateral load required in R507.1 to be permitted to be installed per Figure R507.2.3 with hold-down tension devices installed in not less than 2 locations per deck.
R602.3 Design and construction. Table 602.3(1): Fastener Schedule for Structural Members. The fastening requirements for solid sawn lumber framing members have been reorganized into three categories related to roof, walls and floors. New requirements added for nailing roof trusses to plates (5), abutting studs at intersecting wall corners (8), connection of rim board to sill plates (26) and ledger strip supporting joists or rafters (31). Common nails have been removed as approved gypsum sheathing attachment method. Minimum thickness of wood structural panels recognized is now 3/8 inch. Clarifies that table 602.3(1) does not apply to exterior wood structural sheathing. Fastening requirements for exterior sheathing are in table 602.3(3).
R602.3 Design and construction. Table R602.3(3): Requirements for Wood Structural Panel Wall Sheathing Used to Resist Wind Pressure. New table now establishes minimum requirements for fastening, panel thickness, span ratings and stud spacing based on wind speed and exposure.
R602.3 Design and construction. Table R602.3(5): Size, Height and Spacing of Wood Studs. A habitable attic is treated the same as a typical roof and ceiling forming an attic in determining wood stud size and spacing.
R602.6.1 Drilling and notching of top plate. When a metal tie is required across the opening of a notched or drilled top plate, the tie must now extend at least 6 inches beyond each side of the opening. The length of the nails used in the tie has been reduced to 1.5 inches similar to joist hanger nails.
R602.7.1 Single member headers. Table 602.7.1: Spans for Minimum No. 2 Grade Single Header. Includes prescriptive provisions for single member headers under limited conditions.
R602.10.1 Braced wall lines, R602.10.2 Braced wall panels, R602.10.3 Required length of bracing, R602.10.4 Construction methods and Table R602.10.3(1) Bracing Requirements Based on Wind Speed. These sections have been restructured and new definitions have been added for clarity. The requirements for wind speeds less than or equal to 90 mph shall be used in Minnesota.

R602.10.5 and Table R602.10.5 Minimum length of a braced wall panel. This section consolidates the alternate braced wall panel methods or intermittent and continuously sheathed braced wall lines together.
Figure R602.10.6.3 Method PFG. New figure for portal frame at garage openings.
Table R602.10.6.4 Tension Strap Capacity Required. Now in table form and shows the capacity required for 90 mph wind load in Minnesota.
R602.12 Simplified wall bracing. New section that offers an alternative method to brace wall lines for detached dwellings and townhomes only when all 8 conditions are met. Note that it is limited to two stories with no cripple walls and maximum 10 feet tall walls.
R611 Exterior concrete wall construction. Section has been completely revised to reflect the provisions of the new referenced Portland Cement Association standard PCA 100. Conventionally formed above ground concrete wall provisions have been integrated with the Insulated Concrete Form (ICF) wall requirements.
R703.1.2 Wind Resistance. Added requirement for testing and analysis of wind pressure of all cladding systems.
R703.2 Water resistive barrier (general). Requires a minimum overlap of 2 inches horizontally and 6 inches vertically. Also requires the material to be continuous up to the underside of the rafter/truss top chord.
R703.6.3 Water Resistive Barrier (exterior plaster). Individual layers shall be installed independently such that each layer provides a separate drainage plane.
R703.8 Flashing. Requires flashing at ten specific locations, along with requiring self-adhered membranes to comply with AAMA 711.
R703.9 Exterior Insulation and Finish System (EIFS). Revised to add new requirements and add new ASTM standards for EIFS and EIFS with drainage.
R703.10.1 Panel Siding. Added new ASTM requirements for fiber cement siding.
R703.10.2 Lap Siding. Fiber cement siding with a maximum width of 12 inches shall comply with ASTM requirements.
R703.12.1 Adhered masonry veneer installation clearances. This section has been added to describe clearances of adhered masonry veneer above earth, paved areas, and exterior walking surfaces: <ul style="list-style-type: none"> • Minimum 4 inches above earth • Minimum 2 inches above paved areas • Minimum ½ inch above exterior walking surfaces
R703.12.2 Flashing at foundation (adhered masonry veneer). A corrosion resistant screed or flashing with a minimum vertical attachment flange of 3 ½ inches shall be installed 1 inch below the foundation plate line on exterior stud walls.
R802.1.2 End-jointed lumber. Requires end-jointed lumber used in an assembly required elsewhere in the code to have a fire-resistive rating to have designation of “Heat-Resistant Adhesive” or “HRA” included in its grade mark.
R802.1.6 Structural composite lumber. Added requirement for structural composite lumber to be established and monitored to ASTM D 5456.
R802.6 Bearing. Added requirement for ends of rafter or ceiling joist to bear on masonry or concrete directly, or have a sill plate of 2 inch minimum nominal thickness under the rafter or ceiling joist. The sill plate shall provide a minimum nominal bearing area of 48 square inches.
R802.7.1 Sawn Lumber. Restructured requirements for cuts, notches and holes on structural roof members to reference R502.8.1 and clarified cantilever portions of rafter notch and ceiling joist taper cut.
R802.10.2.1 Applicability limits (of wood trusses). Applicability limits of wood trusses were changed slightly from previous code.
R802.10.3 Bracing (of wood trusses). Reworded slightly to reference accepted industry practice such as BCSI installation guide for wood trusses.
R802.11.1 Roof tie-down uplift resistance. Section changed roof tie down language and expanded Table R802.11: Rafter and Truss Uplift Connection Forces from Wind for different exposures.
R806.2 Minimum vent area (of roof). Section format changed to allow ventilation area of 1/300 of vented space for northern climates according to Exceptions 1 and 2.
R806.4 Installation and weather protection. Requires ventilators to be installed in accordance with manufacturer’s installation instructions.

R806.5 Unvented attic and unvented enclosed rafter assemblies. Added conditions that must be met to allow unvented areas, depending on the air permeability of the insulation directly under the roof sheathing.
R903.2.1 Locations (of kick-out flashing). Added requirement for kick-out flashing a minimum of 2 ½ inches long, minimum 26 gauge when constructed of metal. Required when simultaneously re-siding & re-roofing. Not required when only re-roofing.
R905.2.8.3 Sidewall flashing. Flashing required to be minimum 4 inches high and 4 inches wide. Base flashing against a vertical side wall may be continuous or step flashing.
R905.2.8.5 Drip edge. REMOVED BY STATE AMENDMENT so no drip edge is required. Shingle or underlayment manufacturer may require drip edge per installation instructions.
R907.3 Recovering versus replacement (of roofing). Section was removed that prohibited a second layer of roof covering. Roofs may have a second layer installed over existing layer but it must be confirmed that the manufacturer allows this.
R907.3 Recovering versus replacement (exception #4 for ice barrier membrane). Allows existing adhered ice barrier membrane to remain and then covered with a new layer of adhered ice barrier membrane.

The following information contains simplified explanations of significant changes to the 2015 Minnesota Residential Energy Code (2012 International Energy Conservation Code, Residential Provisions, adopted with Minnesota Amendments, MR 1322).

<p>R103 Construction Documents. Include the following:</p> <ul style="list-style-type: none"> A. Insulation materials and R values B. Fenestration U factors and SHGCs C. Area-weighted U factor and SHGC calculations D. Mechanical system design criteria E. Mechanical and service water heating system and equipment types, sizes and efficiencies. F. Equipment and system control G. Fan motor horsepower and controls H. Duct sealing, and the location and insulation of ducts and pipes I. Lighting fixture schedule with wattage and control narrative J. Air sealing details
R202 Building thermal envelope (definition). The basement walls, exterior walls, floor, roof and any other building elements that enclose conditioned space or provides a boundary between conditioned space and exempt or unconditioned space.
<p>R202 High-efficacy lamps (definition). Lamps with a minimum efficacy of:</p> <ul style="list-style-type: none"> 1. 60 lumens per watt for lamps over 40 watts; 2. 50 lumens per watt for lamps over 15 watts to 40 watts; 3. 40 lumens per watt for lamps 15 watts or less.
R302.1 Interior design conditions. The interior design temperatures used for heating and cooling load calculations shall be a maximum of 72°F for heating and minimum of 75°F for cooling.
R303.1 Building thermal envelope insulation. The insulation installer shall provide a certification listing the type, manufacturer and R-value of insulation installed, including sprayed polyurethane foam (SPF) insulation. The insulation installer shall sign, date and post the certification in a conspicuous location on the job site.

<p>R401.3 Certificate. Include the following on or in the electrical distribution panel:</p> <ul style="list-style-type: none"> A. Date the certificate is installed B. Dwelling address C. Residential contractor name and contractor license number D. Homeowner name, if acting as the general contractor E. Predominant installed R-values and location F. Type of insulation installed in or on ceiling/roof, walls, rim/band joist, foundation, slab, basement wall, crawl space wall or floor, and ducts outside conditioned spaces G. U-factors for fenestration and the solar heat gain coefficient (SHGC) of fenestration H. Results of any required duct system and building envelope air leakage testing I. Types, input ratings, manufacturers, model numbers and efficiencies of heating, cooling and service water heating equipment J. Structure's calculated heat loss, cooling load and heat gain K. Mechanical ventilation type, location and capacity L. Buildings designated continuous and total ventilation rates M. Type, size and location of any make-up air system N. Location or future location of radon fan 									
<p>Table R402.1.1 Insulation and Fenestration Requirements by Component. Insulation and fenestration requirements for Climate Zone 6 (Southern Zone):</p> <table border="1"> <tr> <td>Window maximum U factor: 0.32</td> <td>Wood frame wall insulation: R-20</td> </tr> <tr> <td>Attic ceiling minimum R value: R-49</td> <td>Basement wall insulation: R-15</td> </tr> <tr> <td>Floor insulation: R-30</td> <td>Crawl space insulation: R-15</td> </tr> <tr> <td>Slab insulation (on foundation wall): R-10</td> <td>Rim joist insulation: R-20</td> </tr> </table>		Window maximum U factor: 0.32	Wood frame wall insulation: R-20	Attic ceiling minimum R value: R-49	Basement wall insulation: R-15	Floor insulation: R-30	Crawl space insulation: R-15	Slab insulation (on foundation wall): R-10	Rim joist insulation: R-20
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<p>Table R402.1.1 Insulation and Fenestration Requirements by Component. Insulation and fenestration requirements for Climate Zone 7 (Northern Zone):</p> <table border="1"> <tr> <td>Window maximum U factor: 0.32</td> <td>Wood frame wall insulation: R-21</td> </tr> <tr> <td>Attic ceiling minimum R value: R-49</td> <td>Basement wall insulation: R-15</td> </tr> <tr> <td>Floor insulation: R-38</td> <td>Crawl space insulation: R-15</td> </tr> <tr> <td>Slab insulation (on foundation wall): R-10</td> <td>Rim joist insulation: R-21</td> </tr> </table>		Window maximum U factor: 0.32	Wood frame wall insulation: R-21	Attic ceiling minimum R value: R-49	Basement wall insulation: R-15	Floor insulation: R-38	Crawl space insulation: R-15	Slab insulation (on foundation wall): R-10	Rim joist insulation: R-21
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<p>R402.1.1 Insulation, waterproofing and fenestration. Concrete and block foundation walls shall be waterproofed according to the following when required by Section R406.2 of the MN Residential Code, MR 1309:</p> <ul style="list-style-type: none"> 1. Waterproofing shall extend from the top interior wall edge, across the top of the wall, and down the exterior wall face to the top of the footing. 2. If walls are exposed to the exterior environment, the waterproofing system shall have a rigid, opaque, and weather-resistant protective covering that shall extend a minimum of 6 inches below grade. 									
<p>R402.1.1.1 through R402.1.1.8. Specific requirements for basement wall insulation similar to the current residential energy code.</p>									
<p>R402.4.1.2 Building thermal envelope testing. The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 3 air changes per hour. Testing shall be conducted with a blower door at a pressure of 50 Pascals (0.2 inches w.g.) A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope. Results to be included in posted building certificate.</p>									
<p>R402.4.1.1 Installation. The components of the building thermal envelope shall be installed according to Table R402.4.1.1 Air Barrier and Insulation Installation.</p>									
<p>R403.1.1 Programmable thermostat. Where the primary heating system is a forced-air furnace, a programmable thermostat is required.</p>									
<p>R403.2.2 Duct sealing. Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with Section 603.9 of the IMC. Exception: Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.</p>									

<p>IMC 603.9 Duct sealing. All joints, longitudinal and transverse seams and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, liquid sealants or tapes. Closure systems used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181B-FX” for pressure-sensitive tape or “181B-M” for mastic. Closure systems used to seal metal ductwork shall be installed in accordance with the manufacturer’s installation instructions. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL181B and shall be marked “181B-C.” Pressure-sensitive tape shall not be used as the primary sealant on ducts, unless it has been certified to comply with UL 181A or UL 181B by a nationally recognized testing laboratory. Unlisted duct tape is not permitted as a sealant on any duct.</p>
<p>R403.2.2 (#1) Duct tightness postconstruction test. Total leakage shall be less than or equal to 4 cfm per 100 square feet of conditioned floor area when tested at a pressure differential of 25 Pascals (0.1 inches w.g.) across the entire system, including the air handler enclosure. All register boots shall be taped or sealed. Results to be included in posted building certificate.</p>
<p>R403.2.2 (#2) Duct tightness rough-in test. Total leakage shall be less than or equal to 4 cfm per 100 square feet of conditioned floor area when tested at a pressure differential of 25 Pascals (0.1 inches w.g.) across the entire system, including the air handler enclosure. All register boots shall be taped or sealed. If the air handler is not installed at the time of test, total leakage shall be less than or equal to 3 cfm per 100 square feet of conditioned floor area. Results to be included in posted building certificate.</p>
<p>R403.2.2 Exception to duct tightness tests. The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope.</p>
<p>R403.2.2.1 Sealed air handler. Air handlers shall have a manufacturer’s designation for an air leakage rate of not more than 2 percent of the design air flow rate.</p>
<p>R403.2.3 Building cavities. Building framing cavities shall not be used as ducts or plenums.</p>
<p>R403.3 Mechanical system piping insulation. Hydronic system piping fluid above 105°F or below 55°F shall be insulated to a minimum of R-3.</p>
<p>R403.4.2 Hot water pipe insulation. Hot water pipe shall be insulated to a minimum of R-3 in most applications.</p>
<p>R403.5 Mechanical ventilation. The building shall be provided with a balanced mechanical ventilation system that is +/-10% of the system’s design capacity and meets the requirements of R403.5.5 which establishes the continuous and total ventilation requirements for dwelling unit ventilation.</p>
<p>R403.5.6.1.3 Airflow verification. All mechanical ventilation system airflows greater than 30 cfm at the building intake and exhaust shall be tested and verified.</p>
<p>R403.5.17 Climatic conditions. HVAC equipment shall be sized according to ACCA Manual S or an equivalent method based on ACCA Manual J. Oversizing of heating equipment shall not exceed 40% and oversizing of cooling equipment shall not exceed 15%.</p>
<p>R404.1 Lighting equipment. A minimum of 75% of the lamps or lighting fixtures shall be high-efficacy (see R202 definition).</p>