



Success with the 2018 Virginia Energy Conservation Code:
Tech Tips for Builders

INSULATION



viridiant

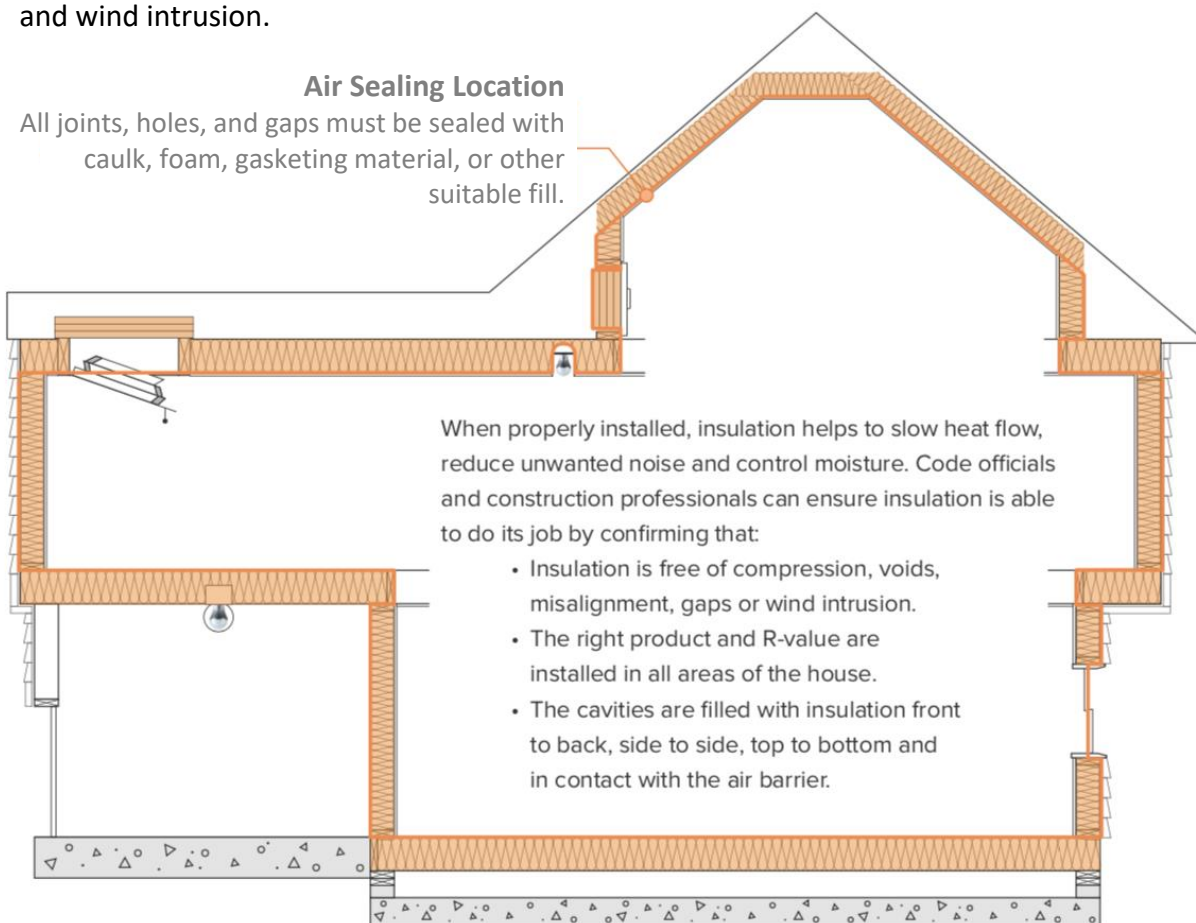


SEEA
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

INSULATION INSTALLATION

Tips for Meeting the 2018 VRC/VECC

To obtain the code-required R-values in the 2018 VRC Table N1102.1.2 (R402.1.2), insulation “shall be installed in accordance with the manufacturer’s instructions” (N1101.11 (R303.2)). All manufacturers require that insulation be free of gaps, voids, misalignment, compression, and wind intrusion.



