

NC 2009 Residential Code changes

(Highlights on changes between the 2006 and 2009 NC Residential Code)

Chapters 1 and 2: Administration and Definitions		
Code sections	Section Title	Change
R101.2	Scope	Added the words ABOVE GRADE.
R101.5	Appendices	Changed the words adopting ordinance to CODE TEXT.
R202	Definitions	New definitions/changes; <ul style="list-style-type: none"> • Approved • Emergency escape and rescue opening • Exterior Wall • Fire Separation distance • Foam Backer Board • Foam Plastic Insulation • Foam Plastic Interior Trim • Gridded Water Distribution System • Natural Durable Wood • Precast Concrete • Sunroom • thermal Isolation • Vehicular Access Door • Vinyl Siding • Retaining Wall • Water resistive Barrier.

Chapters 3: Building Planning		
Code sections	Section Title	Change
R301.1	Application	Changed Section title from design to APPLICATION and added some new wording.
R301.1.1	Alternate Provisions	Changed the wording of #2.
R301.2.1	Wind Limitations	Added curtain walls, exterior to windows and garage doors to this section.
R301.2.1.1	Design criteria	Adding 49m/s , also added supplement reference to Standard for Cold-Formed Steel Framing-Prescriptive Method For One and Two-Family Dwellings.
Table R301.2(1)	Climate and Geographic Design Criteria	Decay column removed. Changed Ice Shield Underlayment to Ice Barrier Underlayment, Added footnote C for Termite column.
Figure	Seismic Map	Removed the word "Continued".

R301.2(2)	for NC	
Figure R301.2(4)	Winds Zone Map for NC	Remove the word “Continued”, changed spelling of Harnet to Harnett on county listings, and removed the word “Island” from behind Topsoil in footnote #4.
Figure R301.2(5)	Ground Snow load map for Eastern US	Deleted this map.
Table R301.7	Allowable Deflection of Structural Members	Added new footnotes.
R302.	Zero Lot Line Separation	Adding new section to R302 for Zero Lot Line Separation.
R305.1	Minimum Height	Changed wording of # 3.
R309.1.2	Garage and Carports	Adding New section for OTHER PENETRATIONS.
R310.1	Emergency Escape and Rescue Openings	Added sentence at the end of section that openings SHALL open directly into a public way, or to a yard or court that opens to a public way.
R312.1	Guards	Changed guard height to NOT LESS THAN 30” on OPEN SIDE stairs.
R313.1.1	Alterations, Repairs and Additions	Added the word BUILDING in front of permit.
R319.1	Protection against Decay	Under Location required # 2, remove “and are less than 8” form the exposed ground’ Added # 8.
R319.3	Fasteners	Adding: “The coating weights of zinc-coated fasteners shall be in accordance with ASTM A 153.”
R320.4.4	Slab-on-grade (structural)	Changed the wording of this section.
R322.1	Accessibility (Scope)	Section R322.1 Scope is being added back to this code.
R323.1	Elevators and Platform Lifts	This section is NEW to 2009 code. States that all Elevators and platform lifts shall comply with ASME A17.1.
R324	Flood-Resistant Construction	This Section was formally R323 but has changed to R324 due to the addition of Elevators which is now R323. Is now in line with the sections of the IRC.

Chapters 4: Foundations

Code sections	Section Title	Change
Table R403.1a	Pier and Footing Sizes for Support of Girders	Table is not in currently in 2006 IRC However is in 2006 NCRC . The sentence, “This table is based upon the limitations of a tributary area using dimensional framing lumber only” , will be added to FOOTNOTE #2
Figure R403.1(1)	Concrete and Masonry Foundation Details	Remove the word “finished” from note #1 . Now reads ... “Foundations shall extend not less than 12 inches below the grade or engineered fill and in no case less than the frost line depth.”
R403.1.4	Minimum Depth	Has been partially re-written to read ... “All exterior footings and foundation systems shall extend below the frost line specified in table R301.2(1). In no case shall the bottom of the footer be less than 12 inches below the undisturbed ground surface or engineered fill.”
R403.1.6	Foundation Anchorage	Added statement ... “There shall be a minimum of two bolts per plate section .”
R404.1	Concrete and Masonry Foundation Walls	The 2009 NCRC will be adopting the 2006 IRC R404.1 However the numbered notes will be changed to the following ... <ol style="list-style-type: none"> 1. Full basement floor shall be 3.5 inched thick concrete slab poured tight against the bottom of the foundation wall 2. Bolt spacing for the sill plate shall be no greater than 3’-0” 3. Where foundation walls support unbalanced load on opposite sides of the building, such as a daylight basement, the building aspect ratio, L/W, shall be attached to the sill with a 20 gauge metal angle clip at 24 inches on center, with five 8d nails per leg, or an approved connector supplying 230 pounds per linear foot capacity.
Table R404.1(1)	Top Reactions and Prescriptive Support for Foundation Walls	Delete from the 2006 IRC
Table R404.1(2)	Maximum Plate Anchor-Bolt Spacing for Supported Foundation Wall	Delete entity from the 2006 IRC

