

## Quick Reference Guide

March 2021

Version 21.0

### Chapter 12 – Air Sealing (caulk, spray foam, tape), Insulating Exterior Walls

Preparation	<ol style="list-style-type: none"><li>1. Mark all stud CENTERS on the floor with red crayon</li><li>2. Mark location of all HVAC ducts (warm and cold air), duct dampers and plumbing pipes with red crayon. Use RECTANGLES for ducts, CIRCLES for dampers and plumbing pipes</li><li>3. Verify all wall and ceiling electrical boxes are marked on the floor (electricians should have done this already). If not, use red crayon rectangle on floor beneath the wall box locations and circle below the ceiling box locations.</li><li>4. Verify wall studs behind counter are in the same plane. Check at 41" above floor. Shim if gap. If ¼" gap or more, shim to zero at 20" below and 10" above the 41" starting point</li><li>5. Verify blocking has been installed for sheetrock at all wall corners, top of walls and perimeter of stair landing and closet over stairway platforms. See "Blocking for Sheetrock", Section 10.5.3</li><li>6. Clean debris from wall cavities</li><li>7. Remove temporary 2x4 brace under range plenum.</li></ol>
Air Sealing	<ol style="list-style-type: none"><li>8. Fill the following gaps with spray foam (if &gt;¼") or air sealing caulk (if &lt; ¼"):<ol style="list-style-type: none"><li>a. Ceiling and wall electrical boxes (all levels except attic)</li><li>b. Exterior &amp; interior wall studs (main &amp; basement levels)</li><li>c. Top/bottom wall plates, interior AND exterior walls (BOTH levels)</li><li>d. Exterior wall sheathing or foamboard visible from inside the house</li><li>e. Range plenum area (use spray foam)</li><li>f. Rough opening gaps between window (fill partially) &amp; door frames (fill fully) (Trim or remove excess <b>ONLY AFTER COMPLETELY DRY</b>). Also caulk bottom of windows along sill pan (or flashing tape)</li><li>g. Sill box penetrations, e.g., dryer vents, HVAC &amp; plumbing pipes, gas line</li><li>h. Subfloor penetrations, e.g., tub drain (cover opening with OSB, seal gaps with spray foam), vent pipe, water supply lines and drains</li><li>i. Exterior doors along floor and inside edge of threshold to outside of jambs (thin bead of caulk)</li><li>j. Foamboard spacers over headers (caulk or foam)</li></ol></li><li>9. Fill all sill box penetrations, e.g., dryer vents, HVAC &amp; plumbing pipes, gas line etc. with finish caulk.</li><li>10. Secure in-floor heat ducts with two soffit nails (one on each end) after adjusting duct to be flush with sub-floor</li><li>11. Apply a 6" width of Flashing tape around floor ducts to seal gaps between sub-flooring and ducts.</li><li>12. Seal joint between cold air return boots and ducts (from basement) with HVAC tape. If not accessible, seal inside of boot (from main floor) with 3" wide x 4" – 6" overlapping pieces of HVAC tape</li><li>13. Install foamboard behind PVC pipe located in exterior wall stud bays. Seal joints and perimeter</li></ol>
Install Wall Insulation	<ol style="list-style-type: none"><li>14. Push a plastic bag into bath fan ducts for future baths. Fill inside bag and sill box area with batt insulation. See Fig. 12-1 and 12-2</li><li>15. Fill exterior wall cavities &lt; 3" wide with foam board. Fill any gaps with caulk or construction tape.</li><li>16. Loosely install unfaced R-19 batt insulation into exterior wall cavities:<ol style="list-style-type: none"><li>a. Split batt to fit around wires</li><li>b. In cavities that are &lt; standard width or height, cut batt ¾" wider/longer than measured opening</li><li>c. Fill ENTIRE cavities <b>ensuring</b> there are NO GAPS near upper plates, corners and around wires and pipes and electrical boxes</li><li>d. Do NOT compress batt; be sure to "fluff" out (using a pencil or nail) to be flush with interior edge of stud</li><li>e. Do NOT cover doorbell, chime and thermostat wires or bathroom vanity light fixture wire</li><li>f. Cut insulation to fit around blocking or use foamboard to fill space in front of or behind blocking</li><li>g. Cut insulation to fit snugly around electrical boxes, place cut-out behind the box</li><li>h. Install batt insulation over rigid foam in sill boxes, 11.5" x 19" in long wall boxes, 11.5" x 32" in short wall boxes</li></ol></li><li>17. Do NOT insulate ceiling areas</li></ol>

## Quality Points

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- All electrical boxes are sealed (except attic light)
- All foam board edges and gaps are sealed
- All holes in top/bottom plates are filled
- All holes are filled in exterior and interior wall studs on both main floor and basement levels
- All exterior penetrations are sealed from the inside, e.g., foamboard, OSB, sill box foam, range plenum, dryer vent
- All sub-floor penetrations are sealed, e.g., tub drain, vent stack, water lines, drain lines
- Gaps between the rough opening and framing of EXTERIOR doors are fully filled with spray foam or caulk
- Gaps between window rough opening and window framing are partially filled with spray foam or caulk. Window bottoms are caulked along sill pan (or flashing tape if used instead)
- Gap on inside edge of exterior door thresholds (along the floor) is caulked to outside of door jambs
- Window and door header areas are filled with foam board and sealed with spray foam or caulk
- Exterior walls are filled with insulation, with no visible gaps around perimeter.
- Insulation is fluffed out and flush with interior edge of studs (no stud areas covered)
- Vanity, doorbell and thermostat wires are not covered with insulation
- Future bath fan vent duct in basement is lined with plastic and duct and sill box are filled with insulation
- Sill boxes are filled with rigid foam and caulked around the perimeter and batt insulation is installed over 1" rigid foam
- Holes gaps in poly are sealed with tape and poly neatly conformed into all corners for tight sheetrock fit to framing