Insulation

The 2017-2018 Virginia Residential “Field Study” gauged energy code enforcement.

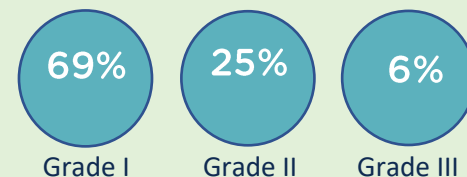
www.energycodes.gov/residential-energy-code-field-studies

Ceiling Insulation R-Value

- 2015 VA Code: R-38
- Study results: 96% COMPLIANT

Ceiling Insulation Quality

- Study results : 69% COMPLIANT

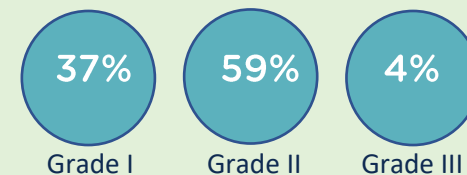


Wall Insulation R-Value

- 2015 VA Code required R-15 or R-13 + 1
- Study results : 100% COMPLIANT

Wall Insulation Quality

- 2015 VA Code required per manufacturer’s instructions
- Study results : 37% COMPLIANT



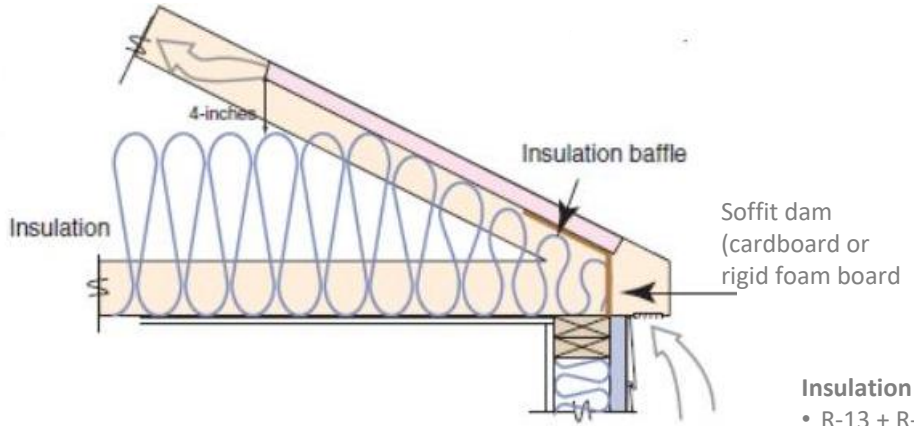
Grade 1: almost no gaps; Grade II: up to 2% gaps, compression or voids; Grade III: 2-5% gaps, compression or voids

Example Details

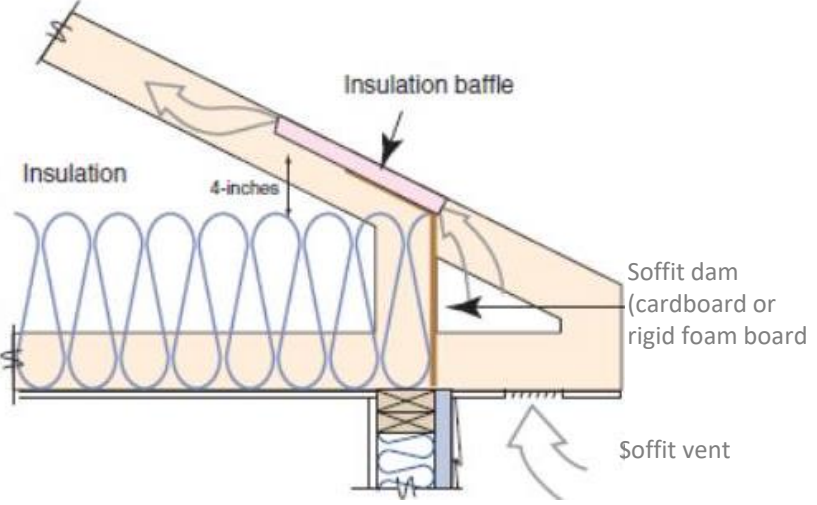
Images: basc.pnnl.gov/resource-guides

- ### Inspecting Insulation
- Air sealing
 - Baffling
 - Obstructions
 - Odd-sized cavities