Chapters 5: Floors		
Code sections	Section Title	Change
Table R502.5(1)	Girder spans and Header spans for exterior bearing walls	Removed 70 psf Ground Snow Load from 2006 IRC table. No change from 2006 NCRC to the 2009 NCRC.
Table R502.5(1)	Girder spans and Header spans for exterior bearing walls	On table: Roof, ceiling and two clear span floor, 28' wide building, 30psf, 2-2x8. Change NJ from 2 to 3.
Fig. R502.8a	Acceptable Location of 3 5/8" diameter hole in 2x10 joist	The wording of footnote 6 has changed. " Plywood shall be attached such that <u>2'-0"</u> minimum of plywood is <u>centered</u> on each side of the hole location, except when the hole is located within <u>2'-0"</u> of the end of joist."

Chapters 6: Walls		
Code sections	Section Title	Change
Fig. R602.3(1)	Typical wall, floor and roof framing	NOTE: Added ledger strip nailing to this section.
R602.6	Drilling and notching-studs	<p>Changed:</p> <ol style="list-style-type: none"> 1. Notching. Any stud in an exterior wall or bearing partition may be cut or notched to a depth not exceeding 25 percent of its width. Studs in nonbearing partitions may be notched to a depth not to exceed 40 percent of a single stud width. <i>Notching of bearing studs shall be on one edge only and not to exceed 1/4 the height of the stud. Notching shall not occur in the bottom or top 6" of bearing studs.</i>

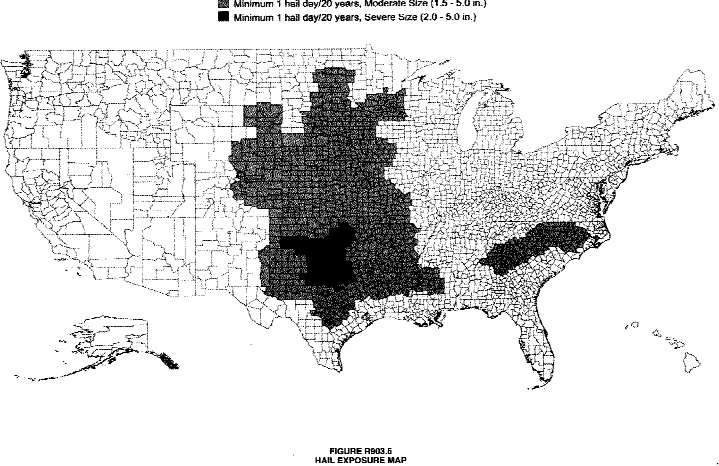
R602.6	Drilling and notching-studs	<p>Changed:</p> <p>2. Drilling. Any stud may be bored or drilled, provided that the diameter of the resulting hole is no more than 60 percent of the stud width, the edge of the hole is no more than 5/8 inch (16mm) to the edge of the stud, <i>and the hole shall not be closer than 6" from an adjacent hole or notch. Holes not exceeding 3/4" diameter can be as close as 1 1/2" on center spacing.</i> Studs located in exterior walls or bearing partitions drilled over 40 percent and up to 60 percent shall also be doubled with no more than two successive doubled studs bored. See figures R602.6(1) and R602.6(2).</p>
R602.10.6	Alternate braced wall panels.	This whole section has changed, from the 2006 IRC. No change between 2006 and 2009 NCRC.
Fig. R602.10.6.2	Garage door braced wall panel for use with continuously sheathed walls.	<p>In the 2006 NCRC this is Figure R602.10.5(2).</p> <ul style="list-style-type: none"> - <i>Add foundation break line all the way to the top on side listing minimum double 2x4 post.</i> - <i>Add language at "Min. Double 2x4 post <u>in a braced wall segment</u>"</i> - <i>At the top add under the 6'-18' the words "<u>Finished opening</u>"</i>
R606.1.2	Used Brick	Used materials shall not be used unless such materials conform to the requirements of section R606 and have been <u>thoroughly</u> cleaned.
R606.6.1	Pier Cap	In the 2006 NCRC this is R606.5.1 Hollow piers shall be capped with 4" (102mm) of solid masonry <i>for 1 (one) story and 8" of solid masonry for 2 (two) and 2-1/2 story house</i> or concrete or shall have cavities of the top course filled with concrete or grout or other approved methods.
Table R606.5	Allowable compressive Stresses for empirical design of masonry	<p>In the 2006 NCRC this is Table R606.4.</p> <ul style="list-style-type: none"> - Check with ICC to see if reference should be R609 instead of R608.

