



# Energy Code Requirements

Community Development Department - Construction Permits and Inspection Services  
215 Sycamore St Muscatine, IA 52761 - PH 563.262.4141 - FAX 563.262.4142  
[www.muscatineiowa.gov/26/Community-Development](http://www.muscatineiowa.gov/26/Community-Development)

2012 International Energy Conservation Code

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## Residential Construction

Compliance with the 2012 International Energy Conservation Code (IECC) is required pursuant to adoption and as mandated by the State of Iowa Chapter 303, Rule 661-303.2(103A).

The following items are a snapshot of some requirements and should in no way be considered all inclusive:

Three paths for compliance remain available: [R401.2]

One path by **Prescriptive** (primarily using IECC Table 402.1.1) and

Two paths by **Performance** (Tradeoff using ResCheck or Performance using software such as RemRate)

### Minimum component requirements: (Prescriptive path)

1. Exterior walls: [Table 402.1.1, footnote h]
  - A. R-13 cavity insulation and R-5 continuous foam or
  - B. R-20 cavity insulation
2. Basement walls: [Table 402.1.1, footnote c]
  - A. R-15 continuous insulation on either the inside or outside of walls, or
  - B. R-19 cavity insulation for the interior side frame walls, or
  - C. R-13 cavity insulation for the interior side frame walls and R-5 continuous insulation either inside or outside
3. Attic/Ceiling: Min R49 [Table 402.1.1] (R38 when full depth heel trusses are used - R402.2.1)
4. Windows: .32 U-Factor [Table 402.1.1]

### Building Thermal Envelope (All paths) [R402.4.1.2]

Must be tested for air leakage by an approved 3rd party HERS rater. Testing at 50 Pascals shall be conducted with a blower door and shall verify a leakage rate of no greater than 4\* (Air Changes per Hour (ACH). \*\*

### Duct system(s): (All paths) [R403.2.2]

1. All duct systems shall be sealed
2. Air handlers or ducts that reside outside the building thermal envelope will require R6 insulation with attic supply ducts requiring R8. The duct system shall be tested for duct tightness.
  - A. Post-construction testing at 25 Pascals shall have leakage to outdoors of no more than 4\* CFM per 100 SF of conditioned floor area, or total leakage of no more than 6\* CFM per 100 SF of conditioned floor area. \*\*
  - B. Rough-in testing at 25 Pascals, shall have total leakage of no more than 6\* CFM per 100 SF including the air handler enclosure. \*\*
3. Building framing cavities shall not be used as supply ducts.
4. Building framing cavities may be used for return ducts provided that ducts systems are tested for leakage and exterior framing cavities are not be used for ducts, including the house/garage walls of typical construction. \*

### Mechanical System (All paths)

1. Because of minimal air leakage requirements, all dwelling units shall be provided with whole-house mechanical ventilation. [IRC R303.4]
2. Whole-house supply and exhaust air shall be provided. Air flow rates vary dependent with system type, dwelling unit size and number of bedrooms, and also must run either continuously or intermittently. Contact your HVAC designer for requirements. [IRC M1507.1]
3. Outdoor air ducts connected to the return side of an air handler are considered to provide supply ventilation while local kitchen and bathroom exhaust fans may provide for exhaust air serving together as a whole-house ventilation system. [IRC M1507.3.1]
4. Whole-house mechanical ventilation system fans must meet certain efficacy requirements, or if integral to HVAC equipment they shall have electronically commutated motors (ECM). [R403.5.1]
5. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating. [R403.5]
6. Heating and cooling equipment must be designed by using ACCA Manual J for loads and Manual S for equipment sizing. [R403.6]

### Hot water piping

1. **All Paths:** Mechanical piping above 105°F or below 55°F shall be insulated to a minimum of R-3. [R403.3]

2. **Prescriptive Path:** Piping from a water heater to a distribution manifold and/or to fixtures shall be insulated to a minimum R-3. [R403.4.2]

**Lighting (All paths):** 75% of all lamps shall be high-efficacy. [R404.1]

\*Per State of Iowa requirements More information available at [www.dps.state.ia.us/fm/building/energy/index.shtml](http://www.dps.state.ia.us/fm/building/energy/index.shtml)

\*\*Contact A Third Party Rater for Testing List is available at [www.iowacodediagnostics.com](http://www.iowacodediagnostics.com)



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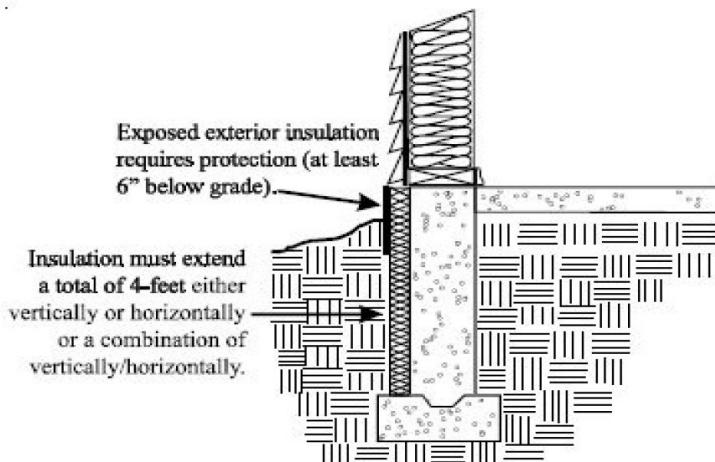
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## Insulated Slab Options

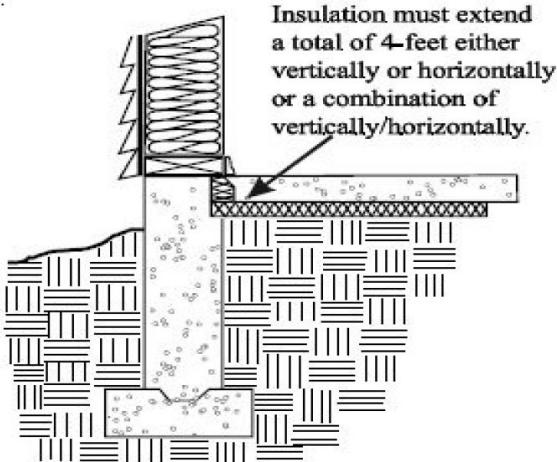
Slab perimeter insulation of at least R-10  
(R-15 for in-floor heat) from top edge for at least 4 feet.

FIGURE 1

Option 1



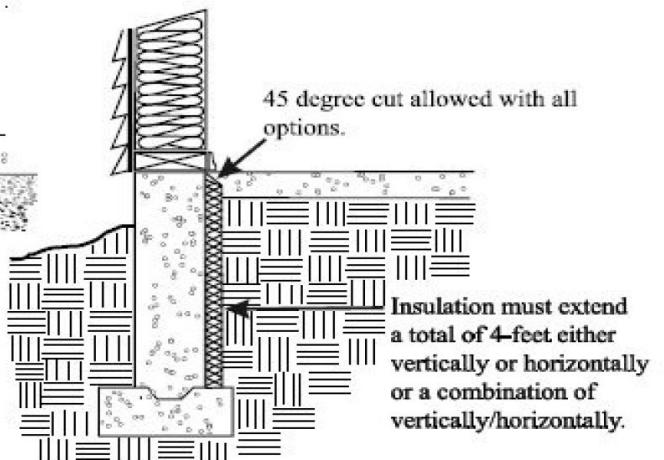
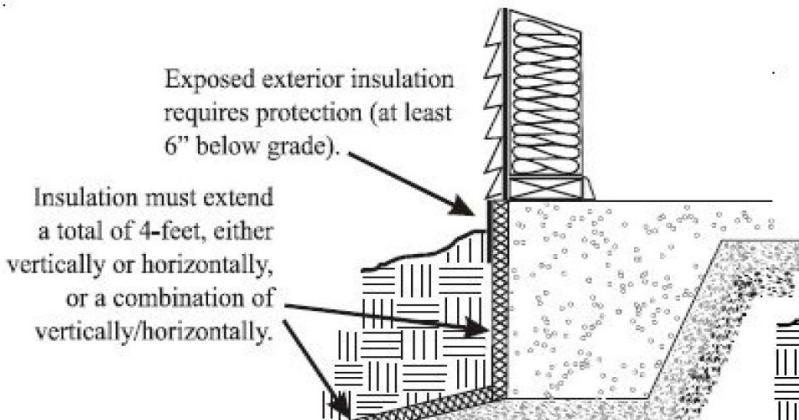
Option 2