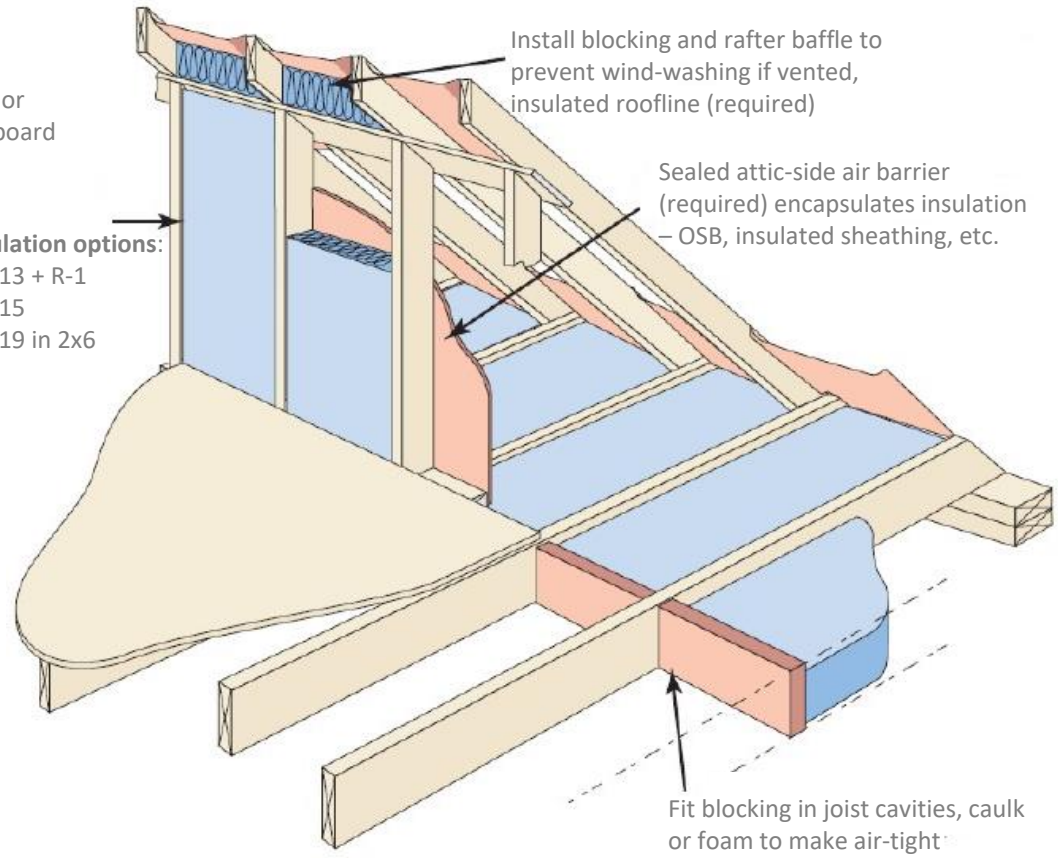
Standard Truss with tapered insulation depth



Energy Truss with full height insulation (recommended)



- Insulation options:
- R-13 + R-1
 - R-15
 - R-19 in 2x6



Contact Viridiant with any questions or comments via: admin@viridiant.org or (804) 225-9843