R613.1	Exterior windows and Glass doors	General. This section prescribes performance and construction requirements for exterior window systems installed in wall systems. Windows shall be installed and flashed in accordance with the manufacturer's written installation instructions <i>or ASTM E 2112 Standard Practice for Installation of Exterior Windows, Doors, and Skylights</i> . Written installation instructions shall be provided by the manufacturer for each window.
R613.2	Exterior windows and glass doors	Deleted. <i>(leave section number but delete all text and exceptions)</i> .

Chapters 7: Wall Covering		
Code sections	Section Title	Change

Chapters 8: Roof-Ceiling Construction																																		
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R802.2	Structural log members																																	
R802.2	Design and construction	States that section R802 (entire section) only applies to roofs with a 3/12 pitch or greater.																																
R802.3.1	Ceiling joist and rafter connections																																	
R802.7.2	Engineered wood products																																	
Table R802.5.1(1) & R802.5.1 (2)	Rafter span tables	<p>The rafter span adjustment factors have changed for slightly for each table.</p> <table border="1"> <thead> <tr> <th>H_v/M_R</th> <th>Rafter Span Adjustment Factor</th> <th>H_v/M_R</th> <th>Rafter Span Adjustment Factor</th> </tr> </thead> <tbody> <tr> <td>2/3 or greater</td> <td>0.50</td> <td>1/3</td> <td>0.67</td> </tr> <tr> <td>1/2</td> <td>0.58</td> <td>1/4</td> <td>0.76</td> </tr> <tr> <td>1/3</td> <td>0.67</td> <td>1/5</td> <td>0.83</td> </tr> <tr> <td>1/4</td> <td>0.76</td> <td>1/6</td> <td>0.90</td> </tr> <tr> <td>1/5</td> <td>0.83</td> <td>1/7.5 or less</td> <td>1.00</td> </tr> <tr> <td>1/6</td> <td>0.90</td> <td></td> <td></td> </tr> <tr> <td>1/7.5 and less</td> <td>1.00</td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">2006 Code 2009 Code</p>	H_v/M_R	Rafter Span Adjustment Factor	H_v/M_R	Rafter Span Adjustment Factor	2/3 or greater	0.50	1/3	0.67	1/2	0.58	1/4	0.76	1/3	0.67	1/5	0.83	1/4	0.76	1/6	0.90	1/5	0.83	1/7.5 or less	1.00	1/6	0.90			1/7.5 and less	1.00		
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Chapters 9: Roof Assemblies

Code sections	Section Title	Change
R903.5	Hail Exposure	This section has been added along with section R903.5.1 that defines a moderate hail exposure area and R903.5.2 which defines a severe hail exposure area. A national map has been added as well to identify these areas.
Figure R903.5	Hail Exposure Map	 <p align="center"> <small> ■ Minimum 1 hail day/20 years, Moderate Size (1.5 - 5.0 in.) ■ Minimum 1 hail day/20 years, Severe Size (2.0 - 5.0 in.) </small> </p> <p align="center"> <small> FIGURE R903.5 HAIL EXPOSURE MAP </small> </p> <p>Map was added which does show parts of NC in a moderate hail exposure area.</p>
R905.2.4.1	Wind resistance of asphalt shingles	New section added that includes a new standard for asphalt shingles installed up to 110 mph wind zones, ASTM D 3161, and a standard for shingles over 110 which is ASTM D 3161, class F.
R905.2.7	Underlayment application	Makes reference in 2 locations that underlayment shall not interfere with the ability of shingles to seal.

