

1.1 **Department of Labor and Industry**

1.2 **Proposed Permanent Rules Adopting the 2012 International Residential Code**

1.3 **1309.0010 ADOPTION OF INTERNATIONAL RESIDENTIAL CODE (IRC) BY**
1.4 **REFERENCE.**

1.5 Subpart 1. **Generally.** The ~~2006~~ 2012 edition of the International Residential Code
1.6 (~~IRC~~) ("IRC") as promulgated by the International Code Council, Inc. (~~ICC~~) ("ICC"),
1.7 ~~Falls Church, Virginia~~ Washington, D.C., is incorporated by reference and made part of
1.8 the Minnesota State Building Code except as qualified by the applicable provisions in
1.9 Minnesota Rules, chapter 1300, and as amended in this chapter. Portions of this publication
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1.15 Subp. 2. **Mandatory chapters.** The ~~2006~~ 2012 IRC chapters 2 ~~through~~ to 10, 44,
1.16 section P2904, and ~~43~~ must Appendix K shall be administered by any municipality that
1.17 has adopted the Minnesota State Building Code, except as qualified by the applicable
1.18 provisions in Minnesota Rules, chapter 1300, and as amended by this chapter.

1.19 Subp. 3. **Replacement chapters.** The following ~~2006~~ 2012 IRC chapters are being
1.20 deleted and replaced with the provisions listed below:

1.21 A. Chapter 1 of the ~~2006~~ 2012 IRC and any references to code administration
1.22 in this code are deleted and replaced with Minnesota Rules, chapter 1300, Minnesota
1.23 Building Code Administration Code.

1.24 B. Chapter 11 of the ~~2006~~ 2012 IRC and any references to residential or
1.25 commercial energy in this code are deleted and replaced with ~~Minnesota Statutes, section~~
1.26 ~~326B.115~~ Minnesota Rules, chapters 1322 and 1323, Minnesota Energy Code.

2.1 C. Chapters ~~12 through~~ 24 of the ~~2006~~ 2012 IRC and any references to
 2.2 mechanical matters in this code are deleted and replaced with Minnesota Rules, chapter
 2.3 1346, Minnesota Mechanical Code.

2.4 D. Chapters ~~25 through 32~~ 33 of the ~~2006~~ 2012 IRC and any references to
 2.5 plumbing in this code are deleted and replaced with Minnesota Rules, chapter 4715,
 2.6 Minnesota Plumbing Code.

2.7 E. Chapters ~~33 through 42~~ 34 to 43 of the ~~2006~~ 2012 IRC and references to
 2.8 electrical matters in this code, other than section ~~R313~~ R314 Smoke Alarms, are deleted
 2.9 and replaced with Minnesota Rules, chapter 1315, Minnesota Electrical Code.

2.10 Subp. 4. [See repealer.]

2.11 [For text of subps 5 and 6, see M.R.]

2.12 **1309.0020 REFERENCES TO OTHER ICC CODES.**

2.13 Subpart 1. **Generally.** References to other codes and standards promulgated by the
 2.14 ICC in the ~~2006~~ 2012 IRC are modified in subparts 2 to 11.

2.15 [For text of subps 2 to 8, see M.R.]

2.16 Subp. 9. **Energy conservation code.** References to the International Energy
 2.17 Conservation Code in this code mean the Minnesota Energy Code, adopted under
 2.18 ~~Minnesota Statutes, section 326B.115~~ Minnesota Rules, chapters 1322 and 1323.

2.19 [For text of subps 10 and 11, see M.R.]

2.20 **1309.0030 ADMINISTRATIVE PROCEDURE CRITERIA.**

2.21 Procedures relating to the administration and enforcement of this code under
 2.22 Minnesota Statutes, section ~~16B.57~~ 326B.101, are contained in Minnesota Rules, chapter
 2.23 1300, Minnesota Building Code Administration Code. Minnesota Rules, chapter 1300,
 2.24 governs the application of this code.

3.1 **1309.0202 SECTION R202, DEFINITIONS.**

3.2 [For text of subp 1, see M.R.]

3.3 Subp. 2. **Additional definitions.** IRC section R202 is amended by adding the
3.4 following definitions:

3.5 ~~**CONNECTOR.** A device for fastening together two or more pieces, members, or parts,
3.6 including anchors, fasteners, and wall ties.~~

3.7 **CODE.** For purposes of this chapter, "the code" or "this code" means the Minnesota
3.8 Residential Code, Minnesota Rules, chapter 1309.

3.9 **CRAWL SPACE.** Areas or rooms with less than 7 6 feet 4 inches (2134 1931 mm) ceiling
3.10 height measured to the finished floor or grade below.

3.11 ~~**DAMPPROOFING.** Treatment of a surface or structure located below grade to resist the
3.12 passage of water in liquid form, in the absence of hydrostatic pressure.~~

3.13 ~~**FASTENER.** A device for holding together two or more pieces, parts, or members.~~

3.14 **FLASHING.** Approved corrosion-resistive material provided in such a manner as to
3.15 deflect and resist entry of water into the construction assembly.

3.16 **FLOOR AREA.** The calculated square footage of the floor within the inside perimeter
3.17 of the exterior walls of the building under consideration without deduction for hallways,
3.18 stairways, closets, the thickness of interior walls, columns, or other features.

3.19 **KICK-OUT FLASHING.** Flashing used to divert water where the lower portion of a
3.20 sloped roof stops within the plane of an intersecting wall cladding.

3.21 **OCCUPANCY CLASSIFICATIONS**

3.22 **IRC-1** - Single-family dwelling

3.23 **IRC-2** - Two-family dwellings

3.24 **IRC-3** - Townhouses

3.25 **IRC-4** - Accessory structures:

3.26 a. Garages;

3.27 b. Storage sheds; and

4.1 c. Similar structures.

4.2 ~~**PAN FLASHING.** A type of corrosion-resistant flashing that is integrated into the~~
4.3 ~~building envelope at the base of a window or door rough opening that diverts incidental~~
4.4 ~~water to the exterior surface of a weather-resistant barrier.~~

4.5 ~~**STAIR.** A change in elevation, consisting of one or more risers.~~

4.6 ~~**STORY ABOVE GRADE PLANE.** Any story having its finished floor surface entirely~~
4.7 ~~above grade plane, except a basement, shall be considered as a story above grade where~~
4.8 ~~the finished surface of the floor above the basement is:~~

4.9 1. ~~more than 6 feet (1829 mm) above grade plane;~~

4.10 2. ~~more than 6 feet (1829 mm) above the finished ground level for more than 50~~
4.11 ~~percent of the total building perimeter; or~~

4.12 3. ~~more than 12 feet (3658 mm) above the finished ground level at any point.~~

4.13 **SILL HEIGHT.** The lowest part of the window opening of an operable window measured
4.14 from the finished floor.

4.15 **WATERPROOFING.** Treatment of a surface or structure located below grade to
4.16 resist the passage of water in liquid form, under hydrostatic pressure ~~and that~~ bridges
4.17 nonstructural cracks.

4.18 **1309.0301 SECTION R301, DESIGN CRITERIA.**

4.19 Subpart 1. [See repealer.]

4.20 Subp. 2. **IRC Table R301.2(1).** ~~IRC~~ Table R301.2(1) is amended to read as follows:

4.21 TABLE R301.2(1)

4.22 ~~CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA~~

SUBJECT TO DAMAGE FROM

5.1					
5.2	ROOF SNOW	WIND	WEATHERING^a	FROST LINE DEPTH^b	FLOOD
5.3	LOAD^d	SPEED^c			HAZARDS
5.4		(mph)			
5.5	$p_f = 0.7 \times p_g$	90	Severe	See M.R. part	See M.R.
5.6				1303.1600	chapter 1335

5.7 For SI: 1 pound per square foot = 0.0479 kN/m.0², 1 mile per hour = 1.609 km/h

5.8 a. ~~Weathering may require a higher strength concrete or grade of masonry than necessary~~
 5.9 ~~to satisfy the structural requirement of this code. The grade of masonry units shall be~~
 5.10 ~~determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129, C 145, C 216, or C 652.~~

5.11 b. ~~The frost line depth may require deeper footings than indicated in Figure R403.1(1)~~

5.12 c. ~~Wind exposure category shall be determined on a site-specific basis in accordance~~
 5.13 ~~with Section R301.2.1.4.~~

5.14 d. ~~The ground snow loads to be used in determining the design snow loads for buildings~~
 5.15 ~~and other structures are given in Minnesota Rules, chapter 1303.~~

TABLE R301.2(1) CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

5.17	<u>ROOF SNOW</u>	<u>WIND DESIGN</u>		<u>SEISMIC DESIGN</u>
5.18	<u>LOAD^f</u>			<u>CATEGORY^l</u>
5.19		<u>Speed^d (mph)</u>	<u>Topographic effects^k</u>	
5.20	$p_f = 0.7 * p_g$	<u>90</u>	<u>YES</u>	<u>A</u>

SUBJECT TO DAMAGE FROM

WINTER DESIGN
TEMP^e

5.23	<u>Weathering^a</u>	<u>Frost line depth^b</u>	<u>Termite^c</u>	
5.24		<u>See MR part</u>		
5.25	<u>Severe</u>	<u>1303.1600</u>	<u>See Footnote "c"</u>	<u>See MR chapter 1323</u>

ICE BARRIER
UNDERLAYMENT
REQUIRED^h

FLOOD
HAZARDS^g

AIR FREEZING
INDEX¹

MEAN ANNUAL
TEMP¹

5.29		<u>See MR chapter</u>	<u>See Table</u>	
5.30	<u>Yes</u>	<u>1335</u>	<u>R403.3(2)</u>	<u>41.16</u>

- 6.1 For SI: 1 pound per square foot = 0.0479 kPa, 1 mile per hour = 0.447 m/s.
- 6.2 a. Weathering may require a higher strength concrete or grade of masonry than necessary
- 6.3 to satisfy the structural requirements of this code. The weathering column shall be filled
- 6.4 in with the weathering index, such as "negligible," "moderate," or "severe," for concrete
- 6.5 as determined from the Weathering Probability Map [Figure R301.2(3)]. The grade of
- 6.6 masonry units shall be determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129,
- 6.7 C 145, C 216, or C 652.
- 6.8 b. See Minnesota Rules, part 1303.1600 – Footing Depth for Frost Protection to verify
- 6.9 whether the county requires Zone I or Zone II frost protection.
- 6.10 c. The jurisdiction shall fill in this part of the table to indicate the need for protection
- 6.11 depending on whether there has been a history of local subterranean termite damage.
- 6.12 d. The jurisdiction shall fill in this part of the table with the wind speed from the basic
- 6.13 wind speed map [Figure R301.2(4)A]. Wind exposure category shall be determined on a
- 6.14 site-specific basis in accordance with section R301.2.1.4.
- 6.15 e. See Minnesota Rules, chapter 1322 - Table R403.5.17 Climate Data Design Conditions
- 6.16 to verify by city.
- 6.17 f. The ground snow loads to be used in determining the design snow loads for buildings
- 6.18 and other structures are given in Minnesota Rules, part 1303.1700 - Ground Snow Load to
- 6.19 verify by county. The roof snow load is a uniform load on the horizontal projection of
- 6.20 the roof.
- 6.21 g. See Minnesota Rules, chapter 1335, Flood Proofing Regulations.
- 6.22 h. In accordance with sections R905.2.7.1, R905.4.3.1, R905.5.3.1, R905.6.3.1,
- 6.23 R905.7.3.1, and R905.8.3.1, where there has been a history of local damage from the
- 6.24 effects of ice damming.
- 6.25 i. The jurisdiction shall fill in this part of the table with the 100-year return period air
- 6.26 freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value

7.1 on the National Climatic Data Center data table "Air Freezing Index-USA Method (Base
 7.2 32° F)" at www.ncdc.noaa.gov/oa/fpsf.

7.3 j. The jurisdiction shall fill in this part of the table with the mean annual temperature
 7.4 from the National Climatic Data Center data table "Average Mean Temperature Index" at
 7.5 <http://www.esrl.noaa.gov/psd/data/usclimate/tmp.state.19712000.climo>.

7.6 k. In accordance with section R301.2.1.5.