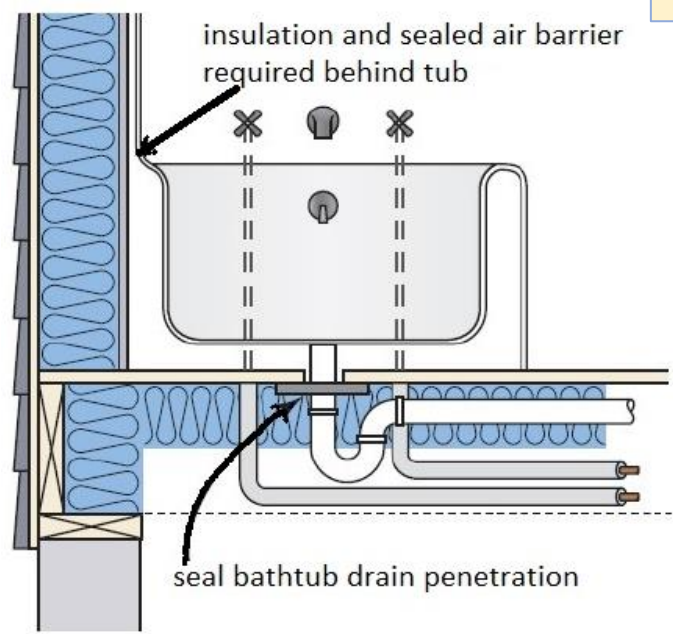


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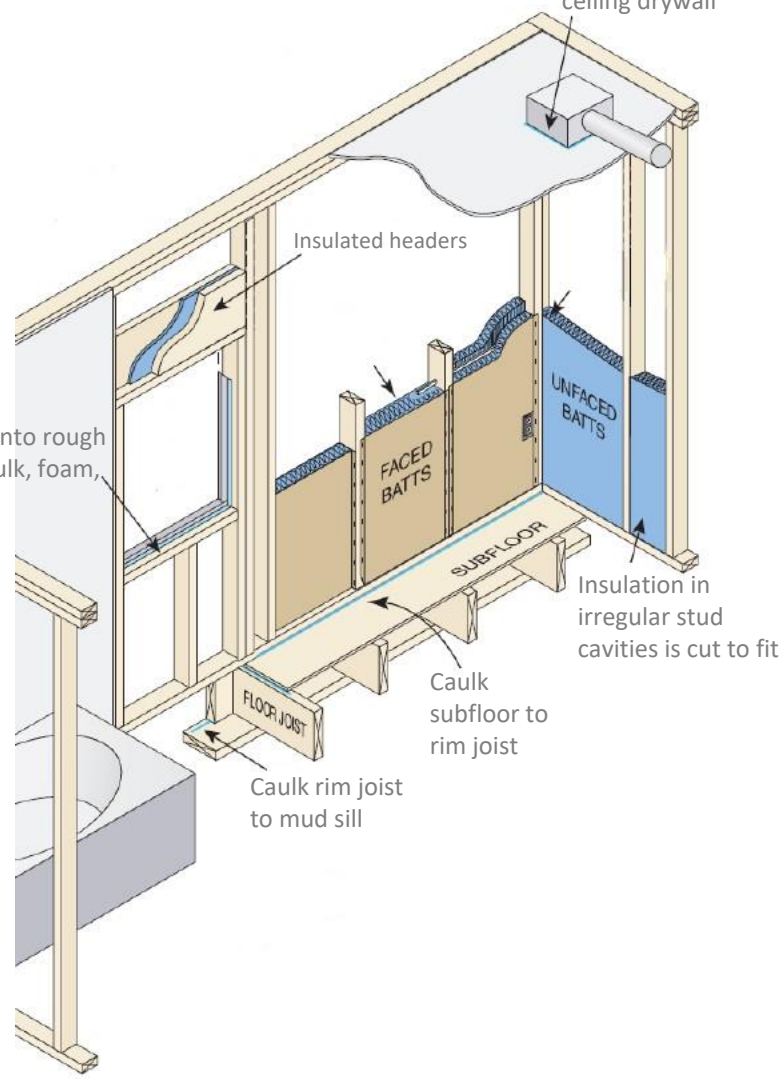
Images: bascc.pnnl.gov/resource-guides

- ### Inspecting Insulation
- Tubs
 - Showers
 - Fireplaces
 - Attic knee walls

Tubs on exterior walls: Ensure insulation is fully encapsulated and air barrier is continuous



Window sealed into rough opening with caulk, foam, or backer rod



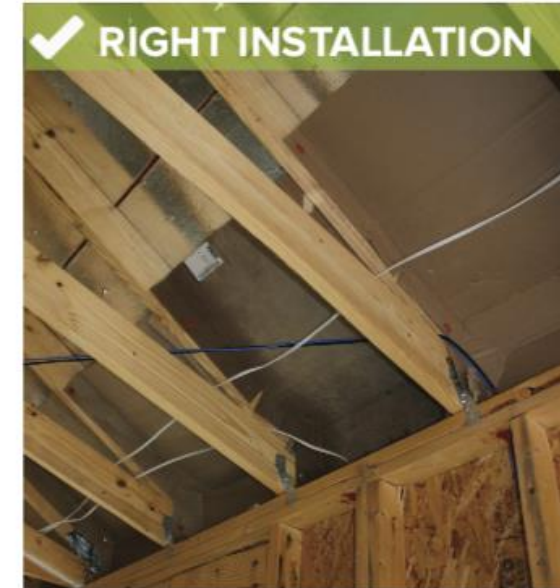
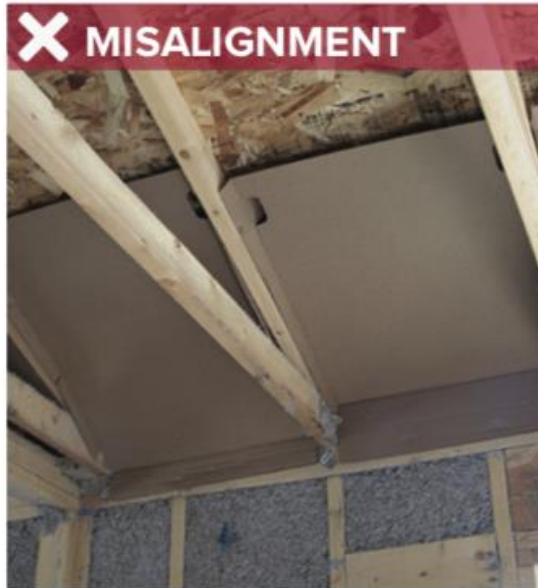
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TECH TIPS: INSULATION

1. For vented attics, install wind baffles on top of all exterior walls, leaving room for at least 4 inches of insulation over top plates and ventilation above.



2. Install insulation to meet Virginia's 2018 R-value requirements^a. Insulation shall be installed in accordance with the manufacturer's instructions.

