

**Recommended Amendments to the  
2003 International Energy Conservation Code  
North Central Texas Council of Governments region**

The following sections, paragraphs, and sentences of the *2003 International Energy Conservation Code* are hereby amended as follows: Standard type is text from the IECC. Underlined type is text inserted. ~~Lined through type is deleted text from the IECC.~~ A double asterisk at the beginning of a section identifies an amendment carried over from the 2000 edition of the code and a triple asterisk identifies a new amendment with the 2003 edition of the code.

**\*\*Add the following section:**

**101.4.1.3 Alternative compliance.** A building certified by a national, state, or local accredited energy efficiency program and determined by the Energy Systems Laboratory to be in compliance with the energy efficiency requirements of this section may, at the option of the Code Official, be considered in compliance. The United States Environmental Protection Agency's Energy Star Program certification of energy code equivalency shall be considered in compliance.

(Reason: This amendment is added to allow alternative compliance in accordance with Texas HB 1365, 78<sup>th</sup> Legislature.)

**\*\*Section 302.1; Replace blank Table 302.1 Exterior Design Conditions with the following:**

CONDITION	VALUE
Winter <sup>a</sup> , design dry-bulb (°F) (99.6%)	17
Summer <sup>a</sup> , design dry-bulb (°F) (0.4%)	100
Summer <sup>a</sup> , design wet-bulb (°F) (0.4%)	78
Degree days heating <sup>b</sup>	2407
Degree days cooling <sup>b</sup>	2603
Climate zone <sup>c</sup>	5B

**\*\*Delete note "a" and replace with the following:**

a. These values are from ASHRAE Handbook of Fundamentals for Dallas/Ft. Worth International Airport 99.6% Winter DB, 0.4% Summer DB, and 0.4% Summer WB; and from Local Climatological Data for Dallas-Ft. Worth published by the National Climatic Data Center, National Oceanic and Atmospheric Administration. These values are for the purpose of providing a uniform basis of requirements for North Central Texas. This will not preclude licensed professionals from submitting design analyses based on site measurements or published data more specific to the building site. Adjustments shall be permitted to reflect local climates which differ from the tabulated values, or local weather experience determined by the code official.

(Reason: One of the references in note "a" is in error. The 1997 ASHRAE Handbook of Fundamentals no longer publishes the design temperature tables in the format assumed by this reference. The main purpose of this change, however, is to provide typical design data for the NCTCOG region for ease of reference within this code.)

**\*\*Section 502.1.1; delete exception #2 and substitute the following:**

2. Buildings located in Climate Zones 5b.

(Reason: The region is located in Climate Zone 5b by amendment. Eliminating vapor retarders in hot and humid climate zones is consistent with the recommendation of most building scientists.)

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**\*\*Section 502.1.5; add the following exceptions:**

**Exceptions:**

1. Any glazing facing within 45 degrees of true north;
2. Any glazing facing within 45 degrees of true south which is shaded along its full width by a permanent overhang with a projection factor of 0.3 or greater.
3. Any fenestration with permanently attached screens where the screens have a rated shading coefficient of .6 or less.

(Reason: This will allow north facing windows, which do not receive direct solar radiation, to be exempt from the minimum SHGC requirement; provides a simple way for south facing windows to effectively achieve summer shade and still receive some solar heat benefit in winter; and specifically allows use of solar screens to achieve the shading effect.)

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**\*\*Section 502.2; Replace blank Table 502.2 Heating & Cooling Criteria with the following:**

**Table 502.2<sup>a,g</sup>  
HEATING AND COOLING CRITERIA**

<b>Element</b>	<b>Mode</b>	<b>Type A-1 Residential Buildings Detached One-Family Dwellings U<sub>o</sub></b>	<b>Type A-2 Residential Buildings Detached Two-Family Dwellings U<sub>o</sub></b>
Walls	Heating or cooling	0.15	0.22
Roof/ceiling	Heating or cooling	0.03	0.03
Floors over unheated spaces	Heating or cooling	0.05	0.05
Heated slab on grade	Heating	R-value = 6	R-value = 6
Unheated slab on grade	Heating	R-value = 0	R-value = 0
Basement wall	Heating or cooling	U-factor = 0.15	U-factor = 0.15
Crawl space wall	Heating or cooling	U-factor = 0.15	U-factor = 0.15

**\*\*Delete Note "a" and replace with the following:**

a. The above values have been determined for all counties in the North Central Texas Council of Governments region.

**\*\*Add Note "g":**

g. These requirements apply only to the boundaries of conditioned space. Air conditioning equipment and ductwork is recommended, but not required, to be located within the conditioned space in North Central Texas zones.

**\*\*Delete Figures 502.2(1-6)**

(Reason: This change unifies the requirements for all counties within the North Central Texas COG. Reference to the graphs is no longer needed when the values have been specified.)

