



Sealing the Rim Joist

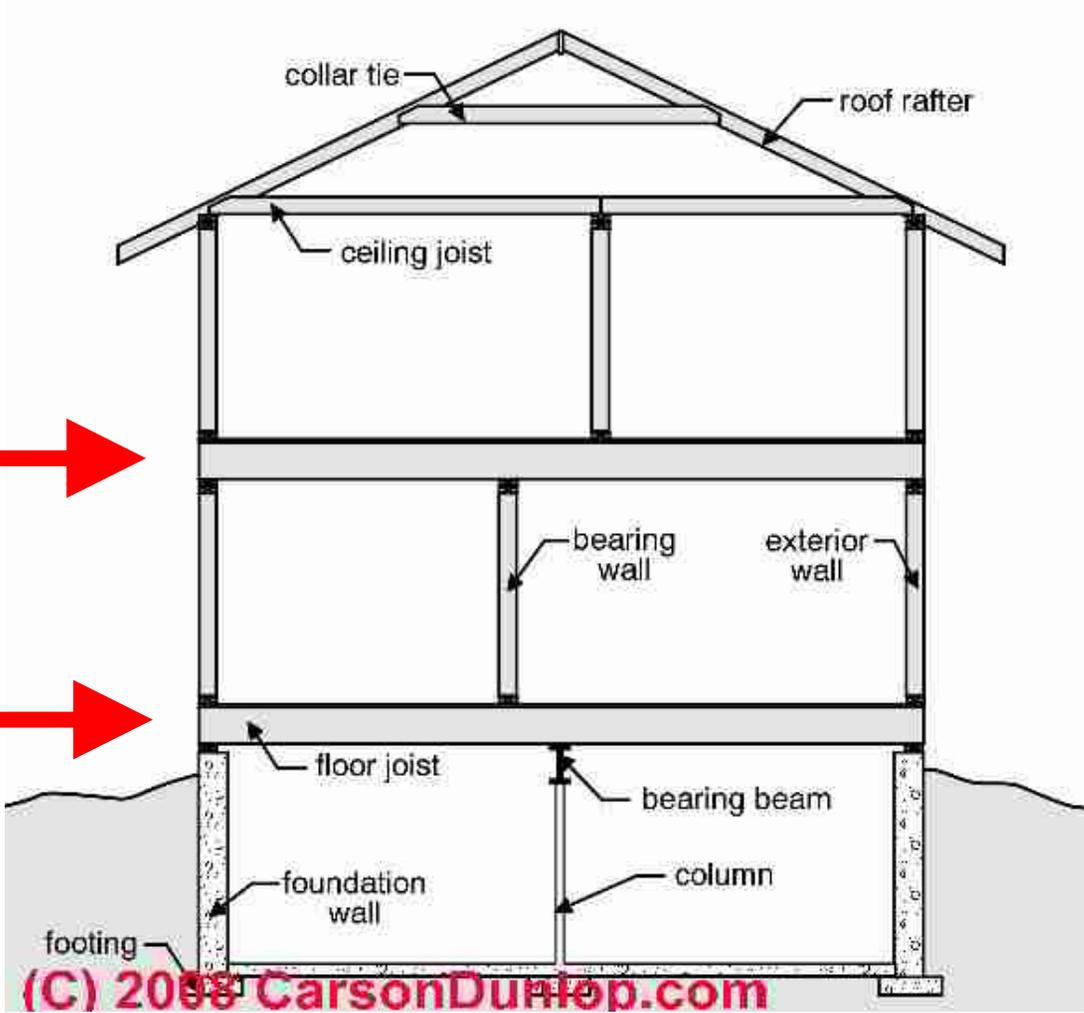
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What's A Rim Joist?

My early journeys into an often recommended insulation project in this explained but then again not so until I finally understood the whys and hows of this most satisfying home improvement

Rim Joist →

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The Rim Joists

- 10% of wall surface, usually not insulated
- Not just the insulation, but more important the draft – your jacket draw-string
- Important: wood shrinkage, imperfect (sometimes sloppy) construction
- Important: perforation city
- Important: rot zone
- Critters are drawn by warm drafts