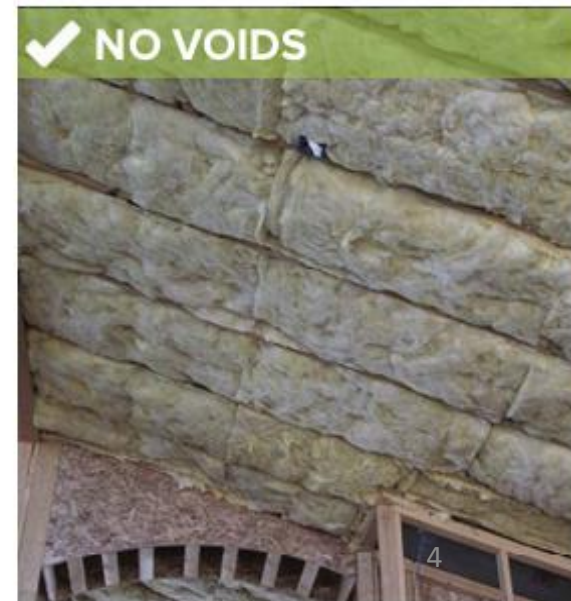
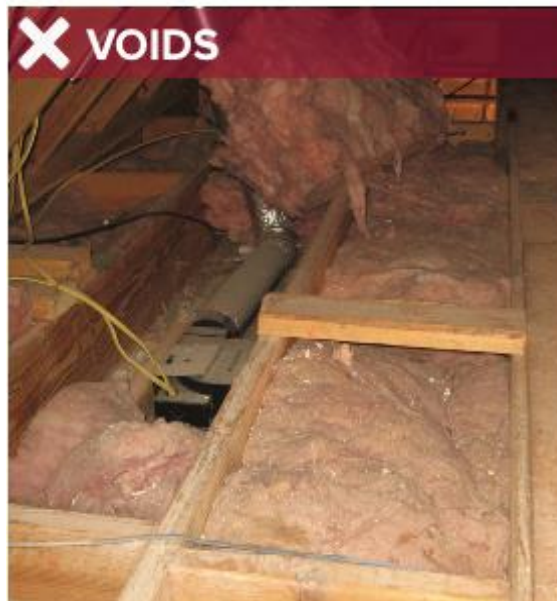
Climate Zone	Ceiling ^b	Frame Wall ^c	Slab	Basement/ Crawl Wall ^{d,e}	Mass Wall ^f	Floor ^g
Zone 4	R-49	R-15 or 13+1	R-10, 2 ft	R-10/13	R-8/13	R-19

- R-values are minimums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value shall not be less than the R-value specified in the table.
- For air-permeable insulation in vented attics, a baffle shall be installed adjacent to the soffit and eave vents. The baffle shall maintain an opening equal or greater than the size of the vent and extend over the top of the attic insulation.
- R-values noted are for wood framed walls. R-13 cavity + R-1 insulated sheathing or R-15 cavity will meet the requirement. For kneewalls, the attic side shall have a sealed air barrier.
- R-10 is continuous and R-13 is cavity.
- Basement walls shall be insulated from the top of the basement wall down to 10 feet below grade or the basement floor, whichever is less.
- The second R-value applies when more than half the insulation is on the interior side of the mass wall.
- Floor insulation shall be installed to maintain continuous permanent contact with the underside of the subfloor decking, and insulation ends shall have air barriers.



TECH TIPS: INSULATION

3. Install insulation to fill the cavity between conditioned and unconditioned space without gaps, voids, misalignments or compression.





TECH TIPS: INSULATION

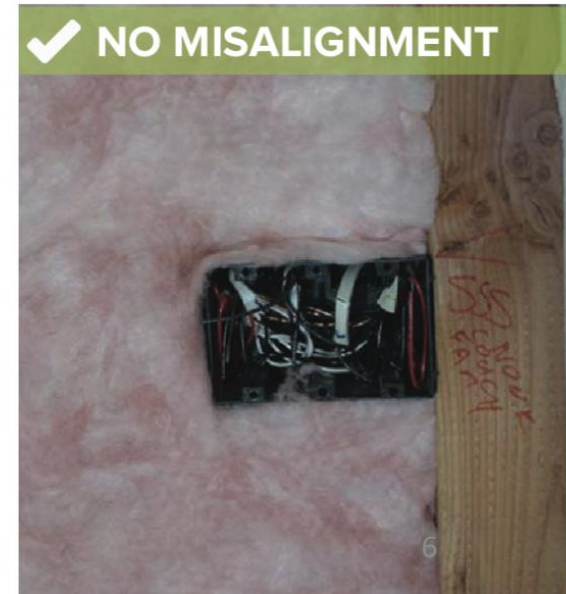
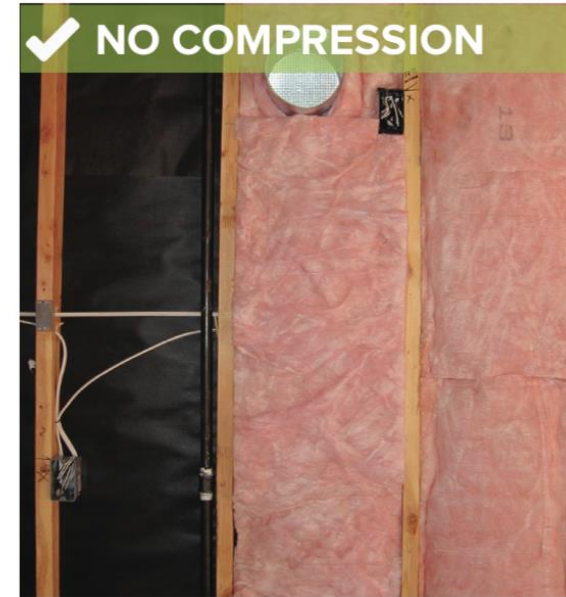
3. (continued) Install insulation to fill the cavity between conditioned and unconditioned space without gaps, voids, misalignments, or compression.