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**\*\*Section 502.2; Add note to Fig 502.2(7):**

All counties within the North Central Texas Council of Governments region are designated as within the area of very heavy termite infestation probability for purpose of uniform interpretation of this requirement.

(Reason: This allows for uniform interpretation of the map throughout the area of the COG.)

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**\*\*\*Section 502.2.2; add a second paragraph as follows:**

A building demonstrating envelope compliance at least 10% better than code may utilize R6 duct insulation in both supply and return air ducts in lieu of the insulation required by Table 503.3.3.3.

(Reason: The use of R6 duct insulation in lieu of R8 for supply duct insulation and R4 for return duct insulation in structures – all other factors being equal – only makes a difference of 2% in performance compliance. Use of R6 in a structure that is 10% better than code will still be 8% above code. This tradeoff may be used with any SEER rating of equipment.)

**\*\*Section 502.2.4; Delete prescriptive Tables 502.2.4(1-9) and substitute the following:**

**\*\*Replace Tables 502.2.4 (1-6) with:**

**Table 502.2.4(1)**

**Prescriptive Building Envelope Requirements, Detached One-Family Dwellings, Based on Window Area as a Percent of Gross Exterior Wall Area**

% Glazing	Maximum	Minimum					
	Glazing U-factor	Ceiling R-value	Exterior wall R-value	Floor R-value	Basement wall R-value	Slab perimeter R-value and depth	Crawl space wall R-value
<8%	0.70	R-26	R-11	R-11	R-5	R-0	R-6
<12%	0.65	R-26	R-13	R-11	R-5	R-0	R-5
<15%	0.60	R-30	R-13	R-19	R-6	R-0	R-7
<18%	0.52	R-30	R-13	R-19	R-6	R-0	R-7
<20%	0.50	R-38	R-13	R-19	R-6	R-0	R-7
<25%	0.46	R-38	R-16	R-19	R-6	R-0	R-7

**\*\*Replace Tables 502.2.4 (7-9) with:**

**Table 502.2.4(2)**

**Prescriptive Building Envelope Requirements, Detached Two-Family Dwellings, Based on Window Area as a Percent of Gross Exterior Wall Area**

% Glazing	Maximum	Minimum					
	Glazing U-factor	Ceiling R-value	Exterior wall R-value	Floor R-value	Basement wall R-value	Slab perimeter R-value and depth	Crawl space wall R-value
<20%	0.55	R-30	R-13	R-11	R-5	R-0	R-5
<25%	0.55	R-30	R-13	R-11	R-5	R-0	R-5
<30%	0.47	R-38	R-13	R-19	R-7	R-0	R-8

(Reason: This change a) reduces the number of tables to be referenced; b) unifies envelope prescriptive requirements across all areas within the COG, requiring the more restrictive values of zones 5b or 6b; and c) eliminates slab edge insulation requirement.)

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**\*\*\*Table 503.3.3.1 MINIMUM PIPE INSULATION.** Amend footnote “a” to read as follows:

- a. For piping lengths in excess of five (5) feet exposed to outdoor air, increase the insulation thickness by 0.5 inch.

(Reason: No performance data available, REM/Rate scoring procedures do not consider refrigerant piping insulation. This amendment will provide uniform approach and eliminate the requirement of policies by the various jurisdictions.)

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**\*\*\*Table 503.3.3.3; add footnote “e” as follows:**

- e. See Section 502.2.2

(Reason: To provide reference to duct R-value tradeoff.)

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**\*\*\*Section 503.3.3.4.3; change first sentence to read as follows:**

**503.3.3.4.3 Sealing required.** All joints, longitudinal and transverse seams, and connections in ductwork, shall be made substantially airtight by means of welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes or other approved closure systems. *{Remainder to remain unchanged}*

(Reason: Provides the building official the ability to consider new technology)

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**\*\*\*Section 602.1.6; delete last sentence of exception.**

(Reason: Slab edge insulation is not recommended in this region. Deleting the last sentence of the exception allows the use of the simplified prescriptive method of compliance.)

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**\*\*\*Section 602.2 Maximum solar heat gain coefficient for fenestration products.** Add the following exceptions:

**Exceptions:**

1. Any glazing facing within 45 degrees of true north;
2. Any glazing facing within 45 degrees of true south which is shaded along its full width by a permanent overhang with a projection factor of 0.3 or greater.
3. Any fenestration with attached screens where the screens have a rated shading coefficient of .6 or less.

(Reason: This exception has been previously granted in Chapter 5 but did not apply to the simplified approach. The logic for the exception is the same)

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**\*\* Section 802.2; Replace blank tables 802.2 (1-4) with the completed tables provided on the following four pages. Delete tables 802.2 (5-37).**

(Reason: This change provides a unified set of prescriptive requirements for all areas within the NCTCOG area based upon the most restrictive zone's requirements (5b or 6b). The deleted tables are not necessary after tables 1-4 are completed, and eliminates data irrelevant to the NCTCOG region.)

