

Technical Bulletin: Ekotrope Data Entry



Residential New Construction Program

BUILDING A SMARTER ENERGY FUTURESM

As part of the RNC Program, raters should model homes as accurately as possible. Small things are often overlooked and can compound to large losses in savings over time. This technical bulletin will cover how to accurately model slabs, floors, and walls.

Partial Slab Insulation and Insulation Depth

Often sections of the slab perimeter around garages, porches, and stone façades are not insulated. Raters should remember to model the slabs accurately based on the percentage of insulated and non-insulated perimeter. In addition to areas missing insulation, raters should model insulation depth based on a percentage of the footing depth. The reference home for the RNC Program assumes a footing depth of 2' which will skew savings if the proposed home's footing depth is larger or smaller. Raters should calculate the areas, perimeters, and insulation depths for insulated and uninsulated slabs using the following formulas.

- **Surface Area** = Total slab area x percent of slab type (example: uninsulated surface area = total slab area X percent of uninsulated slab)
- **Exterior Perimeter** = Total slab perimeter x percent of slab type
- **Insulation Depth** = (Slab insulation depth/Slab footing depth) x 2'

Below is an example of a 75% insulated slab for a home that has a total slab area of 700 sf with a perimeter of 120 sf.

Slab	
Name	Uniinsulated Slab
Type	Uninsulated
Surface Area [ft ²]	700 sf x 0.25 = 175 sf
Exterior Perimeter [ft]	120 sf x 0.25 = 30 ft
Exposed Masonry Area [ft ²]	0
Covering R Value	1.23
Floor Grade	On Grade
Encloses	Conditioned Space
Remove	Copy

Slab	
Name	Insulated Slab
Type	R-10 Perimeter
Surface Area [ft ²]	700 sf x 0.75 = 525 sf
Exterior Perimeter [ft]	120 sf x 0.75 = 90 ft
Exposed Masonry Area [ft ²]	0
Covering R Value	1.23
Floor Grade	On Grade
Encloses	Conditioned Space
Remove	Copy

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Floor Coverings

Framed floors and slabs have the option to include covering R values or floor finishes. Raters can edit the covering value by adding a layer in the library or updating the “Covering R Value” highlighted in the image to the right. Ekotrope specifies the R-values for the below coverings.

- Thick carpet with carpet pad: R-2
- Regular carpet: R-1.23
- Hardwood: R-0.68
- Tile or Vinyl: R-0.05
- None : R-0

The screenshot shows a software interface for entering floor covering data. The fields are: Name (Floor over garage), Type (R-19, 16"OC G1 Carpet), Surface Area [ft²] (172), Floor is located above (Unconditioned, attack), and Covering R Value (1.23). The 'Covering R Value' field is highlighted with a red box. There are 'Remove' and 'Copy' buttons at the bottom.

Rim Joists

Ekotrope rim joist libraries only include a single R-value entry. Raters should derate the nominal R-value in rim joists with calculated values or values specified by Ekotrope. Below is a table with some of the common rim joist scenarios raters see in the RNC Program. Ekotrope offers other scenarios raters can use [here](#).

Nominal R-value	Grade I		Grade II		Grade III	
	16" O.C.	24" O.C.	16" O.C.	24" O.C.	16" O.C.	24" O.C.
R-15	R-13.3	R-14.1	R-12.2	R-12.8	R-10.8	R-11.2
R-19	R-17.3	R-18.1	R-15.4	R-15.9	R-13.2	R-13.5

Wall Libraries

Walls should be modeled to reflect the walls found onsite. Walls separating ambient air and interior air are often modeled with only a stud cavity layer between a siding layer and a drywall layer. However, these walls typically have a sheathing and housewrap layer as well which can account for an R-value of 1 to the wall assembly. Below is an example of an ambient wall with the correct layers.

For other walls such as garage or kneewalls, the model should exclude the housewrap and sheathing layers and replace the siding layer with another drywall layer or the air barrier material.

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Assembly Properties

R **13.543**
U **0.074**

Exterior +

- Siding Layer x
- Housewrap Layer x
- Sheathing Layer x
- Stud/Cavity Layer x
- Drywall Layer x

+ **Interior**

Layer Edit

Name: Stud/Cavity Layer
Description:
 Continuous Stud/Cavity

Material: **Fiberglass Bε** v
Depth in.: **3.5**
Insulation Grade: **I** v

Per Inch Total

R: **15**

+

Stud/Cavity

Stud Type: **Wood** v
Depth in.: **3.5** ?
Width in.: **1.5** ?
Spacing in.: **16** ?
Framing Fraction: **0.23005**
Override Framing Fraction: