

Texas Building Guide to Single-family Residential Energy Code Compliance

International Residential Code (2015 IRC)

Using this Guide

This guide contains three color-coded climate zones (2, 3, or 4) designed to simplify determination of the envelope requirements of the 2015 International Residential Code (IRC, Chapter 11) for Texas. Each county is assigned to one of the three climate zones in Texas.

Please refer to the 2015 IRC for a complete description of all the requirements and compliance alternatives. Local requirements may also vary.

Step-by-Step Instructions

1. Use the color-coded map to locate the county in which the construction or remodeling is taking place and find the climate zone (2, 3, or 4) associated with that county.
2. Use the Table of Building Envelope Requirements on the back of this sheet to find the set of construction options associated with the climate zone selected. Construct or remodel the building according to the envelope requirements and comply with basic code requirements, which include:
 - Installing components to manufacturer specifications
 - Documenting load calculations to ensure properly sized HVAC equipment
 - Providing preventative maintenance manuals
 - Installing temperature controls
 - Limiting window and door leakage
 - Caulking or sealing joints, gaps, and penetrations
 - Installing vapor retarders where required
 - Sealing and insulating ducts (duct tape not allowed)
 - Insulating pipes properly
 - Duct and air leakage testing

Texas Counties by Climate Zones

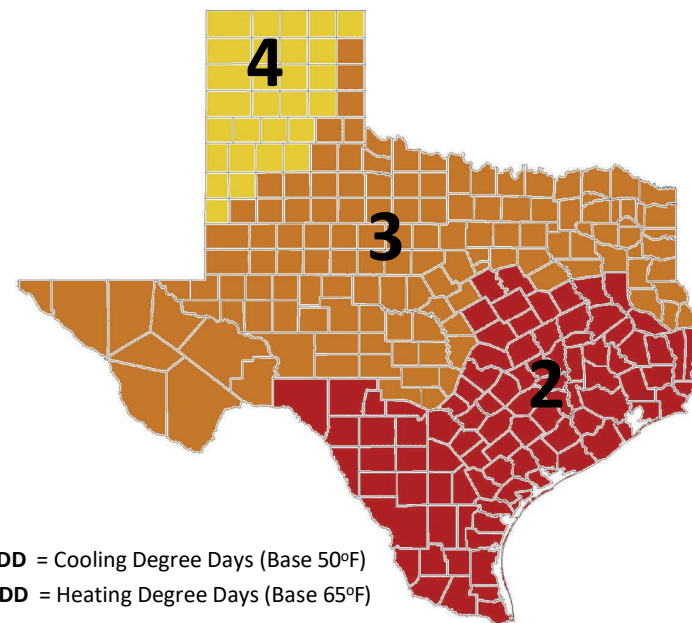
Use the color-code lists or Texas map to locate a county. The reverse side of the guide shows the prescriptive paths for the selected zones.

4 CDD50°F < 4500 and HDD65°F < 5400

Armstrong	Deaf Smith	Hockley	Parmer
Bailey	Donley	Hutchinson	Poter
Briscoe	Floyd	Lamb	Randall
Carson	Gray	Lipscomb	Roberts
Castro	Hale	Moore	Sherman
Cochran	Hansford	Ochiltree	Swisher
Dallam	Hartley	Oldham	Yoakum

3 4500 < CDD50° ≤ 6300 and HDD65°F ≤ 5400

Andrews	El Paso	King	Sabine
Archer	Erath	Knox	San Augustine
Baylor	Fannin	Lamar	San Saba
Blanco	Fisher	Lampasas	Schleicher
Borden	Foard	Llano	Scurry
Bowie	Franklin	Loving	Shackelford
Brewster	Gaines	Lubbock	Shelby
Brown	Garza	Lynn	Smith
Burnet	Gillespie	Marion	Somervell
Callahan	Glasscock	Martin	Stephens
Camp	Grayson	Mason	Sterling
Cass	Gregg	McCulloch	Stonewall
Childress	Hall	Menard	Suton
Clay	Hamilton	Midland	Tarrant
Coke	Hardeman	Mills	Taylor
Coleman	Harrison	Mitchell	Terrell
Collin	Haskell	Montague	Terry
Collingsworth	Hemphill	Morris	Throckmorton
Comanche	Henderson	Motley	Titus
Concho	Hood	Nacogdoches	Tom Green
Cooke	Hopkins	Navarro	Upshur
Cottle	Howard	Nolan	Upton
Crane	Hudspeth	Palo Pinto	Van Zandt
Crocket	Hunt	Panola	Ward
Crosby	Irion	Parker	Wheeler
Culberson	Jack	Pecos	Wichita
Dallas	Jeff Davis	Presidio	Wilbarger
Dawson	Johnson	Rains	Winkler
Delta	Jones	Reagan	Wise
Denton	Kaufman	Red River	Wood
Dickens	Kendall	Reeves	Young
Eastland	Kent	Rockwall	
Ector	Kerr	Runnels	
Ellis	Kimble	Rusk	



