

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

Preparation	1. Mark all stud CENTERS on the floor 2. Mark location of all HVAC ducts (warm and cold air), duct dampers and plumbing pipes 3. Verify all wall and ceiling electrical boxes are marked on the floor 4. Verify wall stud ends behind countertop are in the same plane at 41" above floor. 5. Verify jack studs of sliding doors are straight & plumb to within 1/16". Use cardboard shims if not. Mark OK 6. Verify exterior wall stud ends adjacent sliding doors are straight, plumb and in the same plane @ 41" above floor. Mark OK 7. Verify blocking has been installed for sheetrock per Section 10.6 .3 8. Remove temporary 2x4 brace over range plenum. 9. Clean debris from wall cavities. Vacuum subfloors along exterior wall baseplates, exterior doors, and floor vents 10. Verify basement exterior wall foamboard is in place and secured tight to the exterior wall 11. Verify a folded coil strip was installed at bottom of garage common wall. See 11.1.4.5. 12. Verify exterior door reveals on strike side are between 1/8" – 3/16" wide. Correct if not.
Air Sealing	13. Install 2" foamboard over door and window headers. Tape perimeter if foamboard is flush with framing, use caulk if <1/4"; foam if > 1/4" 14. Fill the following gaps/holes with air sealing caulk: a. ceiling and wall electrical boxes (all levels except attic) b. bottom of windows c. inside joint between bottom plates and sub-floor d. inside seam between exterior wall corners 15. Use tape to seal all flat seams, e.g., the inside seam between upper and top plates of exterior walls and inside seams of exterior doors and window components 16. Use air sealing caulk or spray foam to seal: a. holes in top/bottom wall plates, interior AND exterior walls (BOTH levels) b. all hole in exterior wall studs c. exterior wall sheathing visible from inside the house d. rough opening gaps between window (fill partially) & door frames (fill fully) (Trim or remove excess ONLY AFTER COMPLETELY DRY). Also caulk bottom of windows e. perimeter gaps around vent pipes, water supply lines , dryer vent 17. Use air sealing caulk to seal: a. sill box penetrations, e.g., dryer vents, HVAC & plumbing pipes, gas line etc b. exterior wall studs (main & basement levels) 18. Use spray foam to seal: a. Gap between exterior door jambs and the door framing b. perimeter of range plenum duct exit (if accessible from the inside) c. gaps between the top of foundation wall foamboard and wall upper plate along stairway d. subfloor penetrations, e.g., tub drain (after covering opening with OSB, seal gaps with spray foam), cold air returns (from main floor side first, then from basement side) 19. Use a thin bead of clear finish caulk to seal the seam between floor and threshold of exterior doors 20. Seal joint between cold air return boots and ducts with HVAC tape 21. Secure in-floor heat ducts with four soffit nails 22. Apply a 6" width of HVAC tape around floor ducts to seal gaps between sub-flooring and ducts 23. Install temporary heat duct covers after taping sub-floor openings with HVAC tape
Install Wall Insulation	24. Install R-21 pieces to fill behind all electrical outlets 25. Fill exterior wall cavities < 3" wide with foam board. Fill gaps with caulk or air sealing tape 26. Loosely install unfaced R-21 batt insulation into exterior wall cavities. Take time to fluff it out. 27. Cut batts behind PVC pipes. Open split edges to cover pipes 28. Insulate future bath fan duct (if applicable) 29. Feed doorbell and thermostat wires through insulation. Do not cover. 24. Feed bathroom vanity light wire through insulation IF it is not running through an electrical box.

Quality Points

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- Jack studs of sliding closet door openings are straight and plumb.
- Wall stud faces adjacent sliding closet doors are straight, plumb and in the same plane, and stud faces behind kitchen countertop are in the same plane
- All electrical boxes are sealed (except attic light) and insulation placed behind boxes
- All exterior basement walls have been insulated with foamboard; foamboard is secured tight to walls
- All foam board edges filling narrow stud bays are tight or sealed with tape
- The gap between windowsills and bottom of windows is sealed
- All holes in **interior and exterior** top/bottom plates are filled
- Seams between exterior wall upper/top plates, exterior wall corners, and exterior door/window components are sealed
- Window component seams and joints between upper and top plates are taped
- Seams between exterior wall base plates and sub-floor are sealed
- All holes in exterior wall studs on both main floor and basement levels are filled
- All exterior penetrations are sealed from the inside, e.g., OSB, sill box foam, range plenum, dryer vent
- All sub-floor penetrations are sealed, e.g., tub drain, vent stack, water lines, drain lines, cold air returns
- Cold air returns are sealed from main floor and basement
- Cold air returns seams (between duct and boot) are sealed with flashing tape
- Floor heat vents are nailed and secured with HVAC tape
- 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.
- Gap on inside edge of exterior door thresholds (along the floor) is finish caulked to outside of door jambs
- Window and door header areas are filled with foam board and sealed
- 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 batt insulation