Chapters 10: Chimneys and Fireplaces

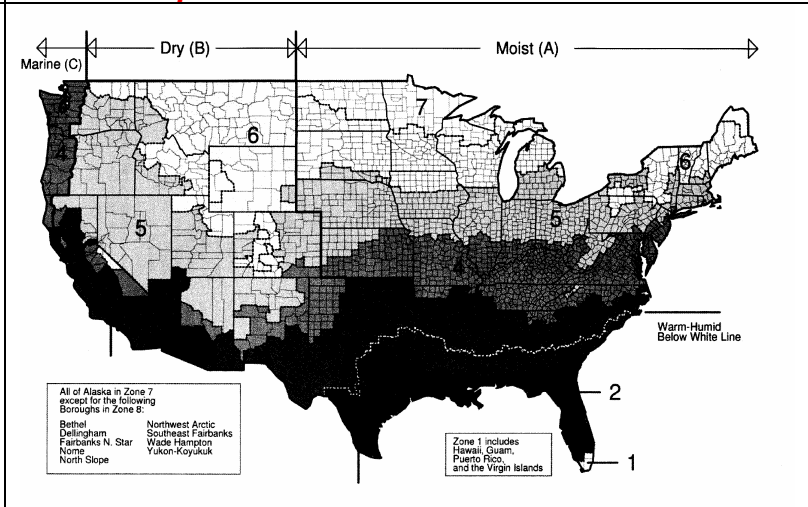
Code sections	Section Title	Change
R1002	Masonry Heaters	Added this new section which covers definition, structural and clearances for masonry heaters. See R1002.1 for masonry heaters definition.
R1003.10	Masonry veneer chimneys	Adds requirement for flashing and weep holes on chimneys with veneer cladding.

Table R1003.14(2)	Net cross-sectional area of square and rectangular flue sizes	<p style="text-align: center;">TABLE R1003.14(2) NET CROSS-SECTIONAL AREA OF SQUARE AND RECTANGULAR FLUE SIZES</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">FLUE SIZE, OUTSIDE NOMINAL DIMENSIONS (inches)</th> <th style="text-align: center;">CROSS-SECTIONAL AREA (square inches)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">4.5 × 8.5</td><td style="text-align: center;">23</td></tr> <tr><td style="text-align: center;">4.5 × 13</td><td style="text-align: center;">34</td></tr> <tr><td style="text-align: center;">8 × 8</td><td style="text-align: center;">42</td></tr> <tr><td style="text-align: center;">8.5 × 8.5</td><td style="text-align: center;">49</td></tr> <tr><td style="text-align: center;">8 × 12</td><td style="text-align: center;">67</td></tr> <tr><td style="text-align: center;">8.5 × 13</td><td style="text-align: center;">76</td></tr> <tr><td style="text-align: center;">12 × 12</td><td style="text-align: center;">102</td></tr> <tr><td style="text-align: center;">8.5 × 18</td><td style="text-align: center;">101</td></tr> <tr><td style="text-align: center;">13 × 13</td><td style="text-align: center;">127</td></tr> <tr><td style="text-align: center;">12 × 16</td><td style="text-align: center;">131</td></tr> <tr><td style="text-align: center;">13 × 18</td><td style="text-align: center;">173</td></tr> <tr><td style="text-align: center;">16 × 16</td><td style="text-align: center;">181</td></tr> <tr><td style="text-align: center;">16 × 20</td><td style="text-align: center;">222</td></tr> <tr><td style="text-align: center;">18 × 18</td><td style="text-align: center;">233</td></tr> <tr><td style="text-align: center;">20 × 20</td><td style="text-align: center;">298</td></tr> <tr><td style="text-align: center;">20 × 24</td><td style="text-align: center;">335</td></tr> <tr><td style="text-align: center;">24 × 24</td><td style="text-align: center;">431</td></tr> </tbody> </table> <p style="text-align: center; font-size: small;">For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm².</p> <p>Added more sizes to this table</p>	FLUE SIZE, OUTSIDE NOMINAL DIMENSIONS (inches)	CROSS-SECTIONAL AREA (square inches)	4.5 × 8.5	23	4.5 × 13	34	8 × 8	42	8.5 × 8.5	49	8 × 12	67	8.5 × 13	76	12 × 12	102	8.5 × 18	101	13 × 13	127	12 × 16	131	13 × 18	173	16 × 16	181	16 × 20	222	18 × 18	233	20 × 20	298	20 × 24	335	24 × 24	431
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R1003.19	Chimney fireblocking	<p>Added specific language and how fireblocking must be supported (must use non-combustible material and be self supporting or be place on metal strips for support). <i>Wood fireblocking material or other combustible items cannot be used up against chimneys regardless of thickness.</i></p>																																				
R1006	Exterior air supply	<p>This is a new section and requires exterior make up air for factory built or masonry fireplaces unless HVAC is designed to introduce fresh air and control indoor air pressures. This section will require screening over air intake (typically installed in firebox) and minimum 6 sq in to no more than 55 sq in of opening. Clearance of 1” from combustibles is also required.</p>																																				