**TABLE 802.2(1)  
BUILDING ENVELOPE REQUIREMENTS**

<b>WINDOW AND GLAZED DOOR AREA 10 PERCENT OR LESS OF ABOVE-GRADE WALL AREA</b>				
<b>ELEMENT</b>	<b>CONDITION/VALUE</b>			
<b>Skylights (<i>U</i>-factor)</b>	1			
<b>Slab or below-grade wall (<i>R</i>-value)</b>	R-0			
<b>Windows and glass doors</b> PF < 0.25 0.25 ≤ PF < 0.50 PF ≥ 0.50	<b>SHGC</b>		<b><i>U</i>-factor</b>	
	Any		Any	
	Any		Any	
<b>Roof assemblies (<i>R</i>-value)</b>  All-wood joist/truss Metal joist/truss Concrete slab or deck Metal purlin with thermal block Metal purlin without thermal block	<b>Insulation between framing</b>		<b>Continuous insulation</b>	
	R-19		R-16	
	R-25		R-17	
	NA		R-16	
	R-25		R-17	
<b>Floors over outdoor air or unconditioned space (<i>R</i>-value)</b>  All-wood joist/truss Metal joist/truss Concrete slab or deck	<b>Insulation between framing</b>		<b>Continuous insulation</b>	
	R-11		R-6	
	R-11		R-6	
	NA		R-6	
	X		R-17	
<b>Above-grade walls (<i>R</i>-value)</b>	<b>No framing</b>	<b>Metal framing</b>	<b>Wood framing</b>	
	Framed			
	R-value cavity	NA	R-11	R-11
	R-value continuous	NA	R-0	R-0
	CMU, ≥ 8 in., with integral insulation			
	R-value cavity	NA	R-0	R-0
	R-value continuous	R-0	R-0	R-0
	Other masonry walls			
	R-value cavity	NA	R-0	R-0
	R-value continuous	R-0	R-0	R-0

**TABLE 802.2(2)  
BUILDING ENVELOPE REQUIREMENTS**

<b>WINDOW AND GLAZED DOOR AREA OVER 10 PERCENT BUT NOT GREATER THAN 25 PERCENT OF ABOVE-GRADE WALL AREA</b>			
<b>ELEMENT</b>	<b>CONDITION/VALUE</b>		
<b>Skylights (<i>U</i>-factor)</b>	1		
<b>Slab or below-grade wall (<i>R</i>-value)</b>	R-0		
<b>Windows and glass doors</b> PF < 0.25 0.25 ≤ PF < 0.50 PF ≥ 0.50	<b>SHGC</b>		<b><i>U</i>-factor</b>
	0.6		Any
	0.7		Any
<b>Roof assemblies (<i>R</i>-value)</b>  All-wood joist/truss Metal joist/truss Concrete slab or deck Metal purlin with thermal block Metal purlin without thermal block	<b>Insulation between framing</b>		<b>Continuous insulation</b>
	R-25		R-19
	R-25		R-20
	NA		R-19
	R-30		R-20
<b>Floors over outdoor air or unconditioned space (<i>R</i>-value)</b>  All-wood joist/truss Metal joist/truss Concrete slab or deck	<b>Insulation between framing</b>		<b>Continuous insulation</b>
	R-11		R-6
	R-11		R-6
	NA		R-6
	X		R-20
<b>Above-grade walls (<i>R</i>-value)</b>  Framed R-value cavity R-value continuous CMU, ≥ 8 in., with integral insulation R-value cavity R-value continuous Other masonry walls R-value cavity R-value continuous	<b>No framing</b>	<b>Metal framing</b>	<b>Wood framing</b>
	NA	R-11	R-11
	NA	R-0	R-0
	NA	R-11	R-11
	R-5	R-0	R-0
	NA	R-11	R-11
	R-5	R-0	R-0