7.7 l. Assigned to allow the application of the least restrictive topographic provisions of
 7.8 the code.

7.9 Subp. 3. IRC Figure R301.2(5). ~~IRC Figure R301.2(5),~~ Ground Snow Loads, Pg,
 7.10 for the United States (lb/ft²), is deleted in its entirety.

7.11 Subp. 4. [See repealer.]

7.12 **1309.0302 SECTION R302, EXTERIOR WALL LOCATION FIRE-RESISTANT**
 7.13 **CONSTRUCTION.**

7.14 Subpart 1. IRC section R302.2, Townhouses. ~~IRC Section R302.1~~ R302.2 is
 7.15 amended to read as follows:

7.16 ~~**R302.1 Exterior walls.** Construction, projections, openings, and penetrations of exterior~~
 7.17 ~~walls of dwellings and accessory buildings shall comply with Table 302.1. These~~
 7.18 ~~provisions shall not apply to walls, projections, openings, or penetrations in walls that~~
 7.19 ~~are perpendicular to the line used to determine the fire separation distance. Projections~~
 7.20 ~~beyond the exterior shall not extend more than 12 inches (305 mm) into areas where~~
 7.21 ~~openings are prohibited.~~

7.22 **Exceptions:**

- 7.23 1. ~~Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot~~
 7.24 ~~line are permitted to have cave projections not exceeding 4 inches (103 mm).~~
- 7.25 2. ~~Foundation vents installed in compliance with this code are permitted.~~

7.26 **TABLE R302.1**

8.1 EXTERIOR WALLS

8.2		MINIMUM	MINIMUM
8.3		FIRE-RESISTANCE	FIRE
8.4		RATING	SEPARATION
8.5	EXTERIOR WALL ELEMENT	RATING	DISTANCE

8.6 **Walls**

8.7 (Fire-resistance-rated) 1-hour with exposure from both sides 0 feet

8.8 (Not fire-resistance-rated) 0 hours 5 feet

8.10 **Projections**

8.11 (Fire-resistance-rated) 1-hour on the underside^a 4 feet

8.12 (Not fire-resistance-rated) 0 hours 5 feet

8.13 **Openings**

8.14 Not allowed N/A <3 feet

8.15 25% Maximum of Wall Area 0 hours 3 feet

8.16 Unlimited 0 hours 5 feet

8.17 **Penetrations**

8.18 All Comply with Section R317.3 <5 feet

8.19 None required 5 feet

8.21 N/A= Not Applicable

8.22 ^a1-hour on the underside equates to one layer of 5/8" type X gypsum sheathing. Openings are not allowed.

8.24 **R302.2 Townhouses.** Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of section R302.1 for exterior walls.

8.27 **Exception:** A common 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both

9.1 sides and shall extend to and be tight against exterior walls and the underside of
9.2 the roof sheathing. Electrical installations shall be installed in accordance with
9.3 Minnesota Rules, chapter 1315. Penetrations of electrical outlet boxes shall
9.4 be in accordance with section R302.4.

9.5 **R302.2.1 Continuity.** The fire-resistance-rated wall assembly separating
9.6 townhouses shall be continuous from the foundation to the underside of the roof
9.7 sheathing, roof deck, or roof slab. The fire-resistance rating shall extend the full
9.8 length of the wall or assembly, including wall extensions through and separating
9.9 attached enclosed accessory structures. The separation shall extend through
9.10 enclosed soffits, overhangs, and similar projections.

9.11 **R302.2.2 Parapets.** Parapets constructed in accordance with section R302.2.3
9.12 shall be constructed for townhouses as an extension of exterior walls or common
9.13 walls in accordance with the following:

- 9.14 1. where roof surfaces adjacent to the wall or walls are at the same elevation,
9.15 the parapet shall extend not less than 30 inches (762 mm) above the roof
9.16 surfaces; or
9.17 2. where roof surfaces adjacent to the wall or walls are at different
9.18 elevations, and the higher roof is not more than 30 inches (762 mm) above
9.19 the lower roof, the parapet shall extend not less than 30 inches (762 mm)
9.20 above the lower roof surface.

9.21 **Exception:** A parapet is not required in the two cases above when
9.22 the roof is covered with a minimum class C roof covering, and the
9.23 roof decking or sheathing is of noncombustible materials or approved
9.24 fire-retardant-treated wood for a distance of 4 feet (1219 mm) on each
9.25 side of the wall or walls, or one layer of 5/8-inch (15.9 mm) type X
9.26 gypsum board is installed directly beneath the roof decking or sheathing,
9.27 supported by a minimum of nominal 2-inch (51 mm) ledgers attached to

10.1 the sides of the roof framing members, for a minimum distance of 4 feet
 10.2 (1219 mm) on each side of the wall or walls and there are no openings or
 10.3 penetrations in the roof within 4 feet (1219 mm) of the common walls.

10.4 3. A parapet is not required where roof surfaces adjacent to the wall or walls
 10.5 are at different elevations and the higher roof is more than 30 inches (762
 10.6 mm) above the lower roof. The common wall construction from the lower
 10.7 roof to the underside of the higher roof deck shall have not less than a 1-hour
 10.8 fire-resistance rating. The wall shall be rated for exposure from both sides.

10.9 **TABLE R302.1(1) EXTERIOR WALLS**

<u>EXTERIOR WALL ELEMENT</u>	<u>MINIMUM FIRE-RESISTANCE RATING</u>	<u>MINIMUM FIRE SEPARATION DISTANCE</u>
<u>Walls</u>		
<u>Fire-resistance-rated</u>	<u>1-hour - tested in accordance with ASTM E 119 or UL 263 with exposure from both sides</u>	<u>< 5 feet</u>
<u>Not fire-resistance-rated</u>	<u>0 hours</u>	<u>≥ 5 feet</u>
<u>Projections</u>		
<u>Fire-resistance-rated</u>	<u>1-hour on the underside^a</u>	<u>≥ 2 feet to < 5 feet</u>
<u>Not fire-resistance-rated</u>	<u>0 hours</u>	<u>≥ 5 feet</u>
<u>Openings in walls</u>		
<u>Not allowed</u>	<u>N/A</u>	<u>< 3 feet</u>
<u>25% Maximum of Wall Area</u>	<u>0 hours</u>	<u>3 feet</u>
<u>Unlimited</u>	<u>0 hours</u>	<u>5 feet</u>
<u>Penetrations</u>		
<u>All</u>	<u>Comply with section R302.4</u>	<u>< 5 feet</u>
	<u>None required</u>	<u>5 feet</u>
<u>For SI: 1 foot = 304.8 mm</u>		

11.1 N/A = Not Applicable

11.2 ^a 1-hour on the underside equates to one layer of 5/8-inch type X gypsum sheathing.

11.3 Openings are not allowed.

11.4 **TABLE R302.1(2) EXTERIOR WALLS - DWELLINGS WITH FIRE SPRINKLERS**

11.5		MINIMUM FIRE-RESISTANCE	MINIMUM FIRE SEPARATION
11.6		RATING	DISTANCE
11.7	<u>EXTERIOR WALL ELEMENT</u>		
11.8	<u>Walls</u>		
11.9	<u>Fire-resistance-rated</u>	<u>1-hour - tested in accordance with ASTM E 119 or UL 263 with exposure from the outside</u>	<u>0 feet</u>
11.10			
11.11			
11.12			
11.13	<u>Not fire-resistance-rated</u>	<u>0 hours</u>	<u>3 feet</u>
11.14	<u>Projections</u>		
11.15	<u>Fire-resistance-rated</u>	<u>1-hour on the underside^a</u>	<u>2 feet</u>
11.16	<u>Not fire-resistance-rated</u>	<u>0 hours</u>	<u>3 feet</u>
11.17	<u>Openings in walls</u>		
11.18	<u>Not allowed</u>	<u>N/A</u>	<u>< 3 feet</u>
11.19	<u>Unlimited</u>	<u>0 hours</u>	<u>3 feet</u>
11.20	<u>Penetrations</u>		
11.21	<u>All</u>	<u>Comply with section R302.4</u>	<u>< 3 feet</u>
11.22			
11.23		<u>None required</u>	<u>3 feet</u>

11.24 For SI: 1 foot = 304.8 mm

11.25 N/A = Not Applicable

11.26 ^a 1-hour on the underside equates to one layer of 5/8-inch type X gypsum sheathing.

11.27 Openings are not allowed.

11.28 **R302.2.3 Parapet construction.** Parapets shall have the same fire-resistance
 11.29 rating as that required for the supporting wall or walls. On any side adjacent to a
 11.30 roof surface, the parapet shall have noncombustible faces for the uppermost 18

12.1 inches (457 mm), to include counterflashing and coping materials. Where the
12.2 roof slopes toward a parapet at slopes greater than 2 units vertical in 12 units
12.3 horizontal (16.7 percent slope), the parapet shall extend to the same height as any
12.4 portion of the roof within a distance of 3 feet (914 mm), but in no case shall the
12.5 height be less than 30 inches (762 mm).

12.6 **R302.2.4 Structural independence.** Each individual townhouse shall be
12.7 structurally independent.

12.8 **Exceptions:**

- 12.9 1. Foundations supporting exterior walls or common walls.
- 12.10 2. Structural roof and wall sheathing from each unit may fasten to the
12.11 common wall framing.
- 12.12 3. Nonstructural wall and roof coverings.
- 12.13 4. Flashing at termination of roof covering over common wall.
- 12.14 5. Townhouses separated by a common 1-hour fire-resistance-rated
12.15 wall as provided in section R302.2.

12.16 **R302.2.5 Sound transmission.** Townhouses constructed in accordance with
12.17 section R302.2 shall comply with the sound transmission requirements of
12.18 Appendix K.

12.19 Subp. 2. **IRC section R302.3, Two-family dwellings.** Section 302.3 is amended by
12.20 adding a subsection to the end of the section to read as follows:

12.21 **R302.3.2 Sound transmission.** Two-family dwellings constructed in accordance
12.22 with section R302.3 shall comply with the sound transmission requirements of
12.23 Appendix K.

12.24 Subp. 3. **IRC section R302.5.1, Opening protection.** Section 302.5.1 is amended
12.25 to read as follows:

12.26 **R302.5.1 Opening protection.** Openings from a private garage directly into a
12.27 room used for sleeping purposes shall not be permitted. Other openings between

13.1 the garage and residence shall be equipped with solid wood doors not less than
 13.2 1-3/8 inches (35 mm) in thickness, solid or honeycomb-core steel doors not less
 13.3 than 1-3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

13.4 Subp. 4. IRC section R302.6. Section R302.6 and Table R302.6 are amended to
 13.5 read as follows:

13.6 **R302.6 Dwelling/garage fire separation.** The garage shall be separated as required
 13.7 by Table R302.6. Openings in garage walls shall comply with section R302.5.

13.8 **TABLE R302.6 DWELLING/GARAGE SEPARATION**

<u>SEPARATION</u>	<u>MATERIAL</u>
<u>From the residence and attics</u>	<u>Not less than 1/2-inch gypsum board or equivalent applied to the garage side. Vertical separation between the garage and the residence attic shall extend to the roof sheathing or rafter blocking.</u>
<u>From all habitable rooms above the garage</u>	<u>Not less than 5/8-inch type X gypsum board or equivalent.</u>
<u>Structural members supporting floor/ceiling assemblies or garage ceiling used for separation required by this section</u>	<u>Not less than 1/2-inch gypsum board or equivalent applied to the garage side of structural members supporting the floor/ceiling assemblies or garage ceiling. Structural members include, but are not limited to: walls, columns, beams, girders, and trusses.</u>
<u>Garages located less than 3 feet from a dwelling unit on the same lot</u>	<u>Not less than 1/2-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area. This provision does not apply to garage walls that are perpendicular to the adjacent dwelling unit wall.</u>

13.27 **1309.0305 SECTION R305, CEILING HEIGHT.**

13.28 IRC section ~~R305.1~~ R305 is amended to read as follows:

13.29 **R305.1 Minimum height, new buildings.** Habitable rooms space, hallways,
 13.30 corridors, bathrooms, toilet rooms, laundry rooms, and portions of basements
 13.31 containing these spaces shall have a ceiling height of not less than 7 feet (2134 mm).