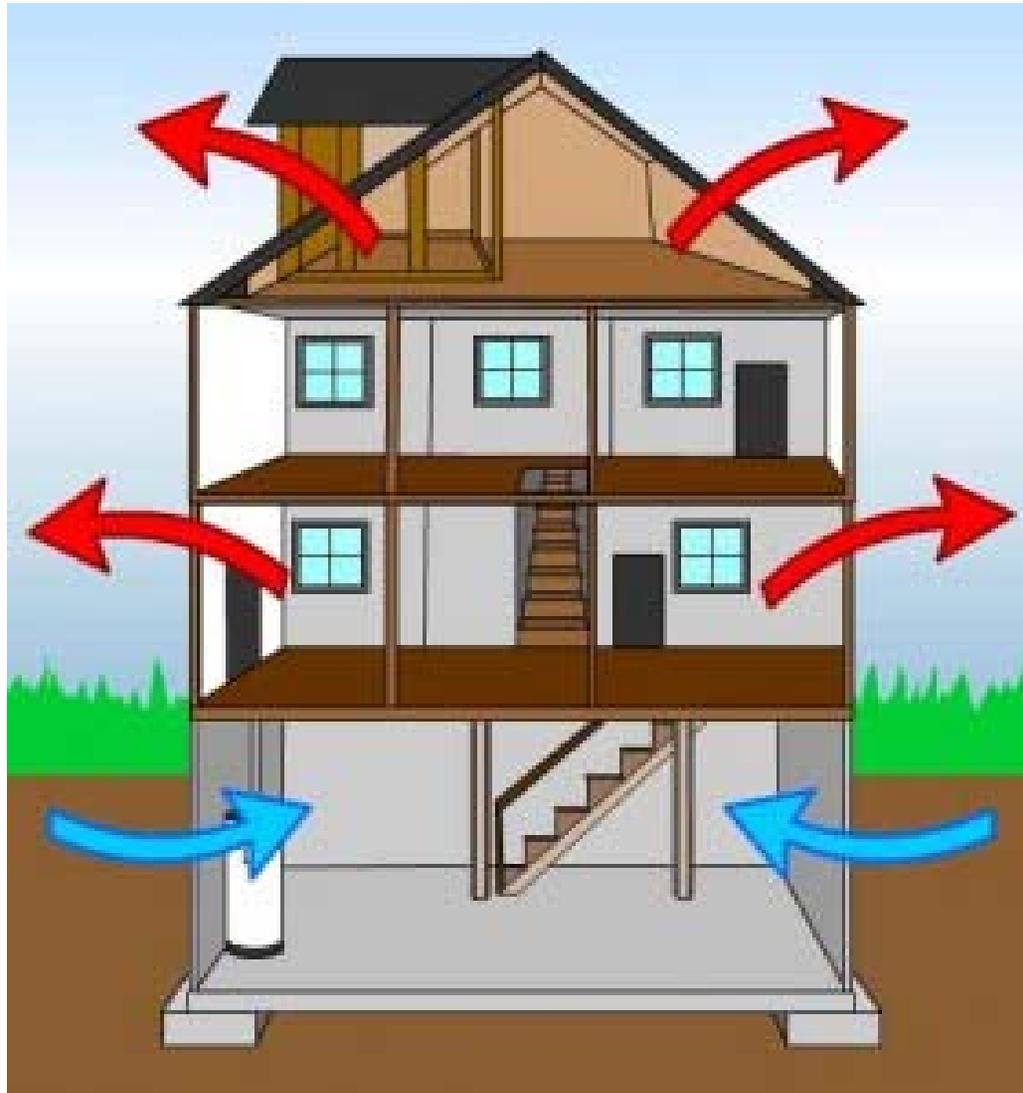
Insulation Ideals

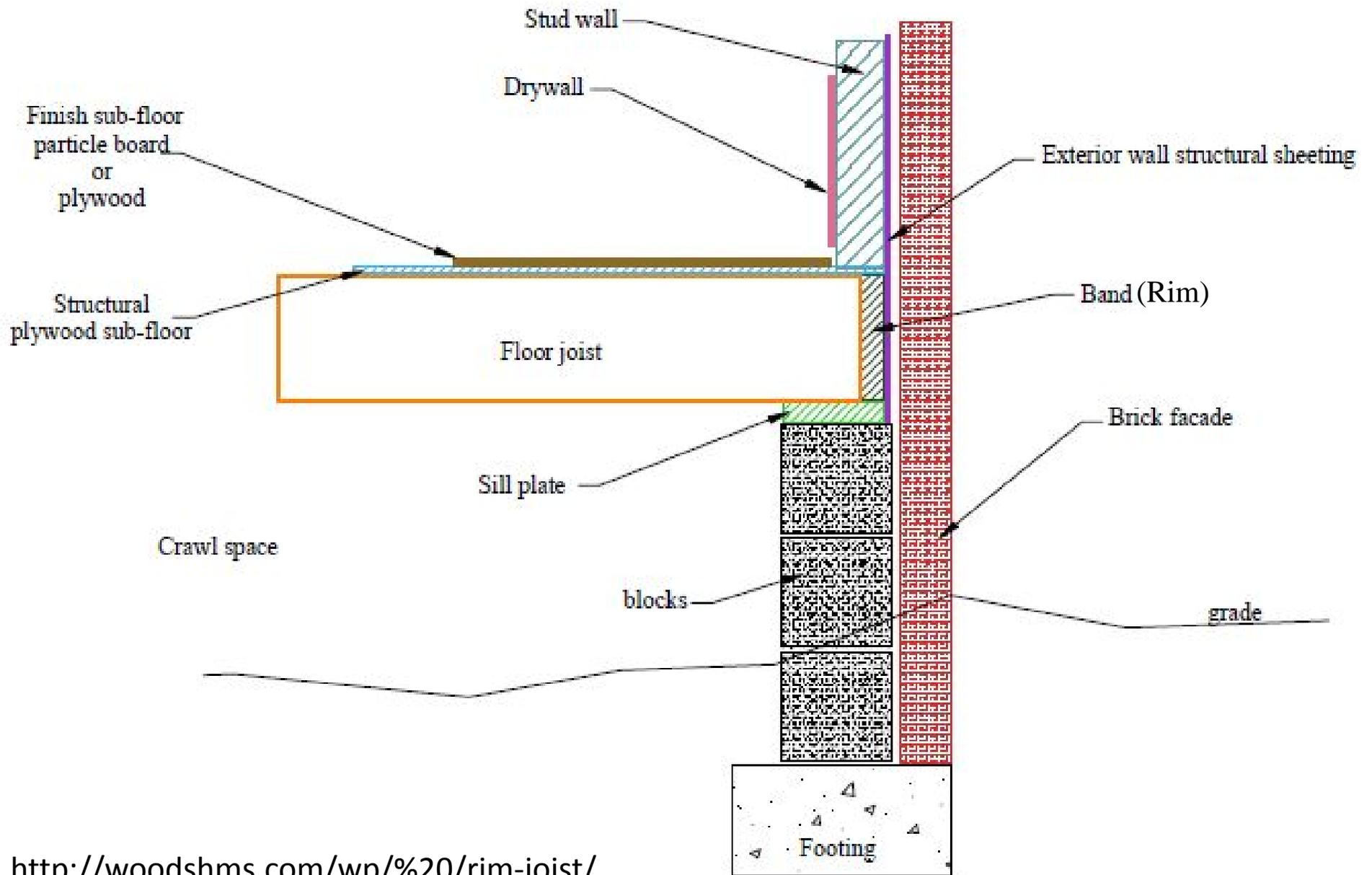
- Insulate on the outside of the structure
 - No insulation gaps (from the structure)
 - Not impacted by all the changes of living
 - Protect your structure from the elements
- Closed-cell foam sealed and insulated (or equivalent insulation plus vapor barrier)

My Insulation Realities

- Not planning to re-build
- My home, like most older homes (and many recently built ones) are not insulated on the exterior
- Bare-ankles and midrifts (no rim protection)

Stop the Draft!