**TABLE 802.2(3)  
BUILDING ENVELOPE REQUIREMENTS**

<b>WINDOW AND GLAZED DOOR AREA OVER 25 PERCENT BUT NOT GREATER THAN 40 PERCENT OF ABOVE-GRADE WALL AREA</b>			
<b>ELEMENT</b>	<b>CONDITION/VALUE</b>		
<b>Skylights (<i>U</i>-factor)</b>	1		
<b>Slab or below-grade wall (<i>R</i>-value)</b>	R-0		
<b>Windows and glass doors</b>	<b>SHGC</b>	<b><i>U</i>-factor</b>	
PF < 0.25	0.4	0.7	
0.25 ≤ PF < 0.50	0.5	0.7	
PF ≥ 0.50	0.6	0.7	
<b>Roof assemblies (<i>R</i>-value)</b>	<b>Insulation between framing</b>	<b>Continuous insulation</b>	
All-wood joist/truss	R-25	R-19	
Metal joist/truss	R-25	R-20	
Concrete slab or deck	NA	R-19	
Metal purlin with thermal block	R-30	R-20	
Metal purlin without thermal block	X	R-20	
<b>Floors over outdoor air or unconditioned space (<i>R</i>-value)</b>	<b>Insulation between framing</b>	<b>Continuous insulation</b>	
All-wood joist/truss	R-11	R-6	
Metal joist/truss	R-11	R-6	
Concrete slab or deck	NA	R-6	
<b>Above-grade walls (<i>R</i>-value)</b>	<b>No framing</b>	<b>Metal framing</b>	<b>Wood framing</b>
Framed			
R-value cavity	NA	R-11	R-11
R-value continuous	NA	R-0	R-0
CMU, ≥ 8 in., with integral insulation			
R-value cavity	NA	R-11	R-11
R-value continuous	R-5	R-0	R-0
Other masonry walls			
R-value cavity	NA	R-11	R-11
R-value continuous	R-5	R-0	R-0

**TABLE 802.2(4)  
BUILDING ENVELOPE REQUIREMENTS**

<b>WINDOW AND GLAZED DOOR AREA OVER 40 PERCENT BUT NOT GREATER THAN 50 PERCENT OF ABOVE-GRADE WALL AREA</b>				
<b>ELEMENT</b>	<b>CONDITION/VALUE</b>			
<b>Skylights (<i>U</i>-factor)</b>	1			
<b>Slab or below-grade wall (<i>R</i>-value)</b>	R-0			
<b>Windows and glass doors</b> PF < 0.25 0.25 ≤ PF < 0.50 PF ≥ 0.50	<b>SHGC</b>		<b><i>U</i>-factor</b>	
	0.4		0.7	
	0.5		0.7	
	0.6		0.7	
<b>Roof assemblies (<i>R</i>-value)</b>  All-wood joist/truss Metal joist/truss Concrete slab or deck Metal purlin with thermal block Metal purlin without thermal block	<b>Insulation between framing</b>		<b>Continuous insulation</b>	
	R-25		R-19	
	R-25		R-20	
	NA		R-19	
	R-30		R-20	
	R-38		R-20	
<b>Floors over outdoor air or unconditioned space (<i>R</i>-value)</b> All-wood joist/truss Metal joist/truss Concrete slab or deck	<b>Insulation between framing</b>		<b>Continuous insulation</b>	
	R-11		R-6	
	R-11		R-6	
	NA		R-6	
<b>Above-grade walls (<i>R</i>-value)</b> Framed	<b>No framing</b>	<b>Metal framing</b>	<b>Wood framing</b>	
	R-value cavity	NA	R-13	R-11
	R-value continuous	NA	R-3	R-0
	CMU, ≥ 8 in., with integral insulation			
	R-value cavity	NA, NA	R-11	R-11
	R-value continuous	R-5	R-0	R-0
	Other masonry walls			
	R-value cavity	NA	R-11	R-11
	R-value continuous	R-5	R-0	R-0

**\*\*\*Add footnote "f" to SHGC column heading in Tables 802.2 (2), 802.2 (3) and 802.2 (4) to read as follows:**

- f. Minimum SHGC requirements do not apply to glazing as follows:
  - 1. Any glazing facing within 45 degrees of true north.
  - 2. Any glazing facing within 45 degrees of true south which is shaded along its full width by a permanent overhang with a projection factor of 0.30 or greater.
  - 3. Any glazing with permanent attached screens where the screens have a rated shading coefficient of 0.60 or less.

(Reason: This exception has been previously granted in Chapter 5. The logic for the exception is the same.)

**\*\*Section 805.2.1 Interior Lighting Controls; add a third sentence to read:**

Large spaces shall have a separate switch or control for each 2500 square feet of floor area.

(Reason: This change is consistent with energy conservation measures in the 4th public review ASHRAE 90.1 - 1999, Space Control. This "zoning" is especially relevant for after-hours employees in office spaces.)



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**\*\*Delete Figures 902.1 (1-43, 45-51).**

(Reason: There is no need to reference the maps of other states.)

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**\*\* Chapter 10; Replace referenced standard as follows:**

~~ASHRAE 90.1-2001 — Energy Standard for Buildings Except Low-Rise Residential Buildings~~

ASHRAE/IES -- 99      Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings  
-- 1999 Edition

Chapter 10 – Referenced Standards: Under the heading **ASHRAE** and **IESNA**, change the Standard Reference Number from 90.1-2001 to 90.1-1999.

(Reason: This amendment is consistent with the Texas Building Energy Performance Standards.)

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END