Chapters 11: Energy Efficiency		
Code sections	Section Title	Change (entire Chapter was re-organized)
N1101.2	Compliance	Added to NC language the allowance to use REScheck 4.0 version but no mechanical trade offs allowed.
N1101.4	Building thermal envelope insulation	New section added, requires R-value on all insulation 12” or more wide or a certificate indicating 3 items-type product, manufacturer and R-value. Added language for blown foam which requires on certificate to identify thickness and R-value of installed thickness. Installer shall sign, date and post the certificate in a conspicuous location on the job site.

N1101.4.1	Blown or sprayed roof/ceiling insulation	Reworded section with requirement for depth markers same as previous except required to face the attic access opening. Foam reference is new and only requires foam thickness and installed R-value to be listed on the certificate (no depth markers required).
N1101.4.2	Insulation mark installation	New section simply requires R-value to readily observable at time of inspection.
N1101.8	Certificate	New section requiring a permanent certificate to be posted on electrical distribution box, kitchen cabinet or other approved location. Must be completed by the builder or design professional (not installer) and indicate R-values of insulation to include ducts outside conditioned spaces, U-factors for fenestration and solar heat gain coefficient (SGHC). <i>This requirement is in addition to installer's certificate for insulation and is a builder requirement.</i>

Figure N1101.2
 US Map changing climate zones throughout the US.
 (NC now has 3 climate zones-#3, #4 & #5)



