

**Recommended Amendments to the
2000 International Energy Conservation Code
North Central Texas Council of Governments region**

****Section 101.3; amend as follows:**

101.3 Compliance. Compliance with this code shall be determined in accordance with Sections 101.3.1, ~~and 101.3.2, or 101.3.3.~~

****Add the following item:**

101.3.3. Alternative compliance. A building certified through a voluntary energy performance testing program approved as meeting or exceeding the provisions of this code may be deemed to comply with the requirements of this code.

(Reason: This amendment would encourage participation in above-code programs and provide an attractive alternative path for unconventional builders who are committed to quality and efficiency, but concerned about mechanics of code compliance. NCTCOG will arrange advisory review of such programs.)

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

CONDITION	VALUE
Winter ^a , design dry-bulb (°F) (99.6%)	17
Summer ^a , design dry-bulb (°F) (0.4%)	100
Summer ^a , design wet-bulb (°F) (0.4%)	78
Degree days heating ^b	2407
Degree days cooling ^b	2603
Climate zone ^c	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.)

****Delete Figures 302.1 (1-43, 45-51).**

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

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

2. Buildings located in Climate Zones 5 through 6 as indicated in Table 302.1.

(Reason: This would eliminate the requirement of a vapor retarder throughout the NCTCOG region. Eliminating vapor retarders in hot and humid climate zones is consistent with the recommendation of most building scientists.)

****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 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.)

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

Table 502.2^{a,g}
HEATING AND COOLING CRITERIA

Element	Mode	Type A-1 Residential Buildings U _o	Type A-2 Residential Buildings U _o
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.)

****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.)

****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, Type A-1 Residential Buildings, Based on Window Area as a Percent of Gross Exterior Wall Area (for zones 5b and 6b)

% 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%	0.65	R-30	R-13	R-11	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, Type A-2 Residential Buildings, 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-6
<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.)

****Section 503.3.3.3; amend as follows:**

All supply and return-air ducts and plenums installed as part of an HVAC air-distribution system shall be thermally insulated in accordance with Table 503.3.3.3 or where such ducts or plenums operate at static pressures greater than 2 in. w.g. (500 Pa) in accordance with Section 503.3.3.4.1.

(Reason: This change clarifies that requirements for higher pressure ducts are given elsewhere. These duct systems are typically associated with commercially sized equipment. This change will be included in the IECC 2001 Supplement.)

****Section 503.3.3.4; amend subsections as follows:**

503.3.3.4.1 High- and medium-pressure duct systems. All ducts and plenums operating at static pressures greater than 2 in. w.g. (500 Pa) shall be insulated and sealed in accordance with Section 803.2.8. High pressure and medium pressure ducts operating at static pressures in excess of 3 in. w.g. (750 Pa) shall be leak tested in accordance with SMACNA HVAC Air Duct Leakage Test Manual with a rate of air leakage not to exceed the maximum rate specified in that standard. Section 803.3.6. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code*.

503.3.3.4.2 Low pressure duct systems. All longitudinal and transverse joints, seams and connections of low pressure supply and return ducts operating at static pressures less than or equal to 2 in. w.g. (500 Pa) shall be securely fastened and sealed with welds gaskets, mastics (adhesives), mastic-plus-embedded fabric systems or tapes installed in accordance with the manufacturer's installation instructions. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code*.

{Exception is unchanged}

(Reason: These changes, which will be included in the 2001 Supplement to the IECC, are necessary because the term "low" and "high" have been discontinued by SMACNA. The modification more clearly delineates the static pressure classification of duct systems in question.)

**** 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**

WINDOW AND GLAZED DOOR AREA 10 PERCENT OR LESS OF ABOVE-GRADE WALL AREA			
ELEMENT	CONDITION/VALUE (Zones 5B,6B)		
Skylights (<i>U</i>-factor)	1		
Slab or below-grade wall (<i>R</i>-value)	R-0		
Windows and glass doors PF < 0.25 0.25 ≤ PF < 0.50 PF ≥ 0.50	SHGC	<i>U</i>-factor	
	Any	Any	
	Any	Any	
Roof assemblies (<i>R</i>-value) All-wood joist/truss Metal joist/truss Concrete slab or deck Metal purlin with thermal block Metal purlin without thermal block	Insulation between framing	Continuous insulation	
	R-19	R-16	
	R-25	R-17	
	NA	R-16	
	R-25	R-17	
Floors over outdoor air or unconditioned space (<i>R</i>-value) All-wood joist/truss Metal joist/truss Concrete slab or deck	Insulation between framing	Continuous insulation	
	R-11	R-6	
	R-11	R-6	
	NA	R-6	
Above-grade walls (<i>R</i>-value) 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	No framing	Metal framing	Wood framing
	NA	R-11	R-11
	NA	R-0	R-0
	NA	R-0	R-0
	R-0	R-0	R-0
	NA	R-0	R-0
	R-0	R-0	R-0

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

WINDOW AND GLAZED DOOR AREA OVER 10 PERCENT BUT NOT GREATER THAN 25 PERCENT OF ABOVE-GRADE WALL AREA			
ELEMENT	CONDITION/VALUE		
Skylights (<i>U</i>-factor)	1		
Slab or below-grade wall (<i>R</i>-value)	R-0		
Windows and glass doors	SHGC	<i>U</i>-factor	
PF < 0.25	0.6	Any	
0.25 ≤ PF < 0.50	0.7	Any	
PF ≥ 0.50	Any	Any	
Roof assemblies (<i>R</i>-value)	Insulation between framing	Continuous insulation	
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	
Floors over outdoor air or unconditioned space (<i>R</i>-value)	Insulation between framing	Continuous insulation	
All-wood joist/truss	R-11	R-6	
Metal joist/truss	R-11	R-6	
Concrete slab or deck	NA	R-6	
Above-grade walls (<i>R</i>-value)	No framing	Metal framing	Wood framing
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(3)
BUILDING ENVELOPE REQUIREMENTS**

WINDOW AND GLAZED DOOR AREA OVER 25 PERCENT BUT NOT GREATER THAN 40 PERCENT OF ABOVE-GRADE WALL AREA			
ELEMENT	CONDITION/VALUE		
Skylights (<i>U</i>-factor)	1		
Slab or below-grade wall (<i>R</i>-value)	R-0		
Windows and glass doors	SHGC	<i>U</i>-factor	
PF < 0.25	0.4	0.7	
0.25 ≤ PF < 0.50	0.5	0.7	
PF ≥ 0.50	0.6	0.7	
Roof assemblies (<i>R</i>-value)	Insulation between framing	Continuous insulation	
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	
Floors over outdoor air or unconditioned space (<i>R</i>-value)	Insulation between framing	Continuous insulation	
All-wood joist/truss	R-11	R-6	
Metal joist/truss	R-11	R-6	
Concrete slab or deck	NA	R-6	
Above-grade walls (<i>R</i>-value)	No framing	Metal framing	Wood framing
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**

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

****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.)

**** Chapter 9; Replace referenced standard as follows:**

~~ASHRAE/IES -- 93 Energy Code for Commercial and High-Rise Residential Buildings -- Based on ASHRAE/IES 90.1-1989 with Revisions thru October 7, 1997 including Errata and Addendum 90.1c-1993~~

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

(Reason: This adopts the most recent edition of the ASHRAE Standard 90.1 as the reference standard for commercial construction.)

END