14.1 The required height shall be measured from the finish floor to the lowest projection
14.2 from the ceiling. ~~Areas or rooms with ceiling heights less than 7 feet (2134 mm) are~~
14.3 ~~considered crawl spaces.~~

14.4 **Exceptions:**

14.5 1. ~~Beams and girders spaced not less than 4 feet (1219 mm) on center may~~
14.6 ~~project not more than 6 inches (152 mm) below the required ceiling height.~~

14.7 For rooms with sloped ceilings, at least 50 percent of the required floor area
14.8 of the room shall have a ceiling height of at least 7 feet (2134 mm) and no
14.9 portion of the required floor area may have a ceiling height of less than 5
14.10 feet (1524 mm).

14.11 2. ~~Not more than 50 percent of the required floor area of a room or space is~~
14.12 ~~permitted to have a sloped ceiling less than 7 feet (2134 mm) in height with~~
14.13 ~~no portion of the required floor area less than 5 feet (1524 mm) in height.~~

14.14 Bathrooms shall have a minimum ceiling height of 6 feet 8 inches (2032 mm)
14.15 at the center of the front clearance area for water closets, bidets, or sinks. The
14.16 ceiling height above fixtures shall be such that the fixture is capable of being
14.17 used for its intended purpose. A shower or tub equipped with a showerhead
14.18 shall have a minimum ceiling height of 6 feet 8 inches (2032 mm) above a
14.19 minimum area 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.

14.20 **R305.1.1 Basements, new buildings.** Portions of basements that do not contain
14.21 habitable space, hallways, bathrooms, toilet rooms, and laundry rooms shall have
14.22 a ceiling height of not less than 6 feet 8 inches (2032 mm).

14.23 **Exception:** Beams, girders, ducts, or other obstructions may project to
14.24 within 6 feet 4 inches (1931 mm) of the finished floor.

14.25 **R305.2 Alterations to existing building basements.** Alterations to portions of
14.26 existing basements shall comply with the provisions of this section.

15.1 **R305.2.1 Minimum ceiling height, existing buildings.** Alterations to existing
15.2 basements or portions thereof shall have a ceiling height of not less than 6 feet 4
15.3 inches (1931 mm), including beams, girders, ducts, or other obstructions.

15.4 **R305.2.1.1 Bathroom plumbing fixture clearance.** Bathrooms shall have a
15.5 minimum ceiling height of 6 feet 4 inches (1931 mm) at the center of the front
15.6 clearance area for water closets, bidets, or sinks. A shower or tub equipped
15.7 with a showerhead shall have a minimum ceiling height of 6 feet 4 inches
15.8 (1931 mm) above a minimum area 30 inches (762 mm) by 30 inches (762
15.9 mm) at the wall where the showerhead is placed. The ceiling may have slopes
15.10 or soffits that do not infringe on the height required for the plumbing fixture.

15.11 **R305.2.2 Minimum stairway headroom, existing buildings.** Alterations to
15.12 existing basement stairways shall have a minimum headroom in all parts of the
15.13 stairway not less than 6 feet 4 inches (1931 mm) measured vertically from the
15.14 sloped line adjoining the tread nosing or from the floor surface of the landing or
15.15 platform on that portion of the stairway.

15.16 **Exception:** Where the nosings of treads at the side of a flight extend under
15.17 the edge of a floor opening through which the stair passes, the floor opening
15.18 shall be allowed to project horizontally into the required headroom a
15.19 maximum of 4-3/4 inches (121 mm).

15.20 **1309.0307 SECTION R307, TOILET, BATH, AND SHOWER SPACES.**

15.21 IRC section R307.1 is amended to read as follows:

15.22 **R307.1 Space required.** Plumbing fixtures shall be installed in accordance with
15.23 Minnesota Rules, chapter 4715, Minnesota Plumbing Code.

15.24 **1309.0309 SECTION R309, GARAGES AND CARPORTS.**

15.25 Subpart 1. IRC section ~~R309.3~~ **R309.1, Floor surface.** IRC Section ~~R309.3~~ R309.1
15.26 is amended to read as follows:

16.1 **~~R309.3~~ R309.1 Floor surface.** Garage floor surfaces may be concrete, asphalt, sand,
16.2 gravel, crushed rock, or natural earth.

16.3 Subp. 2. **~~IRC section R309.4~~ R309.2, Carports.** ~~IRC Section R309.4~~ R309.2 is
16.4 amended to read as follows:

16.5 **~~R309.4~~ R309.2 Carports.** Carports shall be open on at least two sides. Carport
16.6 floor surfaces may be concrete, asphalt, sand, gravel, crushed rock, or natural earth.
16.7 Carports not open on at least two sides shall be considered a garage and shall comply
16.8 with the provisions of this section for garages.

16.9 Subp. 3. **~~IRC section R309.6~~ R309.4, Automatic garage door opening systems.**
16.10 ~~IRC Section R309.6~~ R309.4 is amended to read as follows:

16.11 **~~R309.6~~ R309.4 Automatic garage door opening systems.** All automatic garage
16.12 door opening systems that are installed, serviced, or repaired for garages serving
16.13 residential buildings ~~must~~ shall comply with the provisions of Minnesota Statutes,
16.14 sections 325F.82 and 325F.83.

16.15 Subp. 4. **~~IRC section R309.5,~~ Fire sprinklers.** Section R309.5 is amended to read
16.16 as follows:

16.17 **R309.5 Fire sprinklers.** Attached garages of two-family dwellings and townhouses
16.18 shall be protected by fire sprinklers and installed in compliance with section R313.3.
16.19 Attached garages of single-family dwellings shall be protected by fire sprinklers and
16.20 installed in compliance with section R313.3 when the dwelling's floor area, including
16.21 basement, is 4500 square feet (418.06 m²) or more. Floor area excludes garages.

16.22 **1309.0310 SECTION R310, EMERGENCY ESCAPE AND RESCUE OPENINGS.**

16.23 IRC section R310.1 is amended to read as follows:

16.24 **R310.1 Emergency escape and rescue required.** Basements, habitable attics, and
16.25 every sleeping room shall have at least one operable emergency escape and rescue
16.26 opening. Where basements contain one or more sleeping rooms, emergency egress

17.1 and rescue openings shall be required in each sleeping room, but not be required in
17.2 adjoining areas of the basement. Where emergency escape and rescue openings are
17.3 provided they shall have a sill height of not more than 44 inches (1118 mm) measured
17.4 from the finished floor to the bottom of the clear opening. Where a door opening
17.5 having a threshold below the adjacent ground elevation serves as an emergency escape
17.6 and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure
17.7 shall comply with section R310.3. The net clear opening dimensions required by this
17.8 section shall be obtained by the normal operation of the emergency escape and rescue
17.9 opening from the inside. Emergency escape and rescue openings with a finished sill
17.10 height below the adjacent ground elevation shall be provided with a window well in
17.11 accordance with section R310.2. Emergency escape and rescue openings shall open
17.12 directly into a public way, or to a yard or court that opens to a public way.

17.13 Exceptions:

17.14 1. Basements used only to house mechanical equipment and not exceeding
17.15 total floor area of 200 square feet (18.58 m²).

17.16 2. Basements or basement bedrooms when the building is protected with
17.17 an automatic sprinkler system installed in accordance with IRC section
17.18 P2904 or NFPA 13D.

17.19 3. Basements or basement bedrooms that comply with all of the following
17.20 conditions:

17.21 A. constructed prior to August 1, 2008;

17.22 B. undergoing an alteration or repair; and

17.23 C. the entire basement area, when all portions of the means of egress to
17.24 the level of exit discharge, and all areas on the level of exit discharge
17.25 that are open to the means of egress is protected with an automatic
17.26 sprinkler system in accordance with IRC section P2904 or NFPA 13D.

18.1 **R310.1.1 Minimum opening area.** All emergency escape and rescue openings
18.2 shall have a minimum net clear opening of 5.7 square feet (0.530 m²).

18.3 **Exception:** Grade floor openings shall have a minimum net clear opening
18.4 of 5 square feet (0.465 m²).

18.5 **R310.1.2 Minimum opening height.** The minimum net clear opening height
18.6 shall be 24 inches (610 mm).

18.7 **R310.1.3 Minimum opening width.** The minimum net clear opening width
18.8 shall be 20 inches (508 mm).

18.9 **R310.1.4 Operational constraints.** Emergency escape and rescue openings
18.10 shall be operational from the inside of the room without the use of keys, tools,
18.11 or special knowledge.

18.12 **Exception:** Windows with approved window opening control devices and
18.13 installed in accordance with ASTM F 2090. The devices shall not require
18.14 the use of keys or tools to operate.

18.15 **R310.1.5 Replacement windows.** Replacement windows installed in buildings
18.16 ~~meeting the scope of~~ regulated by the International Residential Code shall be
18.17 exempt from the ~~maximum sill height requirements of Sections~~ section R310.1,
18.18 including subsections R310.1.1, R310.1.2, and R310.1.3, if the replacement
18.19 window meets the following conditions:

18.20 ~~1. The replacement window is the manufacturer's largest standard size~~
18.21 ~~window that will fit within the existing frame or existing rough opening.~~
18.22 ~~The replacement window shall be permitted to be of the same operating~~
18.23 ~~style as the existing window or a style that provides for a greater window~~
18.24 ~~opening area than the existing window;~~

18.25 ~~2. The rooms or areas are not used for any Minnesota state licensed purpose~~
18.26 ~~requiring an egress window; and~~

19.1 3. ~~The window is not required to be replaced pursuant to a locally adopted~~
19.2 ~~rental housing or rental licensing code~~ is the manufacturer's largest standard
19.3 size window that will fit within the existing frame or existing rough opening.
19.4 The replacement window shall be the same operating style as the existing
19.5 window or a style that provides for an equal or greater window opening area
19.6 than the existing window.

19.7 **R310.1.5.1 Licensed facilities.** Windows in rooms used for foster care
19.8 or day care licensed or registered by the state of Minnesota shall comply
19.9 with the provisions of section R310.1.5, or all of the following conditions,
19.10 whichever is more restrictive:

- 19.11 1. Minimum of 20 inches in clear opening width;
- 19.12 2. Minimum of 20 inches in clear opening height;
- 19.13 3. Minimum of 648 square inches (4.5 square feet) clear opening; and
- 19.14 4. Maximum of 48 inches from the floor to the sill height.

19.15 **1309.0311 SECTION R311, MEANS OF EGRESS.**

19.16 Subpart 1. **IRC section R311.3.2, Floor elevations for other exterior doors.**

19.17 Section 311.3.2 is amended to read as follows:

19.18 **R311.3.2 Floor elevations for other exterior doors.** Doors other than the
19.19 required egress door shall be provided with landings or floors not more than
19.20 7-3/4 inches (196 mm) below the top of the threshold.

19.21 **Exception:** A landing is not required if a stairway less than 30 inches (762
19.22 mm) in height is located on the exterior side of the door, provided the door
19.23 does not swing over the stairway. The stairway height shall be measured
19.24 vertically from the interior floor surface to the finished grade.

19.25 **R311.4.3 Landings at doors.** Except as provided in this section, there shall be a
19.26 floor or landing on each side of each exterior door. The width of the landing shall

20.1 not be less than the door served. The landing shall have a minimum dimension of
20.2 36 inches (914 mm) measured in the direction of travel.

