ORDINANCE NO. 3479

AN ORDINANCE OF THE CITY OF MESQUITE, TEXAS, AMENDING CHAPTER 5 OF THE CODE OF THE CITY OF MESQUITE BY ADDING A NEW ARTICLE XIV THEREBY ADOPTING THE INTERNATIONAL ENERGY CONSERVATION CODE, 2000 EDITION, AND PROVIDING CERTAIN ADDITIONS AND DELETIONS THERETO; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A PENALTY NOT TO EXCEED TWO THOUSAND ($2,000.00) DOLLARS FOR EACH OFFENSE; AND DECLARING AN EFFECTIVE DATE.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MESQUITE, TEXAS:

SECTION 1: That Chapter 5 of the Code of the City of Mesquite, Texas, is hereby amended by adding a new Article XIV to read as follows, in all other respects said Code and Chapter to remain in full force and effect:

ARTICLE XIV. ENERGY CODE

DIVISION 1. GENERAL

Sec. 5-469. Adopted.

The *International Energy Conservation Code*, 2000 Edition, a publication of the International Code Council (I.C.C.), is hereby adopted and designated as the official energy code of the City of Mesquite to the same extent as if such were copied verbatim in this Article subject to the amendments prescribed in this Article. The Code shall be applicable and shall regulate the design of building envelopes for adequate thermal resistance and low air leakage and the design and selection of mechanical, electrical, service water heating and illumination systems and equipment which will enable effective use of energy in new building construction. A copy of the *International Energy Conservation Code,* 2000 Edition, and amendments thereto shall be maintained in the office of the City Secretary as an original document and ordinance of the city.

DIVISION 2. AMENDMENTS

Sec. 5-470. Amendments and deletions.

The following amendments are made to the *International Energy Conservation Code*, 2000 Edition:

(1) *Chapter 1, Administration.*

(a) *Section 101.3.* Amend by deleting the section in its entirety and adding a new Section 101.3 to read as follows:

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

(b) *Section 101.3.3.* Amend by adding a new Section 101.3.3 to read as follows:

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.

(2) *Chapter 3, Design Conditions.*

(a) *Table 302.1.* Amend by deleting the table in its entirety and adding a new Table 302.1 to read as follows:

TABLE 302.1
HEATING AND COOLING CRITERIA

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

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.

b. The degree days heating (base 65°F) and cooling (base 65°F) shall be selected from NOAA "Annual Degree Days to Selected Bases Derived from the 1961-1990 Normals," the ASHRAE *Handbook of Fundamentals,* data available from adjacent military installations, or other source of local weather data acceptable to the Code Official.

c. The climate zone shall be selected from the applicable map provided in Figures 302.1(1) through 302.1(51) on the following pages.

(b) *Figures 302.1(1) – (43) and (45) – (51).* Amend by deleting Figures 302.1 (1) – (43) and (45) – (51) in their entirety.

(3) *Chapter 5, Residential Building Design by Component Performance Approach.*

(a) *Section 502.1.1.* Amend by deleting Exception 2 in Section 502.1.1 in its entirety and adding a new Exception 2 to Section 502.1.1 to read as follows:

2. Buildings located in Climate Zones 1 through 9 as indicated in Table 302.1.

(b) *Section 502.1.5.* Amend by adding exceptions to Section 502.1.5 to read as follows:

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.

(c) *Table 502.2.* Amend by deleting the table in its entirety and adding a new Table 502.2 to read as follows:

TABLE 502.2[a-g]
HEATING AND COOLING CRITERIA
ELEMENT MODE TYPE A-1 RESIDENTIAL

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

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

b. There are no insulation requirements for heated slabs in locations having less than 500 Fahrenheit HDD.

c. There are no insulation requirements for unheated slabs in locations having less than 2,500 Fahrenheit HDD.

d. Slab edge insulation is not required for unheated slabs in areas of very heavy termite infestation probability in accordance with Section 502.2.1.4, and as shown in Figure 502.2(7).

e. Basement and crawl space wall U-factors shall be based on the wall components and surface air films. Adjacent soil shall not be considered in the determination of the U-factor.

f. Typical foundation insulation techniques can be found in the DOE *Building Foundation Design Handbook.*

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

(d) *Figures 502.2 (1) - (6).* Amend by deleting the Figures 502.2 (1) – (6) in their entirety.

(e) *Figure 502.2 (7).* Amend by adding a note to Figure 502.2 (7) to read as follows:

> 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.

(f) *Tables 502.4 (1) – (6).* Amend by deleting Tables 502.4 (1) – (6) in their entirety and adding a new Table 502.2.4 (1) to read as follows:

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 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

(g) *Tables 502.4 (7) – (9).* Amend by deleting Tables 502.4 (7) - (9) in their entirety and adding a new Table 502.2.4 (2) to read as follows:

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 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

(h) *Section 503.3.3.3.* Amend by deleting the first paragraph of the section in its entirety and adding a new first paragraph to Section 503.3.3.3 to read as follows:

> *Duct and plenum.* 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 two in. w.g. (500 Pa) in accordance with Section 503.3.3.4.1.

(i) *Section 503.3.3.4.1.* Amend by deleting the section in its entirety and adding a new Section 503.3.3.4.1 to read as follows:

> *High- and medium-pressure duct systems.* All ducts and plenums operating at static pressures greater than two in. w.g. (500 Pa) shall be insulated and sealed in accordance with Section 803.2.8. Ducts operating at static pressures in excess of three in. w.g. (750 Pa) shall be leak-tested in accordance with 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*.

(j) *Section 503.3.3.4.2.* Amend by deleting the first paragraph in the section in its entirety and adding a new first paragraph to Section 503.3.3.4.2 to read as follows:

> *Low-pressure duct systems.* All longitudinal and transverse joints, seams and connections of 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*.

(4) *Chapter 8, Design by Acceptable Practice for Commercial Buildings.*

(a) *Table 802.2 (1).* Amend by deleting the table in its entirety and adding a new Table 802.2 (1) to read as follows:

TABLE 802.2(1)
BUILDING ENVELOPE REQUIREMENTS
WINDOW AND GLAZED DOOR AREA

Windows and Glazed Door Area 10 Percent or Less of Above-Grade Wall Area			
ELEMENT	**CONDITION / VALUE**		
Skylight (U-factor)	1		
Slab or below-grade wall (R–value)	R-0		
Windows and glass doors	**SHGC**	**U-factor**	
PF < 0.25	Any	Any	
0.25 < PF < 0.50	Any	Any	
PF > 0.50	Any	Any	
Roof assemblies (R-value)	**Insulation between framing**	**Continuous insulation**	
All-wood joist/truss	R-19	R-16	
Metal joist/truss	R-25	R-17	
Concrete slab or deck	NA	R-16	
Metal purlin with thermal block	R-25	R-17	
Metal purlin without thermal block	X	R-17	
Floors over outdoor air or unconditioned space (R-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 (R-value)	**No framing**	**Metal framing**	**Wood framing**
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 masonary walls			
R-value cavity	NA	R-0	R-0
R-value continuous	R-0	R-0	R-0

a. Values shall be determined from Tables 802.2(5) through 802.2(37) using the climate zone(s) specified in Table 302.1 (Note: The tables begin on page 116.)
b. "NA" indicates the condition is not applicable.
c. An R-value of zero indicates no insulation is required.
d. "Any" indicates any available product will comply.
e. "X" indicates no complying option exists for this condition.

(b) *Tables 802.2 (2).* Amend by deleting the table in its entirety and adding a new Table 802.2 (2) to read as follows:

Table 802.2 (2)
BUILDING ENVELOPE REQUIREMENTS

Windows and Glazed Door Area Over 10 Percent But Not Greater Than 25 Percent of Above-Grade Wall Area			
ELEMENT	**CONDITION / VALUE**		
Skylight (U-factor)	1		
Slab or below-grade wall (R–value)	R-0		
Windows and glass doors	**SHGC**	**U-factor**	
PF < 0.25	0.6	Any	
0.25 < PF < 0.50	0.7	Any	
PF > 0.50	Any	Any	
Roof assemblies (R-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 (R-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 (R-value)	**No framing**	**Metal framing**	**Wood framing**
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 masonary walls			
R-value cavity	NA	R-11	R-11
R-value continuous	R-5	R-0	R-0

a. Values shall be determined from Tables 802.2(5) through 802.2(37) using the climate zone(s) specified in Table 302.1 (Note: The tables begin on page 116.)
b. "NA" indicates the condition is not applicable.
c. An R-value of zero indicates no insulation is required.
d. "Any" indicates any available product will comply.
e. "X" indicates no complying option exists for this condition.