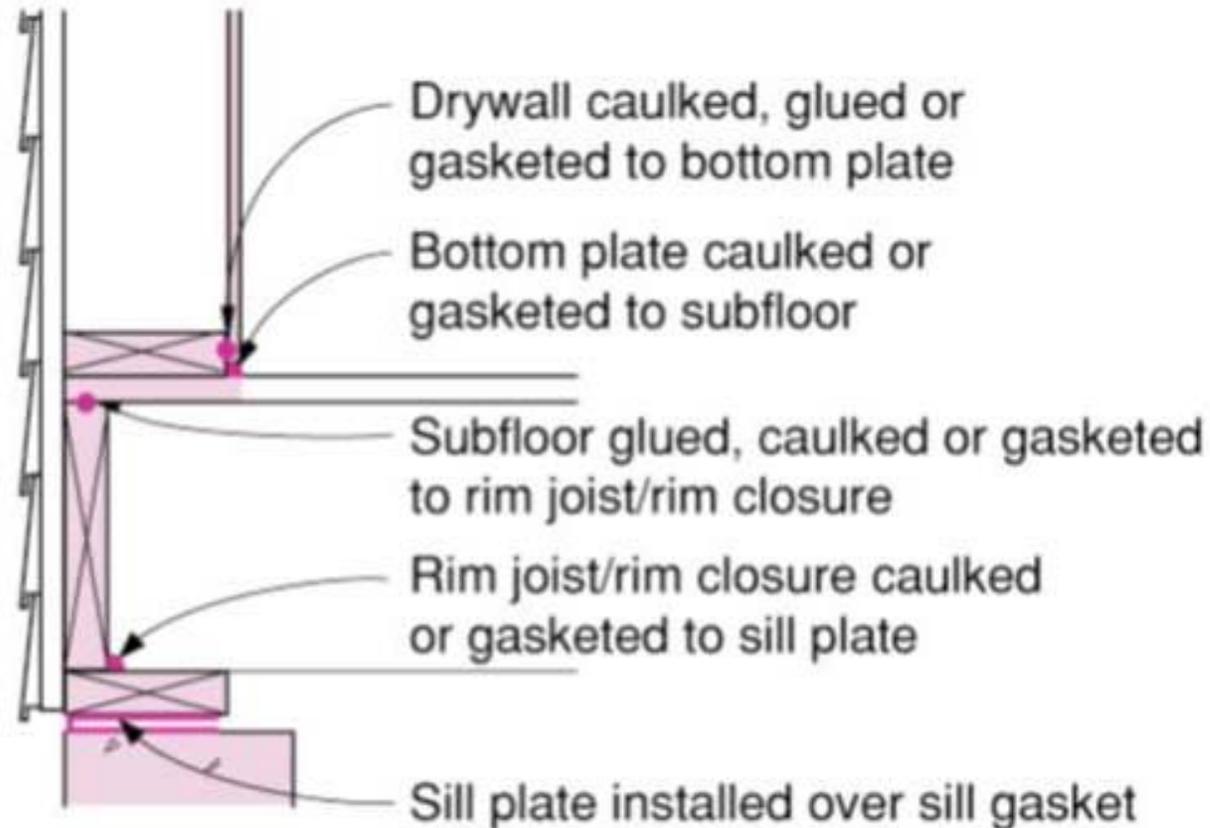




First Steps

1. Inspect for water infiltration/damage or infiltration potential inside; sill seal intact; and good outside drainage
2. DWR: If Internal combustion (gas or oil furnace, boiler or water heater) need to make sure house will still draft properly afterward
(I didn't have to worry – I'm all electric)

Sealing the Rim Joist



Note: shaded components designate air barrier system

Areas to Caulk or Foam

- Along the gap between the sill plate and the foundation
- At the bottom and top of the rim joist on ends of the house and in each space between joists
- All electrical, water, or gas penetrations and any venting ducts that pass to the outside
- Rim joist air sealing is especially important at bump out areas such as bay windows that hang off foundation.
- Caulk is best for sealing gaps or cracks that are 1/4 inch or less. Use spray foam to fill gaps from 1/4" to about 1" (bigger openings should have solid structure)

Insulating the Rim Joist

1. Seal first (if you aren't going to seal, then don't insulate – you will create moisture problems)
2. Cut foam board to size for between joists
3. Fit foam board (work around obstructions)
4. Press into place
5. Caulk to prevent air around foam board (to keep warmed air from condensing water on joists and sill plate)
6. Repeat for end joist in short sections– use insulation tongue-in-groove if can – hold in place with molding or other fastener (ideally plastic)
7. Comply with Code



The Tools

- Cut-off saw
- 2'x3' Carpenters Square
- Tape measure
- Expanding foam applicator (if desired)
- Caulk gun
- Step ladder



What the Code Says

- Most building codes require a layer of 1/2-in. drywall over rigid foam as a fire barrier. The drywall can be screwed to the rim joist through the foam.
- Dow Thermax polyisocyanurate, one type of rigid foam, has a facing that has passed fire-safety tests. That means that most building inspectors don't require Thermax to be protected with a drywall layer, making it a good choice for this application.
- Spray-foam requirements differ from those for rigid foam. As long as spray foam is less than 3-1/4 in., the International Residential Code (IRC) allows spray foam at the rim joist area to be left exposed, without protective drywall.

Perspective

- The key to reducing potential problems with stack effect is good air sealing around penetrations in the building. Start at the top. If you start at the bottom, then you might be increasing the chances that air leaking out of the top will pull air from other sources such as combustion appliances.
- Some common air leakage points in the positive pressure zone of the house (if not properly air sealed) can include: can lights, chimneys, plumbing vents, wiring penetrations, bath fans, and range vents.
- Always be sure you have a functioning carbon monoxide detector and that your boiler and wood stove have a dedicated source of combustion air.