20.3 ~~**R311.4.3.1 Landings at the exterior exit door required by Section**~~
20.4 ~~**R311.4.1.**~~

20.5 1. ~~The floor or landing at the exit door required by Section R311.4.1~~
20.6 ~~shall not be more than 1.5 inches (38 mm) below the top of the threshold,~~
20.7 ~~regardless of door swing.~~

20.8 2. ~~The exterior landing shall be up to 7-3/4 inches (196 mm) below the top~~
20.9 ~~of the threshold, provided the door, other than an exterior storm or screen~~
20.10 ~~door, does not swing over the exterior landing.~~

20.11 ~~**R311.4.3.2 Landings or floors at exterior doors other than those**~~
20.12 ~~**required by Section R311.4.1.**~~

20.13 1. ~~The exterior landing or floors shall be permitted to be no greater~~
20.14 ~~than 7-3/4 inches (196 mm) below the top of the threshold, provided~~
20.15 ~~the door, other than an exterior storm or screen door, does not swing~~
20.16 ~~over the exterior landing.~~

20.17 2. ~~Landings in this subsection are not required for the exterior side of a~~
20.18 ~~door when a stairway that is less than 30 inches (762 mm) in height is~~
20.19 ~~located on the exterior side of the door. The stairway height shall be~~
20.20 ~~measured vertically from the interior floor surface to the finished grade.~~

20.21 3. ~~An exterior landing is not required at a doorway when only a storm or~~
20.22 ~~screen door is installed which does not swing over the exterior landing.~~

20.23 Subp. 2. IRC section R311.7.1, Stairways. Section R311.7.1 is amended to read
20.24 as follows:

20.25 **R311.7.1 Stairways.** All stairways serving a dwelling or accessory structure,
20.26 or any part thereof, shall comply with this section. This shall include exterior

21.1 stairs from a dwelling or garage to grade and those stairs serving decks, porches,
21.2 balconies, sun rooms, and similar structures.

21.3 **Exceptions:**

- 21.4 1. Stairs serving attics or crawl spaces.
21.5 2. Stairs that only provide access to plumbing, mechanical, or electrical
21.6 equipment.

21.7 **Subp. 3. IRC section R311.7.2, Headroom.** Section R311.7.2 is amended to read
21.8 as follows:

21.9 **R311.7.2 Headroom.** The minimum headroom in all parts of the stairway
21.10 shall not be less than 6 feet 8 inches (2032 mm) measured vertically from the
21.11 sloped line adjoining the tread nosing or from the floor surface of the landing or
21.12 platform on that portion of the stairway.

21.13 **Exceptions:**

- 21.14 1. Where the nosings of treads at the side of a flight extend under the
21.15 edge of a floor opening through which the stair passes, the floor opening
21.16 shall be allowed to project horizontally into the required headroom a
21.17 maximum of 4-3/4 inches (121 mm).
21.18 2. The minimum headroom for existing buildings shall be in accordance
21.19 with section R305.2.2.

21.20 **1309.0312 SECTION R312, GUARDS AND WINDOW FALL PROTECTION.**

21.21 **Subpart 1. IRC section R312.1.1, Where required.** Section R312.1.1 is amended
21.22 as follows:

21.23 **R312.1.1 Where required.** Guards shall be located along the open sides of
21.24 floors, stairs, ramps, and landings that are located more than 30 inches (762 mm)
21.25 measured vertically to the floor or grade below. Insect screening shall not be
21.26 considered as a guard.

22.1 Subp. 2. IRC section R312.2, Window fall protection. Section R312.2 is amended
22.2 to read as follows.

22.3 **R312.2 Window fall protection.** Window fall protection shall be provided in
22.4 accordance with sections R312.2.1 and R312.2.2.

22.5 **R312.2.1 Window sills.** In dwelling units, where the lowest part of the opening
22.6 of an operable window is located more than 72 inches (1829 mm) above the
22.7 finished grade or surface below, the lowest part of the window opening shall be a
22.8 minimum of 36 inches (914 mm) above the finished floor of the room in which
22.9 the window is located. Operable sections of windows shall not permit openings
22.10 that allow passage of a 4-inch diameter (102 mm) sphere where such openings
22.11 are located within 36 inches (914 mm) of the finished floor.

22.12 **Exceptions:**

- 22.13 1. Windows with openings that will not allow a 4-inch diameter (102
22.14 mm) sphere to pass through the opening when the window is in its
22.15 largest opened position.
- 22.16 2. Openings that are provided with window fall prevention devices
22.17 that comply with ASTM F 2090.
- 22.18 3. Windows that are provided with window opening control devices
22.19 that comply with section R312.2.2.
- 22.20 4. Replacement windows.

22.21 **R312.2.2 Window opening control devices.** Window opening control devices
22.22 shall comply with ASTM F 2090. The window opening control device, after
22.23 operation to release the control device allowing the window to fully open, shall
22.24 not reduce the minimum net clear opening area of the window unit to less than
22.25 the area required by section R310.1.1.

23.1 **1309.0313 SMOKE ALARMS SECTION R313, AUTOMATIC FIRE SPRINKLER**
23.2 **SYSTEMS.**

23.3 IRC section ~~R313.2.1~~ R313 is amended to read as follows:

23.4 **R313.2.1 Alterations, repairs, or additions.** When alterations, repairs, or
23.5 additions requiring a permit occur, or when one or more sleeping rooms are
23.6 added or created in existing dwellings, the individual dwelling unit shall be
23.7 equipped with smoke alarms located as required for new dwellings, and the
23.8 smoke alarms shall be interconnected and hardwired.

23.9 **Exceptions:**

- 23.10 1. ~~Interconnection and hardwiring of smoke alarms in existing areas~~
23.11 ~~shall not be required to be hardwired where the alterations or repairs~~
23.12 ~~do not result in the removal of interior wall or ceiling finishes exposing~~
23.13 ~~the structure.~~
- 23.14 2. ~~Work on the exterior surfaces of dwellings, such as the replacement~~
23.15 ~~of roofing or siding are exempt from the requirements of this section.~~
- 23.16 3. ~~Permits involving alterations or repairs to plumbing, electrical, and~~
23.17 ~~mechanical are exempt from the requirements of this section.~~

23.18 **R313.1 Townhouse automatic fire sprinkler systems.** An automatic residential fire
23.19 sprinkler system shall be installed in townhouses.

23.20 **Exception:** An automatic residential fire sprinkler system shall not be required
23.21 when additions or alterations are made to existing townhouses that do not have
23.22 an automatic residential fire sprinkler system installed.

23.23 **R313.1.1 Design and installation.** Automatic residential fire sprinkler systems
23.24 for townhouses shall be designed and installed in accordance with IRC section
23.25 P2904 or NFPA 13D.

23.26 **R313.2 One- and two-family dwellings automatic fire systems.** An automatic
23.27 residential fire sprinkler system shall be installed in one- and two-family dwellings.

23.28 **Exceptions:**

24.1 1. Detached one-family dwelling, less than 4500 square feet of floor area.

24.2 Floor area shall include all floors and basements, excluding garages.

24.3 2. An automatic residential fire sprinkler system shall not be required if
24.4 additions, alterations, or repairs are made to existing buildings that do not
24.5 have an automatic residential sprinkler system installed.

24.6 **R313.2.1 Design and installation.** Automatic residential fire sprinkler systems
24.7 shall be designed and installed in accordance with IRC section P2904 or NFPA
24.8 13D.

24.9 **R313.3 Installation requirements.** When an automatic sprinkler system is required
24.10 in one- and two-family dwellings, it shall be installed in accordance with IRC section
24.11 P2904 or NFPA 13D.

24.12 Automatic sprinkler systems required in one- and two-family dwellings and
24.13 townhouse buildings shall be installed in accordance with the following:

24.14 1. Attached garages are required to have one dry head sprinkler located
24.15 within 5 lineal feet of each door installed in the common wall separating
24.16 the dwelling unit and the attached garage;

24.17 2. Attached covered patios, covered decks, covered porches, and similar
24.18 structures are required to have automatic sprinklers with a minimum
24.19 of one dry head for every 20 lineal feet (6.096 m) of common wall
24.20 between the dwelling unit and the covered patio, covered deck, covered
24.21 porch, or similar structure.

24.22 **Exception:** Attached roofs of covered patios, covered decks, covered
24.23 porches, or similar structures that do not exceed 40 square feet (3,716 m²)
24.24 of floor area.

24.25 **R313.4 State-licensed facilities.** One- and two-family dwellings and townhouse
24.26 buildings containing facilities required to be licensed or registered by the state of
24.27 Minnesota shall be provided with an automatic sprinkler system required by the

25.1 applicable licensing provisions of that agency or according to this part, whichever
25.2 is more restrictive.

25.3 **1309.0314 SECTION R314, FOAM PLASTIC SMOKE ALARMS.**

25.4 IRC section ~~R314.5.11~~ R314.3.1 is amended to read as follows:

25.5 ~~**R314.5.11 Sill plate and headers.** Foam plastic shall be permitted to be~~
25.6 ~~spray-applied to a sill plate and header (rim joist) without thermal barrier subject~~
25.7 ~~to all of the following:~~

25.8 ~~1. The maximum thickness of the foam plastic shall not exceed 5-1/2 inches (139.5~~
25.9 ~~mm):~~

25.10 ~~2. The foam plastic shall have a flame spread index of 25 or less and an accompanying~~
25.11 ~~smoke developed index of 450 or less when tested in accordance with ASTM E 84.~~

25.12 **R314.3.1 Alterations, repairs, and additions.** An individual dwelling unit shall
25.13 be equipped with smoke alarms located as required for new dwellings when:

- 25.14 1. alterations, repairs (including installation or replacement of windows or
25.15 doors), or additions requiring a permit occur; or
25.16 2. one or more sleeping rooms are added or created in existing dwellings.

25.17 **Exceptions:**

25.18 1. Work involving the exterior surfaces of dwellings, such as the replacement
25.19 of roofing or siding, or the addition of an open porch or deck, or chimney
25.20 repairs.

25.21 2. Installation, alteration, or repairs of plumbing, electrical, or mechanical
25.22 systems.

25.23 **1309.0315 SECTION R315, CARBON MONOXIDE ALARMS.**

25.24 IRC section R315.1, Carbon monoxide alarms, is amended to read as follows:

25.25 **R315.1 Carbon monoxide alarms.** For new construction, every one-family dwelling
25.26 unit, two-family dwelling unit, and each townhouse dwelling unit shall have an

26.1 approved and operational carbon monoxide alarm installed when one of the following
 26.2 conditions occur:

- 26.3 1. Fuel-fired appliances are installed; or
- 26.4 2. Have attached garages.

26.5 **R315.1.1 Installation.** Carbon monoxide alarms shall be installed outside and
 26.6 not more than 10 feet from each separate sleeping area or bedroom. Alarms shall
 26.7 be installed on each level containing sleeping areas or bedrooms.

26.8 **1309.0323 SECTION R323, STORM SHELTERS.**

26.9 IRC section R323 is deleted in its entirety.

26.10 **1309.0402 SECTION R402, MATERIALS.**

26.11 IRC Table R402.2 is amended to read as follows:

26.12 **TABLE R402.2 MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF**
 26.13 **CONCRETE**

TYPE OR LOCATION OF CONCRETE CONSTRUCTION	MINIMUM SPECIFIED COMPRESSIVE STRENGTH^a (f'_c)		
	Weathering Potential^b		
	Negligible	Moderate	Severe
26.14 <u>Footings^g</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>
26.21 <u>Basement walls,</u> 26.22 <u>foundations, and</u> 26.23 <u>other concrete not</u> 26.24 <u>exposed to the</u> 26.25 <u>weather</u>	<u>2,500</u>	<u>2,500</u>	<u>2,500^c</u>
26.26 <u>Basement slabs and</u> 26.27 <u>interior slabs on</u> 26.28 <u>grade, except garage</u> 26.29 <u>floor slabs</u>	<u>2,500</u>	<u>2,500</u>	<u>2,500^c</u>

27.1	<u>Basement walls, foundation walls, exterior walls, and other vertical concrete work exposed to the weather</u>	<u>2,500</u>	<u>3,000^d</u>	<u>3,000^d</u>
27.2				
27.3				
27.4				
27.5				
27.6				
27.7				
27.8	<u>Porches, carport slabs, and steps exposed to the weather, and garage floor slabs</u>	<u>2,500</u>	<u>3,000^{d, e, f}</u>	<u>3,500^{d, e, f}</u>
27.9				
27.10				
27.11				
27.12				
27.12				

27.13 For SI: 1 pound per square inch = 6.895 kPa.

27.14 a. Strength at 28 days psi.

27.15 b. See Table R301.2(1) for weathering potential.

27.16 c. Concrete in these locations that may be subject to freezing and thawing during
 27.17 construction shall be air-entrained concrete in accordance with Footnote d.

27.18 d. Concrete shall be air-entrained. Total air content (percent by volume of concrete) shall
 27.19 be not less than 5 percent or more than 7 percent.

