Success with Slab Insulation
North Carolina Residential Energy Code 2012

ENERGY CODE PROJECT

Slab-on-grade Floor Insulation

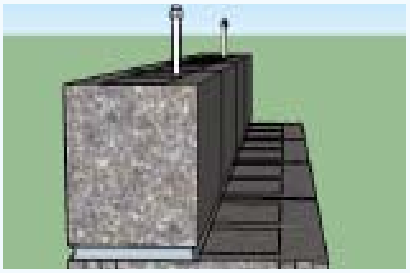
- Slabs are a source of significant heat loss in a structure. The placement of the insulation is critical in order to protect against heat loss through the slab edge.
- Slab insulation:
  - Significantly reduces winter heating bills
  - Provides warmer floors improving occupant comfort

Zones 3 - 4 - 5

Unheated Slab R-Values 0 - 10 - 10

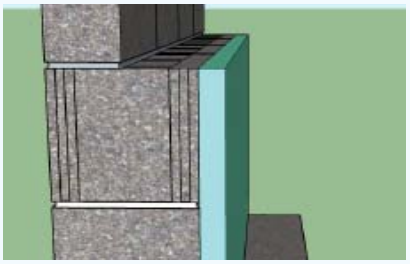
Heated Slab R-Values 5 - 10 - 15

Stem Wall Insulation



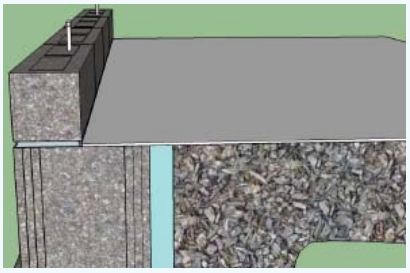
Step 1:

Create CMU wall with L-block, brick, or CMU block as top course



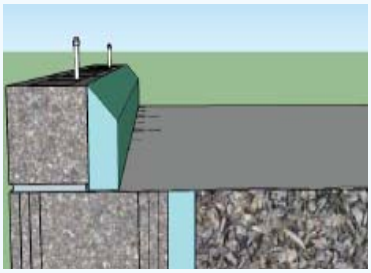
Step 2:

Cut and place rigid insulation that fits the top of the footer to the interior lip of the CMU wall (24" or to the bottom of the footing, whichever is less)



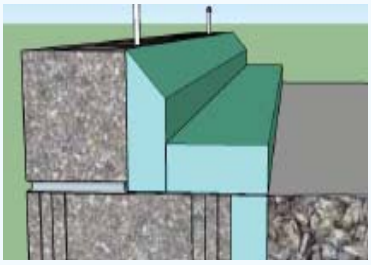
Step 3:

Place gravel and vapor barrier



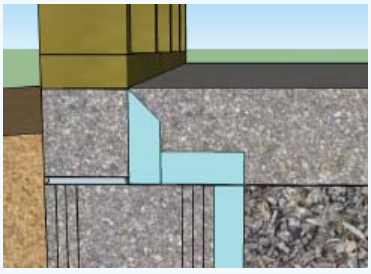
Step 4:

Cut a piece of rigid insulation the size of the space for the future concrete. Trim a 45 degree angle from the top end of the insulation. Place with the cut end facing toward the interior



Step 5:

Cut a piece of rigid insulation to fit from the outside of the insulation trimmed insulation to the edge of the insulation sandwiched between the gravel and CMU wall



Step 6:

Pour concrete

Tips

- The top course of the CMU can be made of an L-block, brick, or brick CMU. However, the brick or brick CMU allows the builder flexibility to custom design the width and height of the stem wall to allow for the insulation and still achieve proper bearing and depth of concrete.
- Ensure the top bearing course is the width of the framed wall. If the top course is wider, it will push the insulation inward and possibly interfere with the carpet tack strip. It is also recommended to bevel the top of the vertical insulation (as shown in Step 4) so the concrete will cover the foam.

Success with Slab Insulation
North Carolina Residential Energy Code 2012

ENERGY CODE PROJECT

Monolithic Slab Insulation

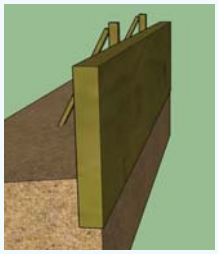

Insulation formed for slab.


Finished slab insulation with a protective cap over it

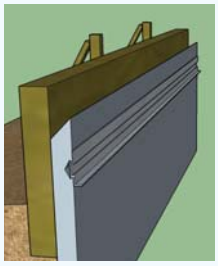

Nicely finished

- **Monolithic slab insulation requires a 2" termite inspection gap and must extend at least 18" below grade or to the bottom of the footing, whichever is less.**

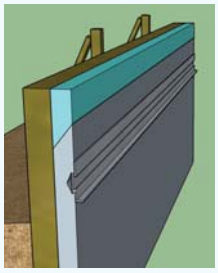
Installation Steps



Step 1:
Build and place formwork

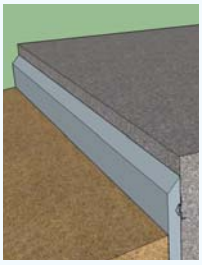


Step 2:
Cut rigid insulation with a 45 degree taper that begins 2 inches below the proposed surface of the slab; place an anchoring system in the insulation

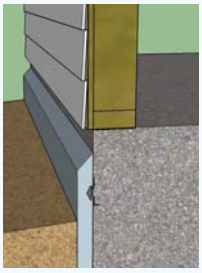


Step 3:
Add a piece of insulation to the top of the main insulation (the cut piece works well here)

Step 4:
Pour the concrete



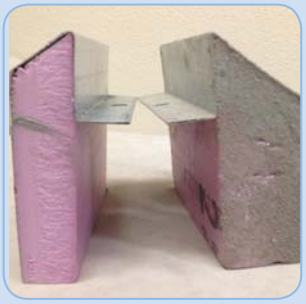
Step 5:
Remove the form work and the piece of insulation added in step 3



Step 6:
Add protective covering

Tips

- **Care must be taken to properly attach insulation to the edge of the slab, most problems occur at this step.**
- **Options for attachment mechanisms include:**
  - **Purchase insulation that is pre-grooved (as shown in Step 2). This will allow wet concrete to fill the space and attach to it.**
  - **Use an "L" bracket and attach it to the backside of the foam (see image to the right)**
- **To prevent damage to the insulation install a gravel or mulch border around the house to avoid the need for lawn maintenance near the slab insulation.**
- **Miter the outside corners of the insulation 45 degrees for a nicely finished look.**



*** More Resources at ncenergystar.org ***