TECH TIPS: INSULATION

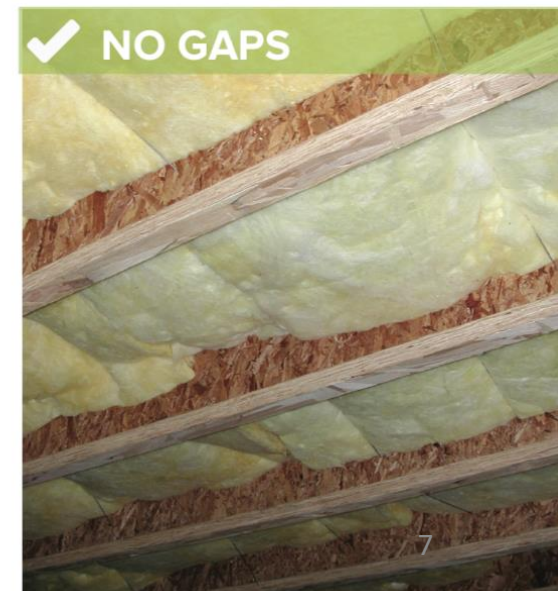
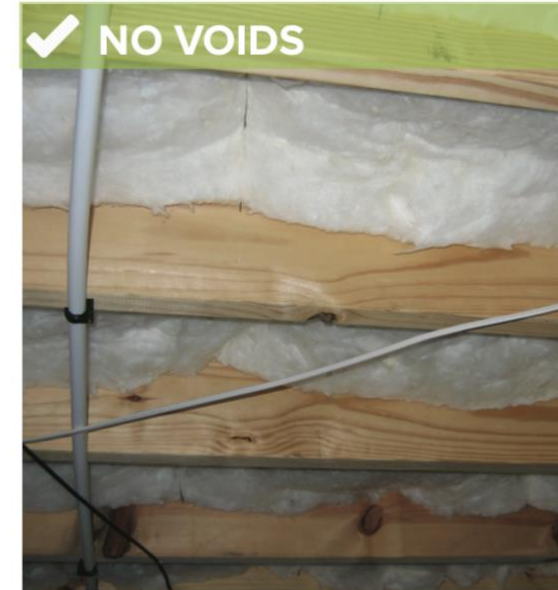
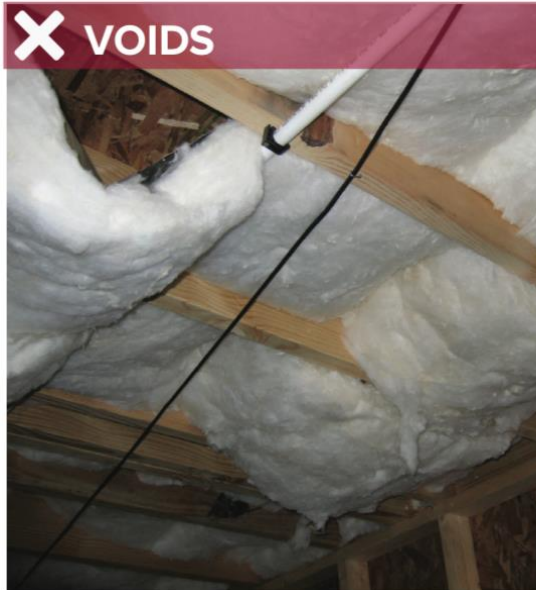
4. Cut and split insulation around all blocking, plumbing, HVAC, and electrical components to obtain a completely full framing cavity.