27.20 e. See section R402.2 for maximum cementitious materials content.

27.21 f. For garage floors with a steel-troweled finish, reduction of the total air content (percent
 27.22 by volume of concrete) to not less than 3 percent is permitted if the specified compressive
 27.23 strength of the concrete is increased to not less than 4,000 psi.

27.24 g. Compressive strength (f'_c) of 2,500 psi, with an approved admixture that provides a
 27.25 water and vapor resistance at least equivalent to 5,000 psi concrete.

27.26 **1309.0403 SECTION R403, FOOTINGS.**

27.27 Subpart 1. **IRC section R403.1.4.1.** ~~IRC~~ Section R403.1.4.1 is amended to read
 27.28 as follows:

27.29 **R403.1.4.1 Frost protection.** ~~Except where otherwise protected from frost,~~
 27.30 Footings shall not bear on frozen soil. Foundation walls, piers, and other

28.1 permanent supports of buildings and structures not otherwise protected from
28.2 frost shall be protected ~~from frost~~ by one or more of the following methods:

- 28.3 1. Extended below the frost line specified in Table R301.2(1);
- 28.4 2. Constructing in accordance with section R403.3;
- 28.5 3. Constructing in accordance with ASCE 32;
- 28.6 4. Erected on solid rock; or
- 28.7 5. Constructing in accordance with Minnesota Rules, chapter 1303.

28.8 **Exception:** Decks not supported by a dwelling need not be
28.9 provided with footings that extend below the frost line.

28.10 Subp. 2. IRC section R403.1.6. IRC Section R403.1.6 is amended to read as follows:

28.11 **R403.1.6 Foundation anchorage.** ~~When braced wall panels are~~ Sill plates and
28.12 walls supported directly on continuous foundations, ~~the wall wood sill plate or~~
28.13 ~~cold-formed steel bottom track~~ shall be anchored to the foundation in accordance
28.14 with this section.

28.15 ~~The Wood sole plate plates at all exterior walls on monolithic slabs and, wood sill~~
28.16 ~~plate sole plates of braced wall panels at building interiors on monolithic slabs, and all~~
28.17 wood sill plates shall be anchored to the foundation with anchor bolts spaced a maximum
28.18 of 6 feet (1829 mm) on center. ~~There shall be a minimum of two bolts per plate section~~
28.19 ~~with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters~~
28.20 ~~from each end of the plate section.~~ Bolts shall be at least ~~1/2-inch~~ 1/2-inch (12.7 mm) in
28.21 diameter and shall extend a minimum of 7 inches (178 mm) into ~~masonry or concrete.~~
28.22 ~~Interior bearing wall sole plates on monolithic slab foundations shall be positively~~
28.23 ~~anchored with approved fasteners~~ or grouted cells of concrete masonry units. A nut and
28.24 washer shall be tightened on each bolt ~~to the plate.~~ Sills There shall be a minimum of two
28.25 bolts per plate section with one bolt located not more than 12 inches (305 mm) or less
28.26 than 7 bolt diameters from each end of the plate section. Interior bearing wall sole plates
28.27 on monolithic slab foundation that are not part of a braced wall panel shall be positively

29.1 anchored with approved fasteners. Sill plates and sole plates shall be protected against
 29.2 decay and termites where required by sections ~~R322~~ R317 and ~~R323~~ R318. Cold-formed
 29.3 steel framing systems shall be fastened to the wood sill plates or anchored directly to the
 29.4 foundation as required in section R505.3.1 or R603.1.1. When vertical reinforcing is
 29.5 required by other sections of this code, the foundation anchor bolts shall align with the
 29.6 reinforcing. All anchor bolts installed in masonry shall be grouted in place with at least ~~1/2~~
 29.7 1-inch (25 mm) of grout between the bolt and the masonry.

29.8 **Exceptions:**

- 29.9 1. Foundation anchor straps spaced as required to provide equivalent
 29.10 anchorage to ~~1/2-inch-diameter~~ 1/2-inch diameter (12.7 mm) anchor
 29.11 bolts. When vertical reinforcing is required by other sections of this
 29.12 code, the foundation anchor straps shall align with the reinforcing.
- 29.13 2. Walls 24 inches (609.6 mm) total length or shorter connecting offset
 29.14 braced wall panels shall be anchored to the foundation with a minimum
 29.15 of one anchor bolt located in the center third of the plate section and
 29.16 shall be attached to adjacent braced wall panels according to Figure
 29.17 R602.10.5 at corners.
- 29.18 3. Walls 12 inches (304.8 mm) total length or shorter connecting offset
 29.19 braced wall panels shall be permitted to be connected to the foundation
 29.20 without anchor bolts. The wall shall be attached to adjacent braced wall
 29.21 panels according to Figure R602.10.5 at corners.

29.22 **1309.0404 SECTION R404, FOUNDATION AND RETAINING WALLS.**

29.23 Subpart 1. IRC section R404.1. ~~IRC Section R404.1, Items 4 and 5, are~~ is amended
 29.24 to read as follows:

29.25 ~~4. Floor shall be blocked perpendicular to the floor joists. Blocking shall be full depth~~
 29.26 ~~within three joist spaces of the foundation wall.~~

30.1 ~~5. Where foundation walls support unbalanced load on opposite sides of the building,~~
30.2 ~~such as a daylight basement, the rim board shall be attached to the sill with a 20-gage~~
30.3 ~~metal angle clip at 24 inches on center, with five 8d nails per leg, or an approved connector~~
30.4 ~~supplying 230 pounds per linear foot capacity.~~

30.5 **R404.1 Concrete and masonry foundation walls.** Concrete foundation walls shall
30.6 be selected and constructed in accordance with the provisions of section R404.1.2.
30.7 Masonry foundation walls shall be selected and constructed in accordance with the
30.8 provisions of section R404.1.1. Concrete and masonry foundation walls shall be
30.9 laterally supported at the top and bottom. Foundation walls that meet all of the
30.10 following shall be considered laterally supported:

- 30.11 1. Full basement floor shall be 3.5 inches (89 mm) thick concrete slab poured
30.12 tight against the bottom of the foundation wall.
- 30.13 2. Floor joists and blocking shall be connected to the sill plate at the top of
30.14 wall with an approved connector with listed capacity meeting the top of wall
30.15 reaction in Table R404.1(1). Maximum spacing of floor joists shall be 24 inches
30.16 on center. Spacing of blocking shall be in accordance with Table R404.1(1).
- 30.17 3. Bolt spacing for the sill plate shall be no greater than the requirements in
30.18 Table R404.1(1).
- 30.19 4. The floor shall be blocked perpendicular to the floor joists. Blocking shall be
30.20 full depth within three joist spaces of the foundation wall. Floor sheathing shall
30.21 be fastened to blocking in accordance with Table R602.3(1).
- 30.22 5. Where foundation walls support unbalanced load on opposite sides of the
30.23 building, such as a daylight basement, the rim board shall be attached to the sill
30.24 with a 20-gage metal angle clip at 24 inches on center, with five 8d nails per leg,
30.25 or an approved connector supplying 230 pounds per lineal foot capacity.

31.1 **Exception:** Cantilevered concrete and masonry foundation walls that do not
 31.2 have permanent lateral support at the top shall be constructed according to Table
 31.3 R404.1.1(5), Table R404.1.1(6), or Table R404.1.1(7).

31.4 Subp. 2. IRC Table R404.1(2)(1). IRC Table R404.1(2) is amended to read Section
 31.5 R404.1 is amended by adding Table R404.1(1) as follows:

31.6 TABLE R404.1(2)(1)

31.7 MAXIMUM ANCHOR BOLT AND BLOCKING SPACING FOR SUPPORTED
 31.8 FOUNDATION WALL

31.9					1/2"	Spacing of	
31.10		Max.		Top of	diameter	Blocking	
31.11	Max.	Unbalanced		Wall	Anchor Bolt	Perpendicular	
31.12	Wall	Backfill	Soil Classes	Soil Load Reaction	Spacing	To Floor	
31.13	Height	Height		(pcf/ft)	(inches) ^a	Joists	
31.14				(plf) ^b		(inches)	
31.15			GW, GP, SW, & SP	30	250	72	<u>60</u>
31.16			GM, GC, SM-SC,				
31.17	8'-0"	7'-4"	& ML	45	370	72	<u>40</u>
31.18			SC, MH, ML-CL,				
31.19			& I-CL	60	490	48	<u>30</u>
31.20			GW, GP, SW, & SP	30	320	72	<u>48</u>
31.21			GM, GC, SM-SC,				
31.22	9'-0"	8'-4"	& ML	45	480	48	<u>32</u>
31.23			SC, MH, ML-CL,				
31.24			& I-CL	60	640	40	<u>24</u>

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

31.26 ^a Sill plate shall be 2 x 6 minimum. Anchor bolt shall be minimum 0.5" diameter
 31.27 cast-in-place with 7" embed. Anchor bolt shall have a 2" diameter by 0.125" thick washer
 31.28 tightened and countersunk 0.25" into the top of the sill plate.

31.29 ^b Minimum load to be used for sizing of accepted anchors or fasteners if bolts are not used.

31.30 Subp. 3. [See repealer.]

32.1 Subp. 4. [See repealer.]

32.2 Subp. 5. [See repealer.]

32.3 Subp. 6. **IRC Table R404.1.1(6)(5)**. IRC Section R404 is amended by adding
 32.4 a new table as follows:

32.5 TABLE R404.1.1(6)(5)

32.6 CANTILEVERED CONCRETE AND MASONRY FOUNDATION WALLS

32.7 32.8 32.9 32.10 32.11 32.12	Maximum Unbalanced Maximum Backfill Wall Height ^j (feet)	Backfill Height ^e (feet)	Minimum Vertical Reinforcement Size and Spacing for 8-Inch Nominal Wall Thickness ^{a,b,c,e,f,i,k}		
			Soil Classes ^d		
32.13 32.14			GW, GP, SW, and SP	GM, GC, SM, SM-SC, and ML	SC, MH, ML-CL, and inorganic CL
32.15	4	3	None required	None required	None required
32.16		4	None required	None required	No. 4 @ 72 in. o.c.
32.17	5	3	None required	None required	None required
32.18 32.19		4	No. 4 @ 72 in. o.c.	No. 4 @ 56 in. o.c. ^h	No. 4 @ 40 in. o.c. ^g
32.20 32.21		5	No. 4 @ 72 in. o.c.	No. 4 @ 56 in. o.c. ^h	No. 4 @ 40 in. o.c. ^g

32.22 a. Mortar shall be Type M or S and masonry shall be laid in running bond. Minimum unit
 32.23 compressive strength is 1,900 psi.

32.24 b. Alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area
 32.25 of reinforcement per lineal foot of wall shall be permitted provided the spacing of the
 32.26 reinforcement does not exceed 72 inches.

32.27 c. Vertical reinforcement shall be Grade 60 minimum. The distance from the face of the soil
 32.28 side of the wall to the center of vertical reinforcement shall be no greater than 2.5 inches.

32.29 d. Soil classes are in accordance with the Unified Soil Classification System. Refer to
 32.30 Table R405.1.

- 33.1 e. Interior concrete floor slab-on-grade shall be placed tight to the wall. The exterior grade
33.2 level shall be 6 inches minimum below the top of wall. Maximum height from top of
33.3 slab-on-grade to bottom of floor joists is 10 feet, 0 inches. Unbalanced backfill height
33.4 is the difference in height of the exterior finish ground levels and the top of the interior
33.5 concrete slab-on-grade.
- 33.6 f. Minimum footing size of 20 inches by 8 inches shall be placed on soil with a bearing
33.7 capacity of 2,000 psf. Minimum concrete compressive strength of footing shall be 3,000
33.8 psi.
- 33.9 g. Provide propped cantilever wall: top of footing shall be 16 inches below the bottom of
33.10 the concrete floor slab minimum.
- 33.11 h. Provide #5 Grade 60 dowels, 1 foot, 6 inches long, to connect footing to wall. Embed
33.12 dowel 5 inches into footing. Place dowels in center of wall thickness spaced at 32 inches
33.13 ~~e.e.~~ on center maximum. No dowels are required where length of the foundation wall
33.14 between perpendicular walls is two times the foundation wall height or less.
- 33.15 i. This table is applicable where the length of the foundation wall between perpendicular
33.16 walls is 35 feet or less, or where the length of the foundation laterally supported on only
33.17 one end by a perpendicular wall is 17 feet or less.
- 33.18 j. Maximum wall height is measured from top of the foundation wall to the bottom of the
33.19 interior concrete slab-on-grade.
- 33.20 k. Install foundation anchorage per section R403.1.6.

