



Waterloo Building Department
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www.cityofwaterlooia.com

RESIDENTIAL ENERGY CODE

2012 International Energy Conservation Code

The 2012 Energy Code applies to the construction of all new single and double family residential homes and additions as adopted by the State of Iowa.

For new dwellings, a permanent certificate shall be affixed to the electrical panel by the builder listing all of the R-values, U-factors and the results from an air leakage test. A copy of the air leakage test is also required to be supplied to the Building Department.

Follow Table R402.1.1 to determine insulation and fenestration requirements.

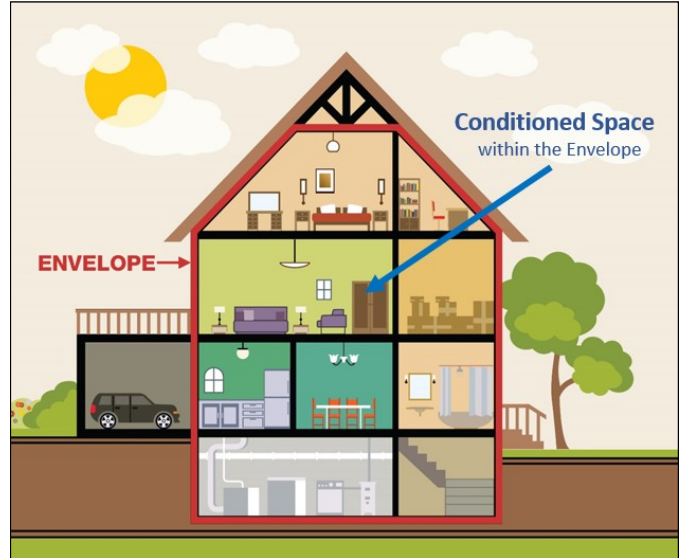


TABLE R402.1.1

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT ^a as amended by the State of Iowa

BLACK HAWK COUNTY CLIMATE ZONE	FENESTRATION U-FACTOR ^b	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^b	CEILING R-VALUE	WOOD FRAME WALL R- VALUE	MASS WALL R-VALUE ⁱ	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^c WALL R-VALUE
6A Moist	0.32	0.55	NR	49	20 or 13+5 ^h	15/20	30 ^g	15/19	10, 4ft	15/19

- 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 (Solar Heat Gain Coefficient) column applies to all glazed fenestration.
- "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.
- Or insulation sufficient to fill the framing cavity, R19 minimum.
- First value is cavity insulation, second is continuous insulation or insulated siding, so "13+5" means R13 cavity insulation plus R5 continuous insulation or insulated siding. If structural sheathing covers 40% or less of the exterior, continuous insulation R-value shall be permitted to be reduced by no more than R3 in the locations where structural sheathing is used—to maintain a consistent total sheathing thickness.
- The second R-value applies when more than half the insulation is on the interior of the mass wall.

*This brochure is intended to explain some of the requirements for Residential Energy Efficiency .
 If you have further questions, please contact the Waterloo Building Department.*

R402.2.2 Ceilings without Attic Spaces. Where the design of the roof/ceiling assembly does not allow sufficient space for the required R49 value, the minimum allowed will be R30. This reduction is limited to 500 square feet or 20% of the total insulated ceiling area, whichever is less.

R402.2.3 Eave Baffle. For air permeable insulations in vented attics, a baffle shall be installed adjacent to soffit and eave vents. Baffles shall maintain an opening equal or greater than the size of the vent. The baffle shall extend over the top of the attic insulation. The baffle shall be permitted to be any solid material.

R402.2.4 Access hatches and doors. Access doors from conditioned spaces to unconditioned spaces (attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces.

R402.2.7 Floors. Floor insulation shall be installed to maintain permanent contact with the underside of the sub-floor decking.

R402.2.8 Basement Walls. Basements with conditioned space shall be insulated from the top of the basement wall down to 10' below grade or to the basement floor. Basements with unconditioned space shall meet this requirement unless the floor over head is insulated accordingly.

R402.2.9 Slab-on-grade floors. Insulation with an R-value of R10 for slab-on-grade floors shall extend downward from the top of the slab on the outside or inside of the foundation wall a distance of 4' by any combination of vertical or vertical + horizontal combined. Any insulation extending away from the building shall be protected by pavement or by a minimum of 10" of soil. The top edge of the insulation installed between the exterior wall and the edge of the interior slab shall be permitted to be cut at a 45-degree angle away from the exterior wall.

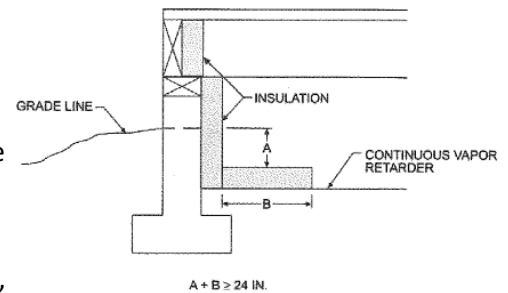
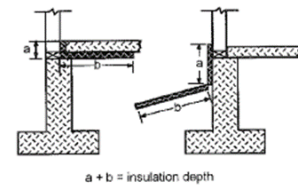
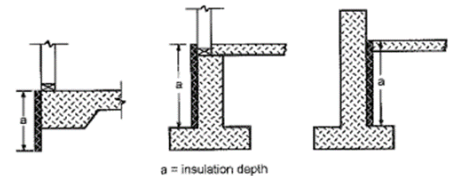


Figure R402.2.10
CRAWL SPACE WALL INSULATION

R402.2.10 Crawl Space Walls. As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. 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". Exposed earth in unvented crawl space foundation shall be covered with a continuous Class I vapor retarder with all joints overlapping by 6", and be sealed or taped with edges extending at least 6" up the stem wall and shall be attached to the stem wall and then capped with a 2" concrete slab.

R402.2.12 Sunroom Insulation. Sunrooms enclosing conditioned space and using the existing home conditioning mechanicals will meet the requirements of Table 402.1.1. Sunrooms with thermal isolation, meaning it's own heating and cooling unit in the sunroom space, the insulation requirements can be reduced to R24 in the new ceiling and R13 in the new walls.

R402.4 Mandatory Air Leakage Test. Each new dwelling unit shall be tested and verified as having an air leakage rate **not exceeding 4 air changes per hour**. Testing shall be conducted with a blower door at a pressure of 0.2" w.g. (50 pascals) by a third party. Written reports of the results shall be provided to the Building Department.

Further requirements can be found in the 2012 International Energy Conservation