2 6300 < CDD50° ≤ 9000

Anderson	Cherokee	Harris	Limestone	Starr
Angelina	Colorado	Hays	LiveOak	Travis
Aransas	Comal	Hidalgo	Madison	Trinity
Atascosa	Coryell	Hill	Matagorda	Tyler
Austin	De Witt	Houston	Maverick	Uvalde
Bandera	Dimmit	Jackson	McLennan	Val Verde
Bastrop	Duval	Jasper	McMullen	Victoria
Bee	Edwards	Jefferson	Medina	Walker
Bell	Falls	Jim Hogg	Milam	Waller
Bexar	Fayette	Jim Wells	Montgomery	Washington
Bosque	Fort Bend	Karnes	Newton	Webb
Brazoria	Freestone	Kenedy	Nueces	Wharton
Brazos	Frio	Kinney	Orange	Willacy
Brooks	Galveston	Kleberg	Polk	Williamson
Burleson	Goliad	Lav Salle	Real	Wilson
Caldwell	Conzaes	Lavaca	Refugio	Webb
Calhoun	Grimes	Lee	Robertson	Zapata
Cameron	Guadalupe	Leon	San Jacinto	Zavala
Chambers	Hardin	Liberty	San Patricio	



Texas Single-family Residential Building Envelope Requirements

Simplified Prescriptive Paths for Envelope Compliance with the International Residential Code (2015 IRC)

Limitations

Texas has enacted a statewide energy code. This guide provides a simplified prescriptive specification for individual envelope components to aid with code compliance. This guide does not provide a guarantee for meeting the IRC. For additional details on the IRC or IECC, refer to the code documents, consult local code officials, or contact the International Code Council. IRC compliance may be demonstrated using the IECC Simulated Performance alternative or the Energy Rating Index alternative.

IRC Table N1102.1 — Building Envelope Requirements^a

Climate Zone	Insulation R-value							Fenestration		
	Ceiling R-value	Wood Frame Wall R-value	Mass Wall R-value	Floor R-value	Basement Wall	Slab R-value Depth	Crawl Space Wall	Fenestration U-Factor	Skylight U-Factor	Glazed SHGC
2	38	13	4/6	13	0	0	0	0.40	0.65	0.25
3	38	20 or 13 + 5 ^h	8/13	19	5/13 ^f	0	5/13	0.35	0.55	0.25
4	49	20 or 13 + 5 ^h	8/13	19	10/13	10, 2ft	10/13	0.35	0.55	0.40

- R-values are minimums. U-factors and SHGC are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-value specified in the table.
- The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.
- "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.
- R-5 shall be added to the required slab-edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Climate Zones 1 through 3 for heated slabs.
- Not applicable in Texas
- Basement wall insulation is not required in warm-humid locations as defined by Figure N1101.2 and Table N1101.2.
- Not applicable in Texas
- First value is cavity insulation, second is continuous insulation or insulated siding, so "13 + 5" means R-13 cavity insulation plus R-5 continuous insulation
- The second R-value applies when more than half the insulation is on the interior of the mass wall.

Notes:

- The Table of Building Envelope Requirements is based upon the 2015 International Residential Code (IRC), published by the International Code Council.
- The IRC Prescriptive requirements are applicable to single family construction. Alternately, the International Energy Conservation Code (IECC) may be used.
- Applies to single-family, wood-frame residential construction only. For mass wall construction, see IRC Section N1102.2.5; for steel-framed ceilings, wall, and floors, see IRC Section N1102.2.6.
- "Glazed" refers to any translucent or transparent material in exterior openings of buildings, including windows, skylights, sliding glass doors, the glass areas of opaque doors, and glass block.
- Fenestration product (window, door, glazing) U-factor and SHGC must be determined from the National Fenestration Rating Council (NFRC) label on the product or obtained from the default tables [IRC Table N1101.12.3(1) for glazing; IRC Table N1101.12.3(2) for doors; and N1101.10.3(3) for SHGC].
- Up to 15 square feet of glazed fenestration per dwelling unit shall be exempted from U-factor and SHGC requirements in IRC Section N1102.3.3 and one side-hinged opaque door assembly up to 24 square feet in area is exempted from the U-factor requirement in section N1102.3.4. The exemptions do not apply if using the U-factor alternative approach in Section N1102.1.4 and the total-UA alternative approach in Section N1102.1.5.
- Air sealing and insulation: Building envelope air tightness and insulation installation shall be demonstrated to comply through a blower door test (IRC Section N1102.4.1.2). Ducts shall be sealed and tested (N1103.3.3)
- A minimum of 75% of the lamps or permanently installed lighting fixtures shall be high-efficacy (N1104.1)
- Prescriptive packages are based upon meeting or exceeding minimum equipment efficiencies for HVAC and water heating set by the Department of Energy (DOE) and the National Appliance and Energy Conservation Act (NAECA).