33.21 Subp. 7. **IRC Table R404.1.1(7)(6)**. ~~IRC~~ Section R404 is amended by adding
33.22 a new table as follows:

33.23 TABLE R404.1.1(7)(6)

33.24 CANTILEVERED CONCRETE AND MASONRY FOUNDATION WALLS

34.1	Maximum		Minimum Vertical Reinforcement Size and Spacing for 10-Inch		
34.2	Maximum Unbalanced		Nominal Wall Thickness ^{a,b,c,e,f,i,k}		
34.3	Wall Backfill				
34.4	Height ^j	Height ^e			
34.5	(feet)	(feet)			
34.6	Soil Classes ^d				
34.7			GW, GP, SW, and SP	GM, GC, SM, SM-SC, and ML	SC, MH, ML-CL, and inorganic CL
34.8					
34.9	4	3	None required	None required	None required
34.10		4	None required	None required	None required
34.11	5	3	None required	None required	None required
34.12		4	None required	No. 4 @ 72 in. o.c.	No. 4 @ 64 in. o.c. ^g
34.13					
34.14		5	No. 4 @ 72 in. o.c.	No. 4 @ 72 in. o.c.	No. 4 @ 56 in. o.c. ^g
34.15					
34.16	6	3	None required	No. 4 @ 72 in. o.c.	No. 4 @ 72 in. o.c.
34.17		4	No. 4 @ 72 in. o.c.	No. 4 @ 72 in. o.c.	No. 4 @ 64 in. o.c. ^h
34.18					
34.19		5	No. 4 @ 64 in. o.c. ^h	No. 4 @ 40 in. o.c. ^{g,h}	No. 5 @ 48 in. o.c. ^{g,h}
34.20					
34.21		6	No. 4 @ 64 in. o.c. ^h	No. 4 @ 40 in. o.c. ^{g,h}	No. 5 @ 48 in. o.c. ^{g,h}
34.22					

34.23 a. Mortar shall be Type M or S and masonry shall be laid in running bond. Minimum unit
34.24 compressive strength is 1,900 psi.

34.25 b. Alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area
34.26 of reinforcement per lineal foot of wall shall be permitted provided the spacing of the
34.27 reinforcement does not exceed 72 inches.

34.28 c. Vertical reinforcement shall be Grade 60 minimum. The distance from the face of the soil
34.29 side of the wall to the center of vertical reinforcement shall be no greater than 2.5 inches.

34.30 d. Soil classes are in accordance with the Unified Soil Classification System. Refer to
34.31 Table R405.1.

- 35.1 e. Interior concrete slab-on-grade shall be placed tight to the wall. The exterior grade
35.2 level shall be 6 inches minimum below the top of wall. Maximum height from top of
35.3 slab-on-grade to bottom of floor joists is 10 feet, 0 inches. Unbalanced backfill height
35.4 is the difference in height of the exterior finish ground levels and the top of the interior
35.5 concrete slab-on-grade.
- 35.6 f. Minimum footing size of 20 inches by 8 inches shall be placed on soil with a bearing
35.7 capacity of 2,000 psf. Minimum concrete compressive strength of footing shall be 3,000
35.8 psi.
- 35.9 g. Provide propped cantilever wall: top of footing shall be 16 inches below the bottom of
35.10 the concrete floor slab minimum.
- 35.11 h. Provide #5 Grade 60 dowels, 1 foot, 6 inches long, to connect footing to wall. Embed
35.12 dowel 5 inches into footing. Place dowels in center of wall thickness spaced at 32 inches
35.13 ~~o.e. on center~~ maximum. No dowels are required where length of the foundation wall
35.14 between perpendicular walls is two times the foundation wall height or less.
- 35.15 i. This table is applicable where the length of the foundation wall between perpendicular
35.16 walls is 35 feet or less, or where the length of the foundation laterally supported on only
35.17 one end by a perpendicular wall is 17 feet or less.
- 35.18 j. Maximum wall height is measured from top of the foundation wall to the bottom of the
35.19 interior concrete slab-on-grade.
- 35.20 k. Install foundation anchorage per section R403.1.6.

35.21 Subp. 8. **IRC Table R404.1.1(8)(7)**. IRC Section R404 is amended by adding
35.22 a new table as follows:

35.23 TABLE R404.1.1(8)(7)

35.24 CANTILEVERED CONCRETE AND MASONRY FOUNDATION WALLS

36.1	Maximum				
36.2	Maximum	Unbalanced			
36.3	Wall	Backfill			
36.4	Height ⁱ	Height ^e	Minimum Vertical Reinforcement Size and Spacing for 12-Inch		
36.5	(feet)	(feet)	Nominal Wall Thickness ^{a,b,c,e,f,i,k}		
36.6	Soil Classes ^d				
36.7		GW, GP, SW, and SP	GM, GC, SM,	SC, MH, ML-CL,	
36.8			SM-SC, and ML	and inorganic CL	
36.9	4	3	None required	None required	None required
36.10		4	None required	None required	None required
36.11	5	3	None required	None required	None required
36.12		4	None required	None required	No. 4 @ 72 in. o.c.
36.13		5	No. 4 @ 72 in. o.c.	No. 4 @ 72 in. o.c.	No. 4 @ 72 in. o.c.
36.14	6	3	None required	None required	None required
36.15		4	None required	None required	No. 4 @ 72 in. o.c.
36.16		5	No. 4 @ 72 in. o.c.	No. 4 @ 56 in. o.c. ^h	No. 4 @ 40 in. o.c. ^g
36.17					
36.18		6	No. 4 @ 72 in. o.c.	No. 4 @ 56 in. o.c. ^g	No. 4 @ 32 in. o.c. ^{g,h}
36.19					
36.20	7	3	None required	None required	None required
36.21		4	None required	No. 4 @ 72 in. o.c.	No. 4 @ 72 in. o.c.
36.22		5	No. 4 @ 72 in. o.c.	No. 4 @ 56 in. o.c. ^h	No. 4 @ 40 in. o.c. ^g
36.23					
36.24		6	No. 4 @ 48 in. o.c. ^h	No. 5 @ 48 in. o.c. ^{g,h}	No. 6 @ 48 in. o.c. ^{g,h}
36.25					
36.26		7	No. 4 @ 48 in. o.c. ^h	No. 5 @ 40 in. o.c. ^{g,h}	No. 6 @ 48 in. o.c. ^{g,h}
36.27					

36.28 a. Mortar shall be Type M or S and masonry shall be laid in running bond. Minimum unit
 36.29 compressive strength is 1,900 psi.

36.30 b. Alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area
 36.31 of reinforcement per lineal foot of wall shall be permitted provided the spacing of the
 36.32 reinforcement does not exceed 72 inches.

- 37.1 c. Vertical reinforcement shall be Grade 60 minimum. The distance from the face of the
37.2 soil side of the wall to the center of vertical reinforcement shall be no greater than 3 inches.
- 37.3 d. Soil classes are in accordance with the Unified Soil Classification System. Refer to
37.4 Table R405.1.
- 37.5 e. Interior concrete slab-on-grade shall be placed tight to the wall. The exterior grade
37.6 level shall be 6 inches minimum below the top of wall. Maximum height from top of
37.7 slab-on-grade to bottom of floor joists is 10 feet, 0 inches. Unbalanced backfill height
37.8 is the difference in height of the exterior finish ground levels and the top of the interior
37.9 concrete slab-on-grade.
- 37.10 f. Minimum footing size of 20 inches by 8 inches shall be placed on soil with a bearing
37.11 capacity of 2,000 psf. Minimum concrete compressive strength of footing shall be 3,000
37.12 psi.
- 37.13 g. Provide propped cantilever wall: top of footing shall be 16 inches below the bottom of
37.14 the concrete floor slab minimum.
- 37.15 h. Provide #5 Grade 60 dowels, 1 foot, 6 inches long, to connect footing to wall. Embed
37.16 dowel 5 inches into footing. Place dowels in center of wall thickness spaced at 32 inches
37.17 ~~o-e:~~ on center maximum. No dowels are required where length of the foundation wall
37.18 between perpendicular walls is two times the foundation wall height or less.
- 37.19 i. This table is applicable where the length of the foundation wall between perpendicular
37.20 walls is 35 feet or less, or where the length of the foundation laterally supported on only
37.21 one end by a perpendicular wall is 17 feet or less.
- 37.22 j. Maximum wall height is measured from top of the foundation wall to the bottom of the
37.23 interior concrete slab-on-grade.
- 37.24 k. Install foundation anchorage per section R403.1.6.

37.25 Subp. 9. **IRC section R404.1.3.** ~~IRC~~ Section R404.1.3 is amended by adding the
37.26 following exception to condition 2:

38.1 **Exception:** Cantilevered concrete and masonry foundation walls constructed in
38.2 accordance with Table R404.1.1(6)(5), R404.1.1(7)(6), or R404.1.1(8)(7).

38.3 **1309.0406 SECTION R406, FOUNDATION WATERPROOFING AND**
38.4 **DAMPPROOFING.**

38.5 Subpart 1. **IRC section R406.1.** ~~IRC Section R406.1 is amended to read as follows:~~
38.6 deleted in its entirety.

38.7 ~~**R406.1 Concrete and masonry foundation dampproofing.** Except where required~~
38.8 ~~by Section R406.2 to be waterproofed, foundation walls that retain earth and enclose~~
38.9 ~~interior spaces and floors below grade shall be dampproofed at a minimum from the~~
38.10 ~~top of the footing to the finished grade. Masonry walls shall be parged with not less~~
38.11 ~~than 3/8-inch (9.5 mm) portland cement parging applied to the exterior of the wall.~~
38.12 ~~The parging shall be dampproofed in accordance with one of the following:~~

- 38.13 ~~1. Bituminous coating.~~
38.14 ~~2. 3 pounds per square yard (1.63 kg/m²) of acrylic-modified cement.~~
38.15 ~~3. 1/8-inch (3.2 mm) coat of surface-bonding cement complying with ASTM C 887.~~
38.16 ~~4. Any material permitted for waterproofing in Section R406.2.~~
38.17 ~~5. Other approved methods or materials.~~

38.18 ~~**Exception:** Parging of unit masonry walls is not required where a material is~~
38.19 ~~approved for direct application to the masonry.~~

38.20 ~~Concrete walls shall be dampproofed by applying any one of the above-listed~~
38.21 ~~dampproofing materials or any one of the waterproofing materials listed in Section R406.2~~
38.22 ~~to the exterior of the wall.~~

38.23 Subp. 2. **IRC section R406.2.** ~~IRC Section R406.2 is amended to read as follows:~~

38.24 **R406.2 Concrete and masonry foundation waterproofing.**

38.25 ~~In all soils groups other than Group 1 soils in accordance with Table R405.1, Exterior~~
38.26 ~~foundation walls that retain earth and enclose below grade interior spaces and, floors~~
38.27 ~~below grade, and crawl spaces shall be waterproofed. Waterproofing shall be installed~~

39.1 at a minimum from the top of the footing to the finished grade or in accordance with
 39.2 the manufacturer's installation instructions. Walls shall be waterproofed in accordance
 39.3 with one of the following:

- 39.4 1. 2-ply hot-mopped felts.
- 39.5 2. 55 pound (25 kg) roll roofing.
- 39.6 3. ~~6-mil~~ 6-mil (0.15 mm) polyvinyl chloride.
- 39.7 4. ~~6-mil~~ 6-mil (0.15 mm) polyethylene.
- 39.8 5. 40-mil (1 mm) polymer-modified asphalt.
- 39.9 6. 60-mil (1.5 mm) flexible polymer cement.
- 39.10 7. 1/8-inch cement based, fiber reinforced, waterproof coating.
- 39.11 8. 60-mil (1.5 mm) solvent free liquid applied synthetic rubber.

