

2009 INTERNATIONAL RESIDENTIAL BUILDING CODE REQUIREMENTS

SECTION N1102 - BUILDING THERMAL ENVELOPE

N1102.2.8 Crawl space walls. As an alternative to insulating floors over crawl spaces, insulation of crawl space walls when the crawl space is not vented to the outside is permitted. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm). Exposed earth in unvented crawl space foundations shall be covered with a continuous vapor retarder. All joints of the vapor retarder shall overlap by 6 inches (152 mm) and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches (152 mm) up the stem wall and shall be attached to the stem wall.

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a

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 & 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 ^f	0.40	0.60	NR	38	13	5	19	10/13	10, 2 ft	10/13
5 ^g	0.35	0.60	NR	38	19 or 13 + 5 ⁱ	13	30 ^h	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	19 or 13 + 5 ⁱ	15	30 ^h	10/13	10, 4 ft	10/13
7 & 8	0.35	0.60	NR	49	21	19	30 ^h	10/13	10, 4 ft	10/13

- a. R-Values are minimums. U-factors and SHGC are maximums. R-19 insulation shall be permitted to be compressed into a 2x6 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. Except Marine.
- g. And Marine 4.
- h. Or insulation sufficient to fill the framing cavity, R-19 minimum.
- i. "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.

All counties in Tennessee are located in either Zone 3 or Zone 4.

N1102.2.3 Mass walls. Mass walls, for the purposes of this chapter, shall be considered walls of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth (adobe, compressed earth block, rammed earth) and solid timber/logs. The provisions of Section N1102.1 for mass walls shall be application when at least 50 percent of the required insulation R-value is on the exterior of, or integral to, the wall. Walls that do not meet this criterion for insulation placement shall meet the wood frame wall insulation requirements of Section N1102.1.