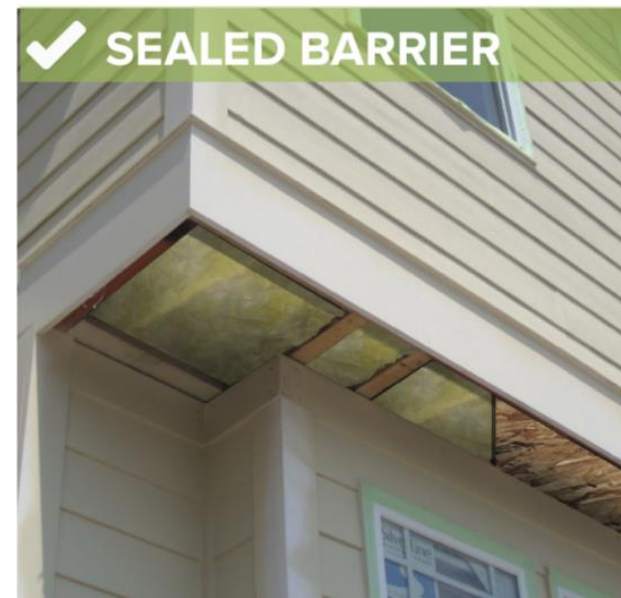
TECH TIPS: INSULATION

5. Install insulation to completely fill floor framing cavity or to maintain permanent contact with the subfloor without voids or compression.

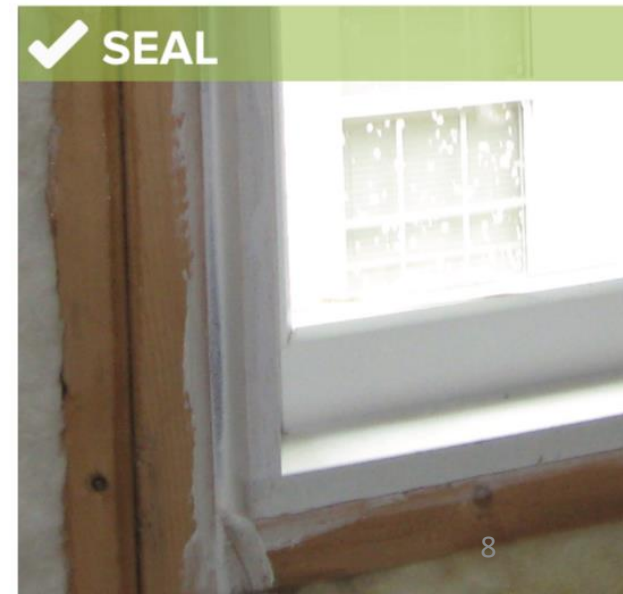




6. For cantilever floors, frame to allow for at least R-19 and encapsulated with an exterior rigid air barrier and air sealing.



7. Air seal around windows and doors using backer rod, caulk or low expansion foam.





TECH TIPS: INSULATION

8. Insulate all attic access doors and install weather stripping to make them air-tight.

✘ NO INSULATION



✔ INSULATION



✘ NO INSULATION



✔ INSULATION





9. For attics with loose fill insulation, install baffles/dam around the attic access opening to hold insulation in place.

✘ NO BAFFLES



✔ RIGHT INSTALLATION

