



CITY OF CLEVELAND, TN DEVELOPMENT AND ENGINEERING RESIDENTIAL INSPECTION CHECKLIST

Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed

2018 IECC ENERGY INSPECTION REQUIREMENTS:

REQUIREMENT AND CODE SECTION OR REFERENCE (R-value table is from the 2009 IECC as adopted by the State of TN and the City of Cleveland)

The building thermal envelope drives all your insulation requirements. First you must determine where the building thermal envelope has been located.

TABLE 402.1.1 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a

CLIMATE ZONE	FENESTRATION U-FACTOR ^b	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{b, e}	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
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13

- R-values are minimums. U-factors and SHGC are maximums. R-19 batts compressed into a nominal 2 × 6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.
- The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
- "15/19" means R-15 continuous insulated sheathing 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 insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
- 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 Zones 1 through 3 for heated slabs.
- There are no SHGC requirements in the Marine Zone.
- Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.
- Or insulation sufficient to fill the framing cavity, R-19 minimum.
- "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with



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insulated sheathing of at least R-2.



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- i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.
- j. For impact rated fenestration complying with Section R301.2.1.2 of the *International Residential Code* or Section 1609.1.2 of the *International Building Code*, the maximum *U*-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

General

1. R-value is applied by the manufacture to each piece of insulation 12 inches or greater in width. IECC 303.1.1
2. Blown or sprayed insulation requires documentation of the initial installed thickness, settled thickness, settled R-value, installed density, coverage area and number of bags installed. IECC 303.1.1.1
3. A permanent certificate is posted in a utility room, mechanical room, or other approved location inside the house. IECC 401.3
4. Insulation applied to the exterior below grade wall shall be protected to prevent degradation and extend a minimum of 6" below grade. IECC 303.2.1

Building Thermal Envelope

1. The building thermal envelope meets requirements for Climate Zone 4. IECC 402.1
2. Access doors from conditioned to unconditioned spaces are weatherstripped and insulated. IECC 402.2.4
3. Baffles or venting to provide 1" space between insulation and roof sheathing. IECC 402.2.3
4. In ceilings with attic spaces, R-30 may be used to satisfy the requirement for R-38 whenever full height uncompressed R-30 insulation extends over the wall top plate at the eaves and 100% of the ceiling is at this full R-value. IECC 402.2.1
5. In ceiling without attic space R-30 may be used when space does not allow for higher R-values. The reduction is limited to 500 sq ft. or 20 percent of the total insulated ceiling area. IECC 402.2.2
6. The thickness of blown in insulation is noted on markers. One marker is required for every 300 sq feet of attic space with numbers a minimum of 1" in height, facing the attic access opening. IECC 303.1.1.1
7. Floor insulation is installed to maintain permanent contact with the underside of the subfloor decking. IECC 402.2.8
8. Slab on-grade floors need not be insulated due to the potential for termite infestation. IECC 402.2.10
9. The building thermal envelope shall be constructed to limit air leakage. IECC 402.4.1
10. The buildings air leakage rate has been tested and verified by a blower door test (5 ACH₅₀ Max) IECC 402.4.1.2 (modified in City Ordinance)



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11. Duct tightness verified (mandatory for ducts outside the building thermal envelope) by post-construction leakage less than or equal to 4 cfm per 100 sf if the air handler is installed at the time of the test, and less than or equal to 3cfm per 100 sf if the air handler is not installed. IECC 403.3.4
12. 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 inches. Exposed earth in unvented crawl space foundations shall be covered with a continuous Class I vapor retarder (6 mil poly) in accordance with the International Building Code. All joints of the vapor retarder shall overlap by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall. IECC 402.2.11

Air Sealing Requirements

ADAPTED FROM 2018 IECC TABLE 402.4.2 AIR BARRIER AND INSULATION INSTALLATION

COMPONENT	CRITERIA
1. Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. House wrap joints are taped or sealed. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.
2. Ceiling/attic	Air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
3. Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
4. Windows and doors	The space between window/door jambs and framing is sealed.
5. Rim joists	Rim joists shall be insulated and include an air barrier.
6. Floors (including above-garage and cantilevered floors)	Insulation shall be installed to maintain permanent contact with underside of subfloor decking. The air barrier shall be installed at any exposed edge of insulation.
7. Crawl space walls	Where provided in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls. Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.



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8. Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.
9. Narrow cavities	Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
10. Garage separation	Air sealing shall be provided between the garage and conditioned spaces.
11. Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be air tight, IC rated, and sealed to the drywall.
12. Plumbing and wiring	Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
13. Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
14. Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air sealed boxes shall be installed.
15. Common wall	Air barrier is installed in common wall between dwelling units.
16. HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.
17. Fireplace	An air barrier shall be installed on fireplace walls. Fireplaces shall have gasketed doors.