39.12 **Exception:** Organic solvent-based products such as hydrocarbons,
 39.13 chlorinated hydrocarbons, ketones, and esters shall not be used for ICF walls
 39.14 with expanded polystyrene form material. Use of plastic roofing cements,
 39.15 acrylic coatings, latex coatings, mortars, and pargings are permitted to be
 39.16 used to seal ICF walls is permitted. Cold-setting asphalt or hot asphalt
 39.17 shall conform to Type C of ASTM D 449. Hot asphalt shall be applied at a
 39.18 temperature of less than ~~200 degrees~~ 200° F (90° C).

39.19 All joints in membrane waterproofing shall be lapped and sealed with an adhesive
 39.20 compatible with the membrane.

39.21 **1309.0602 SECTION R602, WOOD WALL FRAMING.**

39.22 Subpart 1. **IRC Table R602.3.1.** ~~IRC~~ Table R602.3.1 is amended to read as follows:

39.23 TABLE R602.3.1

39.24 MAXIMUM ALLOWABLE LENGTH OF WOOD WALL STUDS EXPOSED TO
 39.25 WIND SPEEDS OF 90 MPH OR LESS^{b,c,d,e,f,g,h,i}

39.26 Where conditions are not within the parameters
 39.27 of footnotes b, c, d, e, f, g, h, and i,

40.1 design is required.

40.2 ROOF SPANS UP TO 22' SUPPORTING A ROOF ONLY

40.3	40.4	40.5	40.6			
Maximum	Exposure		On-Center Spacing (inches)			
Wall Height	Category ^{h,i}		24	16	12	8
(feet)						
40.8	10	B	2x6	2x4	2x4	2x4
40.9		C	2x6	2x6	2x4	2x4
40.10	12	B	2x6	2x6	2x4	2x4
40.11		C	2x6	2x6	2x6	2x4
40.12	14	B	2x6	2x6	2x6	2x4
40.13		C	2x6	2x6	2x6	2x6
40.14	16	B	2x8	2x6	2x6	2x6
40.15		C	2x8	2x6	2x6	2x6
40.16	18	B	2x8	2x8	2x6	2x6
40.17		C	2x8	2x8	2x6	2x6
40.18	20	B	2x8	2x8	2x8	2x6
40.19		C	NA ^a	2x8	2x8	2x6
40.20	24	B	NA ^a	2x8	2x8	2x8
40.21		C	NA ^a	NA ^a	2x8	2x8

40.23 ROOF SPANS GREATER THAN 22' AND UP TO 26' SUPPORTING A ROOF ONLY

40.24	40.25	40.26	40.27			
Maximum	Exposure		On-Center Spacing (inches)			
Wall Height	Category ^{h,i}		24	16	12	8
(feet)						
40.29	10	B	2x6	2x6	2x4	2x4
40.30		C	2x6	2x6	2x6	2x4
40.31	12	B	2x6	2x6	2x6	2x4

41.1		C	2x8	2x6	2x6	2x6
41.2	14	B	2x6	2x6	2x6	2x6
41.3		C	2x8	2x8	2x6	2x6
41.4	16	B	2x8	2x6	2x6	2x6
41.5		C	2x8	2x8	2x6	2x6
41.6	18	B	2x8	2x8	2x6	2x6
41.7		C	NA ^a	2x8	2x8	2x6
41.8	20	B	NA ^a	2x8	2x8	2x6
41.9		C	NA ^a	NA ^a	2x8	2x8
41.10	24	B	NA ^a	NA ^a	2x8	2x8
41.11		C	NA ^a	NA ^a	NA ^a	2x8

41.12

41.13 ROOF SPANS GREATER THAN 26' AND UP TO 30' SUPPORTING A ROOF ONLY

41.14 Maximum

41.15 Wall Height

Exposure
Category^{h,i}

(feet)

On-Center Spacing (inches)

41.16 24 16 12 8

41.17

41.18 41.19 10 B 2x6 2x6 2x4 2x4

41.20 C 2x6 2x6 2x6 2x4

41.21 12 B 2x6 2x6 2x6 2x4

41.22 C 2x8 2x6 2x6 2x6

41.23 14 B 2x8 2x6 2x6 2x6

41.24 C 2x8 2x8 2x6 2x6

41.25 16 B 2x8 2x6 2x6 2x6

41.26 C 2x8 2x8 2x8 2x6

41.27 18 B 2x8 2x8 2x6 2x6

41.28 C NA^a 2x8 2x8 2x841.29 20 B NA^a 2x8 2x8 2x641.30 C NA^a NA^a 2x8 2x8

42.1	24	B	NA ^a	NA ^a	2x8	2x8
42.2		C	NA ^a	NA ^a	NA ^a	2x8

42.3

42.4 ROOF SPANS GREATER THAN 30' AND UP TO 34' SUPPORTING A ROOF ONLY

42.5 Maximum

42.6 Wall Height Exposure
42.7 (feet) Category^{h,i} On-Center Spacing (inches)

42.8			24	16	12	8
42.9						
42.10	10	B	2x6	2x6	2x4	2x4
42.11		C	2x6	2x6	2x6	2x4
42.12	12	B	2x6	2x6	2x6	2x4
42.13		C	2x8	2x6	2x6	2x6
42.14	14	B	2x8	2x6	2x6	2x6
42.15		C	2x8	2x8	2x6	2x6
42.16	16	B	2x8	2x8	2x6	2x6
42.17		C	NA ^a	2x8	2x8	2x6
42.18	18	B	2x8	2x8	2x6	2x6
42.19		C	NA ^a	NA ^a	2x8	2x8
42.20	20	B	NA ^a	2x8	2x8	2x6
42.21		C	NA ^a	NA ^a	2x8	2x8
42.22	24	B	NA ^a	NA ^a	2x8	2x8
42.23		C	NA ^a	NA ^a	NA ^a	2x8

42.24 a. Design required.

42.25 b. Applicability of these tables assumes the following: SPF#2 or better, Ground snow =
42.26 60 psf, Roof snow = 42 psf, Component and Cladding Zone 4 - 50 square feet (Exposure
42.27 B = 14.3 psf, Exposure C = 18.4 psf), eaves not greater than 2.0 feet in dimension.

42.28 c. The exterior of the wall shall be continuously sheathed in accordance with one of the
42.29 ~~methods (2-8) listed in Section R602.10.3.~~ materials listed in items 32 to 38 in Table

- 43.1 R602.3(1), including the prescribed fastening. All wall bracing requirements shall be in
43.2 accordance with R602.10.
- 43.3 d. Studs shall be continuous full height. Where studs do not extend full height due to a wall
43.4 opening, full height studs shall be provided on each side of the opening, equal in number
43.5 to the spacing of the required full height studs multiplied by half the width of the opening,
43.6 plus one stud. Where multiple openings occur adjacent to one another, framing between
43.7 openings shall include the total of all full height studs required for both openings combined.
- 43.8 e. Full depth blocking is required at 10-foot spacing maximum.
- 43.9 f. Utility, standard, stud, and No. 3 grade lumber of any species are not permitted.
- 43.10 g. This table is based on a maximum allowable deflection limit of L/120.
- 43.11 ~~h. Exposure B-Urban and suburban areas, wooded areas, or other terrain with numerous~~
43.12 ~~closely spaced obstructions having the size of single-family dwellings or larger. Exposure~~
43.13 ~~B shall be assumed unless the site meets the definition of another type exposure.~~
- 43.14 ~~i. Exposure C - Open terrain with scattered obstructions, including surface undulations or~~
43.15 ~~other irregularities, having heights generally less than 30 feet extending more than 1,500~~
43.16 ~~feet from the building site in any quadrant. This category includes flat open country,~~
43.17 ~~grasslands, and shorelines in hurricane prone regions. Exposure C shall also apply to any~~
43.18 ~~building located within Exposure B type terrain where the building is directly adjacent to~~
43.19 ~~open areas of Exposure C type terrain in any quadrant for a distance of more than 600 feet.~~

43.20 Subp. 2. IRC section R602.10.11. Section R602.10.11 is amended to read as follows:

43.21 **R602.10.11 Cripple wall bracing.** Cripple walls shall be constructed in
43.22 accordance with section R602.9 and braced in accordance with this section.
43.23 Cripple walls shall be braced with the length and method of bracing used for
43.24 the wall above in accordance with Tables R602.10.3(1) and R602.10.3(3),
43.25 and the applicable adjustment factors in Table R602.10.3(2) or R602.10.3(4),
43.26 respectively, except that the length of cripple wall bracing shall be multiplied by
43.27 a factor of 1.15.

44.1 **1309.0612 SECTION R612, EXTERIOR WINDOWS AND DOORS.**

44.2 IRC section R612.1 is amended to read as follows:

44.3 **R612.1 General.** This section prescribes performance and construction requirements
 44.4 for exterior windows and doors installed in walls. Windows and doors shall be
 44.5 installed in accordance with the fenestration manufacturer's written installation
 44.6 instructions. Window and door openings shall be flashed in accordance with section
 44.7 R703.8. Written installation instructions shall be provided by the fenestration
 44.8 manufacturer for each window or door.

44.9 **1309.0702 SECTION R702, INTERIOR COVERING.**

44.10 Subpart 1. IRC Table R702.1(3). Table R702.1(3) is amended to read as follows:

44.11 TABLE R702.1(3)

44.12 CEMENT PLASTER PROPORTIONS, PARTS BY VOLUME

<u>COAT</u>	<u>CEMENT PLASTER TYPE</u>	<u>CEMENTITIOUS MATERIALS</u>				<u>VOLUME OF AGGREGATE PER SUM OF SEPARATE VOLUMES OF CEMENTI- TIOUS MATERIALS^b</u>
		<u>Portland Cement Type I, II or III or Blended Cement Type IP, I(PM), IS or I(SM)</u>	<u>Plastic Cement</u>	<u>Masonry Cement Type M, S or N</u>	<u>Lime</u>	
<u>First</u>	<u>Portland or blended</u>	<u>1</u>			<u>3/4 - 1-1/2^a</u>	<u>2-1/2 - 4</u>
	<u>Masonry</u>			<u>1</u>		<u>2-1/2 - 4</u>
	<u>Plastic</u>		<u>1</u>			<u>2-1/2 - 4</u>
<u>Second</u>	<u>Portland or blended</u>	<u>1</u>			<u>3/4 - 1-1/2</u>	<u>3 - 5</u>
	<u>Masonry</u>			<u>1</u>		<u>3 - 5</u>
	<u>Plastic</u>		<u>1</u>			<u>3 - 5</u>
	<u>Portland or blended</u>	<u>1</u>			<u>3/4 - 2</u>	<u>1-1/2 - 3</u>

45.1	<u>Finish</u>	<u>Masonry</u>		<u>1</u>		<u>1-1/2 - 3</u>
45.2		<u>Plastic</u>		<u>1</u>		<u>1-1/2 - 3</u>

45.3 For SI: 1 inch = 25.4 mm, 1 pound = 0.545 kg.

45.4 a. Lime by volume of 0 to 3/4 shall be used when the plaster will be placed over
 45.5 low-absorption surfaces such as dense clay tile or brick.

45.6 b. The same or greater sand proportion shall be used in the second coat than used in
 45.7 the first coat.

45.8 Subp. 2. IRC section R702.7 Vapor retarders. Section R702.7 is amended to
 45.9 read as follows:

45.10 R702.7 Vapor retarders. A Class I or II vapor retarder is required on the interior
 45.11 side of frame walls in Climate Zones 6 and 7. Class II vapor retarders are permitted
 45.12 only when specified on the construction documents.

45.13 **1309.0703 SECTION R703, EXTERIOR COVERING.**

45.14 Subpart 1. [Repealed, 32 SR 12]

45.15 Subp. 2. [Repealed, 32 SR 12]

45.16 Subp. 2a. IRC section R703.2 Water-resistive barrier. Section R703.2 is amended
 45.17 to read as follows:

45.18 R703.2 Water-resistive barrier. One layer of No. 15 asphalt felt, free from holes and
 45.19 breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive
 45.20 barrier shall be applied over studs or sheathing of all exterior walls. Such felt or
 45.21 material shall be applied horizontally, with the upper layer lapped over the lower
 45.22 layer not less than 2 inches (51 mm). The water-resistive barrier shall overlap the
 45.23 flashings required in section R703.8 not less than 2 inches (51 mm). Where joints
 45.24 occur in the water-resistive barrier or flashing, the joints shall be lapped not less than
 45.25 6 inches (152 mm). The felt or other approved material shall be continuous up to the
 45.26 underside of the rafter or truss top chord and terminated at penetrations and building

46.1 appendages in a manner to meet the requirements of the exterior wall envelope as
46.2 described in section R703.1.