Option 3

2006 IRC Section 403.3 allows frost protected shallow foundation footing depth of 2 feet.

Option 4





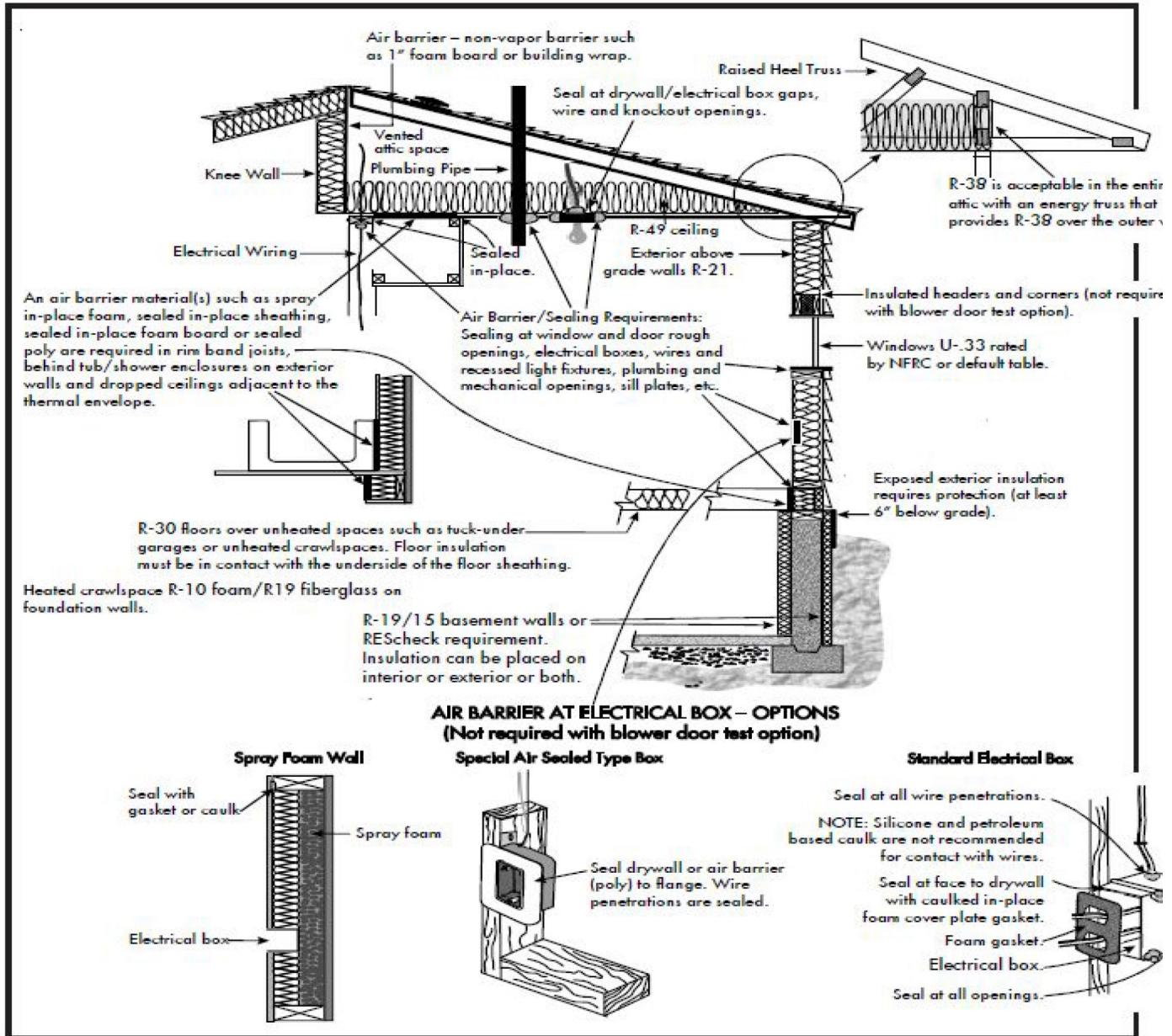
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**FIGURE 4. Air Sealing and Prescriptive Path Insulation Requirements**



## Recessed Light Requirements

### Section 402.4.4

Recessed lights that are installed in the building thermal envelope (typically a ceiling with unheated space above) must be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed lights must be IC rated and labeled as meeting ASTM E 283. All recessed lights shall be sealed with a gasket or caulk between the housing and interior ceiling or wall covering.

Reference: [http://www.dps.state.ia.us/fm/building/energy/PDF/Iowa\\_Residential\\_Energy\\_Code\\_Summary\\_2012.pdf](http://www.dps.state.ia.us/fm/building/energy/PDF/Iowa_Residential_Energy_Code_Summary_2012.pdf)