<p>Tables N1101.5(1), N1101.5(2), N1101.5(3)</p>	<p>Default tables (new) added for glazed fenestration U- factor, Door U-factor & glazed SHGC (when values not given by mfg)</p>	<p style="text-align: center;">TABLE N1101.5(1) DEFAULT GLAZED FENESTRATION U-FACTORS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">FRAME TYPE</th> <th rowspan="3">SINGLE PANE</th> <th rowspan="3">DOUBLE PANE</th> <th colspan="2">SKYLIGHT</th> </tr> <tr> <th>Single</th> <th>Double</th> </tr> </thead> <tbody> <tr> <td>Metal</td> <td>1.2</td> <td>0.8</td> <td>2</td> <td>1.3</td> </tr> <tr> <td>Metal with thermal break</td> <td>1.1</td> <td>0.65</td> <td>1.9</td> <td>1.1</td> </tr> <tr> <td>Nonmetal or metal clad</td> <td>0.95</td> <td>0.55</td> <td>1.75</td> <td>1.05</td> </tr> <tr> <td>Glazed block</td> <td colspan="4" style="text-align: center;">0.6</td> </tr> </tbody> </table> <p style="text-align: center;">TABLE N1101.5(2) DEFAULT DOOR U-FACTORS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DOOR TYPE</th> <th>U-FACTOR</th> </tr> </thead> <tbody> <tr> <td>Uninsulated metal</td> <td>1.2</td> </tr> <tr> <td>Insulated metal</td> <td>0.6</td> </tr> <tr> <td>Wood</td> <td>0.5</td> </tr> <tr> <td>Insulated, nonmetal edge, max 45% glazing, any glazing double pane</td> <td>0.35</td> </tr> </tbody> </table> <p style="text-align: center;">TABLE N1101.5(3) DEFAULT GLAZED FENESTRATION SHGC</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">SINGLE GLAZED</th> <th colspan="2">DOUBLE GLAZED</th> <th rowspan="2">GLAZED BLOCK</th> </tr> <tr> <th>Clear</th> <th>Tinted</th> <th>Clear</th> <th>Tinted</th> </tr> </thead> <tbody> <tr> <td>0.8</td> <td>0.7</td> <td>0.7</td> <td>0.6</td> <td>0.6</td> </tr> </tbody> </table>	FRAME TYPE	SINGLE PANE	DOUBLE PANE	SKYLIGHT		Single	Double	Metal	1.2	0.8	2	1.3	Metal with thermal break	1.1	0.65	1.9	1.1	Nonmetal or metal clad	0.95	0.55	1.75	1.05	Glazed block	0.6				DOOR TYPE	U-FACTOR	Uninsulated metal	1.2	Insulated metal	0.6	Wood	0.5	Insulated, nonmetal edge, max 45% glazing, any glazing double pane	0.35	SINGLE GLAZED		DOUBLE GLAZED		GLAZED BLOCK	Clear	Tinted	Clear	Tinted	0.8	0.7	0.7	0.6	0.6																																					
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<p>Table N1102.1</p>	<p>Insulation and fenestration by component (Zone changes)</p>	<p style="text-align: center;">TABLE N1102.1 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>CLIMATE ZONE</th> <th>FENESTRATION U-FACTOR</th> <th>SKYLIGHT^b U-FACTOR</th> <th>GLAZED FENESTRATION SHGC</th> <th>CEILING R-VALUE</th> <th>WOOD FRAME WALL R-VALUE</th> <th>MASS WALL R-VALUE</th> <th>FLOOR R-VALUE</th> <th>BASEMENT^c WALL R-VALUE</th> <th>SLAB^d R-VALUE AND DEPTH</th> <th>CRAWL SPACE WALL R-VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.2</td> <td>0.75</td> <td>0.40</td> <td>30</td> <td>13</td> <td>3</td> <td>13</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>2</td> <td>0.75</td> <td>0.75</td> <td>0.40</td> <td>30</td> <td>13</td> <td>4</td> <td>13</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>3</td> <td>0.65</td> <td>0.65</td> <td>0.40^e</td> <td>30</td> <td>13</td> <td>5</td> <td>19</td> <td>0</td> <td>0</td> <td>5/13</td> </tr> <tr> <td>4 except Marine</td> <td>0.40</td> <td>0.60</td> <td>NR</td> <td>38</td> <td>13</td> <td>5</td> <td>19</td> <td>10/13</td> <td>10, 2 ft</td> <td>10/13</td> </tr> <tr> <td>5 and Marine 4</td> <td>0.35</td> <td>0.60</td> <td>NR</td> <td>38</td> <td>19 or 13 + 5^f</td> <td>13</td> <td>30^g</td> <td>10/13</td> <td>10, 2 ft</td> <td>10/13</td> </tr> <tr> <td>6</td> <td>0.35</td> <td>0.60</td> <td>NR</td> <td>49</td> <td>19 or 13 + 5^f</td> <td>15</td> <td>30^g</td> <td>10/13</td> <td>10, 4 ft</td> <td>10/13</td> </tr> <tr> <td>7 and 8</td> <td>0.35</td> <td>0.60</td> <td>NR</td> <td>49</td> <td>21</td> <td>19</td> <td>30^g</td> <td>10/13</td> <td>10, 4 ft</td> <td>10/13</td> </tr> </tbody> </table> <p>a. R-values are minimums. U-factors and SHGC are maximums. R-19 insulation shall be permitted to be compressed into a 2 x 6 cavity. b. The fenestration U-factor column excludes skylights. The solar heat gain coefficient (SHGC) column applies to all glazed fenestration. c. The first R-value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement. d. R-5 shall be added to the required slab edge R-values for heated slabs. e. There are no solar heat gain coefficient (SHGC) requirements in the Marine Zone. f. Or insulation sufficient to fill the framing cavity, R-19 minimum. g. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, R-5 sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.</p> <p>Removed Heating degree days and added column for skylight fenestration, added SHGC fenestration column, added wood frame and Mass wall column.</p>	CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE AND DEPTH	CRAWL SPACE WALL R-VALUE	1	1.2	0.75	0.40	30	13	3	13	0	0	0	2	0.75	0.75	0.40	30	13	4	13	0	0	0	3	0.65	0.65	0.40 ^e	30	13	5	19	0	0	5/13	4 except Marine	0.40	0.60	NR	38	13	5	19	10/13	10, 2 ft	10/13	5 and Marine 4	0.35	0.60	NR	38	19 or 13 + 5 ^f	13	30 ^g	10/13	10, 2 ft	10/13	6	0.35	0.60	NR	49	19 or 13 + 5 ^f	15	30 ^g	10/13	10, 4 ft	10/13	7 and 8	0.35	0.60	NR	49	21	19	30 ^g	10/13	10, 4 ft	10/13
CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE AND DEPTH	CRAWL SPACE WALL R-VALUE																																																																																
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<p>Table N1102.1.2</p>	<p>Equivalent U-factors (new table dealing with U factors)</p>	<p style="text-align: center;">TABLE N1102.1.2 EQUIVALENT U-FACTORS^a</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>CLIMATE ZONE</th> <th>FENESTRATION U-FACTOR</th> <th>SKYLIGHT U-FACTOR</th> <th>CEILING U-FACTOR</th> <th>FRAME WALL U-FACTOR</th> <th>MASS WALL U-FACTOR</th> <th>FLOOR U-FACTOR</th> <th>BASEMENT WALL U-FACTOR</th> <th>CRAWL SPACE WALL U-FACTOR</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.20</td> <td>0.75</td> <td>0.035</td> <td>0.082</td> <td>0.197</td> <td>0.064</td> <td>0.360</td> <td>0.477</td> </tr> <tr> <td>2</td> <td>0.75</td> <td>0.75</td> <td>0.035</td> <td>0.082</td> <td>0.165</td> <td>0.064</td> <td>0.360</td> <td>0.477</td> </tr> <tr> <td>3</td> <td>0.65</td> <td>0.65</td> <td>0.035</td> <td>0.082</td> <td>0.141</td> <td>0.047</td> <td>0.360</td> <td>0.136</td> </tr> <tr> <td>4 except Marine</td> <td>0.40</td> <td>0.60</td> <td>0.030</td> <td>0.082</td> <td>0.141</td> <td>0.047</td> <td>0.059</td> <td>0.065</td> </tr> <tr> <td>5 and Marine 4</td> <td>0.35</td> <td>0.60</td> <td>0.030</td> <td>0.060</td> <td>0.082</td> <td>0.033</td> <td>0.059</td> <td>0.065</td> </tr> <tr> <td>6</td> <td>0.35</td> <td>0.60</td> <td>0.026</td> <td>0.060</td> <td>0.06</td> <td>0.033</td> <td>0.059</td> <td>0.065</td> </tr> <tr> <td>7 and 8</td> <td>0.35</td> <td>0.60</td> <td>0.026</td> <td>0.057</td> <td>0.057</td> <td>0.033</td> <td>0.059</td> <td>0.065</td> </tr> </tbody> </table> <p>a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source.</p>	CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR	1	1.20	0.75	0.035	0.082	0.197	0.064	0.360	0.477	2	0.75	0.75	0.035	0.082	0.165	0.064	0.360	0.477	3	0.65	0.65	0.035	0.082	0.141	0.047	0.360	0.136	4 except Marine	0.40	0.60	0.030	0.082	0.141	0.047	0.059	0.065	5 and Marine 4	0.35	0.60	0.030	0.060	0.082	0.033	0.059	0.065	6	0.35	0.60	0.026	0.060	0.06	0.033	0.059	0.065	7 and 8	0.35	0.60	0.026	0.057	0.057	0.033	0.059	0.065																
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		This table can be used for steel framing also meeting listed U factor equivalent.																														
Table N1102.2.4	Steel-frame ceiling, wall and floor insulation (R-value)	<p style="text-align: center;">TABLE N1102.2.4 STEEL-FRAME CEILING, WALL AND FLOOR INSULATION (R-VALUE)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">WOOD FRAME R-VALUE REQUIREMENT</th> <th style="width: 50%;">COLD-FORMED STEEL EQUIVALENT R-VALUE^a</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="text-align: center;">Steel Truss Ceilings^a</td> </tr> <tr> <td style="text-align: center;">R-30</td> <td style="text-align: center;">R-38 or R-30 + 3 or R-26 + 5</td> </tr> <tr> <td style="text-align: center;">R-38</td> <td style="text-align: center;">R-49 or R-38 + 3</td> </tr> <tr> <td style="text-align: center;">R-49</td> <td style="text-align: center;">R-38 + 5</td> </tr> <tr> <td colspan="2" style="text-align: center;">Steel Joist Ceilings^b</td> </tr> <tr> <td style="text-align: center;">R-30</td> <td style="text-align: center;">R-38 in 2 × 4 or 2 × 6 or 2 × 8 R-49 in any framing</td> </tr> <tr> <td style="text-align: center;">R-38</td> <td style="text-align: center;">R-49 in 2 × 4 or 2 × 6 or 2 × 8 or 2 × 10</td> </tr> <tr> <td colspan="2" style="text-align: center;">Steel Framed Wall</td> </tr> <tr> <td style="text-align: center;">R-13</td> <td style="text-align: center;">R-13 + 5 or R-15 + 4 or R-21 + 3</td> </tr> <tr> <td style="text-align: center;">R-19</td> <td style="text-align: center;">R-13 + 9 or R-19 + 8 or R-25 + 7</td> </tr> <tr> <td style="text-align: center;">R-21</td> <td style="text-align: center;">R-13 + 10 or R-19 + 9 or R-25 + 8</td> </tr> <tr> <td colspan="2" style="text-align: center;">Steel Joist Floor</td> </tr> <tr> <td style="text-align: center;">R-13</td> <td style="text-align: center;">R-19 in 2 × 6 R-19 + R-6 in 2 × 8 or 2 × 10</td> </tr> <tr> <td style="text-align: center;">R-19</td> <td style="text-align: center;">R-19 + R-6 in 2 × 6 R-19 + R-12 in 2 × 8 or 2 × 10</td> </tr> </tbody> </table> <p>For SI: 1 inch = 25.4 mm. a. Cavity insulation R-value is listed first, followed by continuous insulation R-value. b. Insulation exceeding the height of the framing shall cover the framing.</p> <p>Table has been expanded to include truss ceilings, joist ceilings, floors not previously listed. Cavity and continuous insulation are both required per footnote a.</p>	WOOD FRAME R-VALUE REQUIREMENT	COLD-FORMED STEEL EQUIVALENT R-VALUE ^a	Steel Truss Ceilings^a		R-30	R-38 or R-30 + 3 or R-26 + 5	R-38	R-49 or R-38 + 3	R-49	R-38 + 5	Steel Joist Ceilings^b		R-30	R-38 in 2 × 4 or 2 × 6 or 2 × 8 R-49 in any framing	R-38	R-49 in 2 × 4 or 2 × 6 or 2 × 8 or 2 × 10	Steel Framed Wall		R-13	R-13 + 5 or R-15 + 4 or R-21 + 3	R-19	R-13 + 9 or R-19 + 8 or R-25 + 7	R-21	R-13 + 10 or R-19 + 9 or R-25 + 8	Steel Joist Floor		R-13	R-19 in 2 × 6 R-19 + R-6 in 2 × 8 or 2 × 10	R-19	R-19 + R-6 in 2 × 6 R-19 + R-12 in 2 × 8 or 2 × 10
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N1102.2.5	Floors	Wording change to specifically required permanent contact with subfloor. NC exception added that enclosed floor cavities like in garage ceilings cantilevers and house on piles can the band boards shall be insulated to maintain thermal envelope continuity.																														
N1102.2.10	Thermally isolated sunroom insulation	New section requiring less insulation in some cases for sunroom but new walls separating sunroom from conditioned spaces must meet building thermal envelope requirements. Sunrooms zones 1-4 need only R-19 in ceilings, zone 5-8 need R-24. All zones for walls need only R-13, no floor amount given.																														
N1102.3.5	Thermally isolated sunroom U-factor	New section allowing some variations for sunrooms, max U-factor shall be .50 and the maximum skylight U-factor shall be .75. New windows or doors separating the sunroom from conditioned space shall meet the building thermal envelope requirements. NC added language to state that “conditioned sunrooms shall maintain thermal isolation; shall not be used as kitchens or sleeping rooms; and shall be served by a separate heating or cooling system, or be thermostatically controlled as a separate zone on the existing system.																														

Section N1103	Systems	This section has dropped many of the tables that were used for mechanical ductwork and water supply insulation requirements. Several items have been reproduced in text version.
N1103.2.3	Building Cavities	Building framing cavities shall not be used as supply ducts.
N1103.5	Mechanical ventilation	Outdoor air intakes and exhaust must have automatic or gravity dampers that close when systems not operational.

Chapters 43: Referenced Standards

Appendix

Code sections	Section Title	Change-None
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