46.3 **Exception:** Omission of the water-resistive barrier is permitted in the following
46.4 situations:

46.5 1. In detached accessory buildings.

46.6 2. Under exterior wall finish materials as permitted in Table R703.4.

46.7 3. Under paperbacked stucco lath when the paper backing is an approved
46.8 water-resistive barrier.

46.9 Subp. 3. IRC section R703.6. ~~IRC~~ Section R703.6 is amended to read as follows:
46.10 **R703.6 Exterior plaster.** Installation of these materials shall be in compliance with
46.11 ASTM C 926-98a and ASTM C 1063-03 and provisions of this code.

46.12 **R703.6.1 Lath.** All lath and lath attachments shall be of corrosion-resistant
46.13 materials. Expanded metal or woven wire lath shall be attached with 11 gage
46.14 nails having a 7/16-inch (11.1 mm) head or 16 gage staples, spaced at no more
46.15 than 6 inches (152 mm) or as otherwise approved. Nails or staples shall penetrate
46.16 wood framing support members not less than 3/4-inch (19 mm).

46.17 **R703.6.1.1 Control joints and expansion joints.** Provisions for the control
46.18 of expansion shall be determined by the exterior plaster application designer.
46.19 ASTM C 1063 sections 7.11.4 - 7.11.4.4 do not apply.

46.20 **R703.6.2 Plaster.** Plastering with portland cement plaster shall be not less than
46.21 three coats when applied over metal lath or wire lath and shall be not less than
46.22 two coats when applied over masonry, concrete, pressure-preservative treated
46.23 wood, or decay-resistant wood as specified in section R317.1 or gypsum backing.
46.24 If the plaster surface is completely covered by veneer or other facing material or
46.25 is completely concealed, plaster application need be only two coats, provided
46.26 the total thickness is as set forth in Table R702.1(1).

47.1 On wood-frame construction with an on-grade floor slab system, exterior plaster
47.2 shall be applied to cover, but not extend below, lath, paper, and screed.

47.3 The proportion of aggregate to cementitious materials shall be as set forth in
47.4 Table R702.1(3).

47.5 **R703.6.2.1 Weep screeds.** A minimum 0.019-inch (0.5 mm) (No. 26
47.6 galvanized sheet gage), corrosion-resistant weep screed or plastic weep
47.7 screed, with a minimum vertical attachment flange of 3-1/2 inches (89
47.8 mm) shall be provided at or below the foundation plate line on exterior
47.9 stud walls in accordance with ASTM C 1063-03. The weep screed shall be
47.10 placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51
47.11 mm) above paved areas and shall be of a type that will allow trapped water
47.12 to drain to the exterior of the building. The weather-resistant barrier shall
47.13 lap the attachment flange. The exterior lath shall cover and terminate on the
47.14 attachment flange of the weep screed.

47.15 ~~**R703.6.1.3 Control joints and expansion joints.** Provisions for the control~~
47.16 ~~of expansion shall be determined by the exterior plaster application designer.~~
47.17 ~~ASTM C 1063-03 sections 7.114 - 7.114.4 do not apply.~~

47.18 **R703.6.3 Water-resistive barriers.** Water-resistive barriers shall be installed as
47.19 required in section R703.2 and, where applied over wood-based sheathing, shall
47.20 include two layers of a water-resistive vapor-permeable barrier. Each layer shall
47.21 meet both of the following requirements:

- 47.22 1. A water resistance of not less than that of 60-minute Grade D paper;
47.23 or a minimum hydrostatic head of 23-31/32 inches (60.9 cm) when tested
47.24 in accordance with hydrostatic pressure test method AATCC 127-1998
47.25 2008; or a minimum water transudation time of 60 minutes when tested
47.26 in accordance with ASTM D-779.

48.1 2. A water vapor permeance of not less than that of No. 15 felt; or a
48.2 minimum permeance rating of 8.5 gr/h.ft.² in Hg (US perm) (4.9×10^{10}
48.3 kg/Pa.s.m²) when tested in accordance with Procedure B of ASTM E96.

48.4 **Exception:** One layer of water-resistive barrier complying with R703.2
48.5 is permitted when a drainage space that allows bulk water to flow freely
48.6 behind the cladding is provided.

48.7 **R703.6.4 Application.** Each coat shall be kept in a moist condition for at
48.8 least 48 hours prior to application of the next coat.

48.9 **Exception:** Applications installed in accordance with ASTM C 926. The second coat
48.10 is permitted to be applied as soon as the first coat has attained sufficient rigidity to
48.11 receive the second coat.

48.12 **R703.6.5 Curing.** The finish coat for two-coat cement plaster shall not be
48.13 applied sooner than seven days after application of the first coat. For three-coat
48.14 cement plaster, the second coat shall not be applied sooner than 48 hours after
48.15 application of the first coat, except as required in section R703.6.4. The finish
48.16 coat for three-coat cement plaster shall not be applied sooner than seven days
48.17 after application of the second coat.

48.18 Subp. 3a. [See repealer.]

48.19 Subp. 4. [Repealed, 32 SR 12]

48.20 Subp. 5. [Repealed, 32 SR 12]

48.21 Subp. 6. [Repealed, 32 SR 12]

48.22 Subp. 7. [Repealed, 32 SR 12]

48.23 Subp. 8. [Repealed, 32 SR 12]

48.24 [For text of subps 8a and 8b, see M.R.]

48.25 Subp. 9. **IRC section R703.8.** IRC Section R703.8 is amended to read as follows:

49.1 **R703.8 Flashing.** Approved corrosion-resistant flashing shall be applied
49.2 shingle-fashion in such a manner as to prevent entry of water into the wall cavity or
49.3 penetration of water to the building structural framing components. Self-adhered
49.4 membranes used as flashing shall comply with AAMA 711. The flashing shall extend
49.5 to the surface of the exterior wall finish. Approved corrosion-resistant flashing shall
49.6 be installed at all of the following locations:

49.7 1. Exterior window and door openings. Flashing at shall be installed at the head
49.8 and sides of exterior window and door openings and shall extend to the surface of
49.9 the exterior wall finish or to the water-resistive barrier for subsequent drainage.

49.10 Flashing at exterior window and door openings shall be installed in accordance
49.11 with at least one of the following:

49.12 (a) the fenestration manufacturer's installation and flashing instructions.

49.13 When flashing is not addressed in the fenestration manufacturer's
49.14 instructions, it shall be installed in accordance with the flashing
49.15 manufacturer's instructions;

49.16 (b) in accordance with the flashing design or method of a registered design
49.17 professional; and

49.18 (c) in accordance with other approved methods.

49.19 2. At the intersection of chimneys or other masonry construction with frame or
49.20 stucco walls, with projecting lips on both sides under stucco copings.

49.21 3. Under and at the ends of masonry, wood, or metal copings and sills.

49.22 4. Continuously above all projecting wood trim.

49.23 5. Where exterior porches, decks, or stairs attach to a wall or floor assembly
49.24 of wood-frame construction.

49.25 6. At wall and roof intersections.

49.26 7. At built-in gutters.

49.27 8. Where exterior material meets in other than a vertical line.

50.1 9. Where the lower portion of a sloped roof stops within the plane of an
 50.2 intersecting wall cladding in such a manner as to divert ~~or kick out~~ water away
 50.3 from the assembly in compliance with section R903.2.1.

50.4 10. At the intersection of the foundation and rim joist framing when the exterior
 50.5 wall covering does not lap the foundation insulation.

50.6 **R703.8.1 Pan flashing of windows and doors.** ~~A pan flashing shall be provided~~
 50.7 ~~under all exterior windows and doors. Pan flashing shall be (a) sloped to drain~~
 50.8 ~~water to the exterior surface of a weather-resistive barrier or flat with sealed back~~
 50.9 ~~dam and side dams to prevent re-entry of water into the wall cavity or onto interior~~
 50.10 ~~finishes, and (b) maintain the thermal envelope of the building. Pan flashing made~~
 50.11 ~~from metal must be thermally isolated from interior surfaces.~~ Pan flashing shall
 50.12 be installed in accordance with the fenestration manufacturer's installation and
 50.13 flashing instructions. Where flashing instructions or details are not provided, pan
 50.14 flashing shall be installed at the sill of exterior window and door openings. Pan
 50.15 flashing shall be sealed or sloped in such a manner as to direct water to the surface
 50.16 of the exterior wall finish or to the water-resistive barrier for subsequent drainage.

50.17 **Exceptions:**

- 50.18 1. Windows or doors installed in accordance with the manufacturer's
 50.19 installation instructions which include an alternate flashing method.
 50.20 2. Windows or doors in detached accessory structures.
 50.21 3. Skylights, bow or bay windows.
 50.22 4. Doors required to meet accessibility requirements that would prevent
 50.23 the installation of pan flashing.
 50.24 5. Repairs or replacement of existing windows and doors.
 50.25 6. When a method is provided by a registered design professional.

50.26 **1309.0903 SECTION R903, WEATHER PROTECTION.**

50.27 ~~IRC Section R903.2.2 is amended as follows:~~

51.1 ~~**R903.2.2 Kick-out flashing/diverter.** A kick-out flashing shall be installed where the~~
51.2 ~~lower portion of a sloped roof stops within the plane of an intersecting wall cladding, in~~
51.3 ~~such a manner as to divert or kick out water away from the assembly.~~

51.4 IRC section R903.2.1 is amended as follows:

51.5 **R903.2.1 Locations.** Flashings shall be installed at wall and roof intersections,
51.6 wherever there is a change in roof slope or direction and around roof openings. A
51.7 kick-out flashing shall be installed to divert the water away from where the eave
51.8 of a sloped roof intersects a vertical sidewall. The kick-out flashing on the roof
51.9 shall be a minimum of 2-1/2 inches (63.5 mm) long. Where flashing is of metal,
51.10 the metal shall be corrosion-resistant with a thickness of not less than 0.019 inch
51.11 (0.5 mm) (No. 26 galvanized sheet).

51.12 **R903.2.1.1 Existing buildings and structures.** Kick-out flashings shall be
51.13 required in accordance with section R903.2.1 when simultaneously re-siding
51.14 and re-roofing existing buildings and structures.

51.15 **Exception:** Kick-out flashings are not required when only re-roofing
51.16 existing buildings and structures.

51.17 **1309.0905 SECTION R905, REQUIREMENTS FOR ROOF COVERINGS.**

51.18 Subpart 1. **IRC section R905.2.1.** ~~IRC~~ Section R905.2.1 is amended as follows:

51.19 **R905.2.1 Sheathing requirements.** Asphalt shingles shall be fastened to solidly
51.20 sheathed decks or ~~1-inch~~ 1-inch thick nominal wood boards.

51.21 Subp. 2. **IRC section R905.2.8.5.** Section R905.2.8.5 is deleted in its entirety.

51.22 **REPEALER.** Minnesota Rules, parts 1309.0010, subpart 4; 1309.0040; 1309.0301,
51.23 subparts 1 and 4; 1309.0317; 1309.0318; 1309.0404, subparts 3, 4, and 5; 1309.0613;
51.24 1309.0703, subpart 3a; 1309.0802; 1309.0806; and 1309.4300, are repealed.

Office of the Revisor of Statutes

Administrative Rules



TITLE: Proposed Permanent Rules Adopting the 2012 International Residential Code

AGENCY: Department of Labor and Industry

MINNESOTA RULES: Chapter 1309

INCORPORATIONS BY REFERENCE:

Part 1309.0010, subpart 1: 2012 edition of the International Residential Code ("IRC") as promulgated by the International Code Council, Inc., Washington, D.C., available in the office of the commissioner of labor and industry.

The attached rules are approved for
publication in the State Register

Sheree Speer
Senior Assistant Revisor