(c) *Tables 802.2 (3).* Amend by deleting the table in its entirety and adding a new Table 802.2 (3) to read as follows:

Table 802.2(3)
BUILDING ENVELOPE REQUIREMENTS

Windows and Glazed Door Area Over 25 Percent But Not Greater Than 40 Percent of Above-Grade Wall Area			
ELEMENT	**CONDITION / VALUE**		
Skylight (U-factor)	1		
Slab or below-grade wall (R–value)	R-0		
Windows and glass doors	**SHGC**	**U-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 (R-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 (R-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 (R-value)	**No framing**	**Metal framing**	**Wood framing**
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 masonary walls			
R-value cavity	NA	R–11	R–11
R-value continuous	R-5	R–0	R–0

a. Values shall be determined from Tables 802.2(5) through 802.2(37) using the climate zone(s) specified in Table 302.1 (Note: The tables begin on page 116.)
b. "NA" indicates the condition is not applicable.
c. An R-value of zero indicates no insulation is required.
d. "Any" indicates any available product will comply.
e. "X" indicates no complying option exists for this condition.

(d) *Tables 802.2 (4).* Amend by deleting the table in its entirety and adding a new Table 802.2 (4) to read as follows:

Table 802.2(4)
BUILDING ENVELOPE REQUIREMENTS

Windows and Glazed Door Area Over 40 Percent But Not Greater Than 50 Percent of Above-Grade Wall Area			
ELEMENT	**CONDITION / VALUE**		
Skylight (U-factor)	1		
Slab or below-grade wall (R–value)	R-0		
Windows and glass doors	**SHGC**	**U-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 (R-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	R-38	R-20	
Floors over outdoor air or unconditioned space (R-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 (R-value)	**No framing**	**Metal framing**	**Wood framing**
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	R-11	R-11
R-value continuous	R-5	R-0	R-0
Other masonary walls			
R-value cavity	NA	R-11	R-11
R-value continuous	R-5	R-0	R-0

a. Values shall be determined from Tables 802.2(5) through 802.2(37) using the climate zone(s) specified in Table 302.1 (Note: The tables begin on page 116.)
b. "NA" indicates the condition is not applicable.
c. An R-value of zero indicates no insulation is required.
d. "Any" indicates any available product will comply.
e. "X" indicates no complying option exists for this condition.

(e) *Tables 802.2 (5) – (37).* Amend by deleting Tables 802.5 (5) – (37) in their entirety.

(f) *Section 805.2.1.* Amend by deleting the section in its entirety and adding a new Section 805.2.1 to read as follows:

Interior lighting controls. Each area enclosed by walls or floor-to-ceiling partitions shall have at least one manual control for the lighting serving that area. The required controls shall be located within the area served by the controls or be a remote switch that identifies the lights served and indicates their status. Large spaces shall have a separate switch or control for each 2500 square-foot area.

(5) *Chapter 9, Referenced Standards.*

(a) *ASHRAE/IES-93.* Amend by deleting the referenced standard in its entirety and adding a new referenced standard "ASHRAE/IES-99" to read as follows:

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

SECTION 2. That all ordinances or portions thereof in conflict with the provisions of this ordinance, to the extent of such conflict, are hereby repealed. To the extent that such ordinances or portions thereof are not in conflict herewith, the same shall remain in full force and effect.

SECTION 3. That should any word, sentence, clause, paragraph or provision of this ordinance be held to be invalid or unconstitutional, the validity of the remaining provisions of this ordinance shall not be affected and shall remain in full force and effect.

SECTION 4. That any person, firm or corporation violating any of the provisions or terms of this ordinance shall be deemed to be guilty of a Class C Misdemeanor and upon conviction in the Municipal Court shall be punished by a fine not to exceed Two Thousand ($2,000.00) Dollars for each offense.

SECTION 5. That this ordinance shall take effect on April 4, 2002.

DULY PASSED AND APPROVED by the City Council of the City of Mesquite, Texas, on the 4th day of February, 2002.

Mike Anderson
Mayor

ATTEST:

Ellen Williams
City Secretary

APPROVED:

B. J. Smith
City Attorney