



Success with the 2018 Virginia Energy Conservation Code

HVAC INSTALLATION

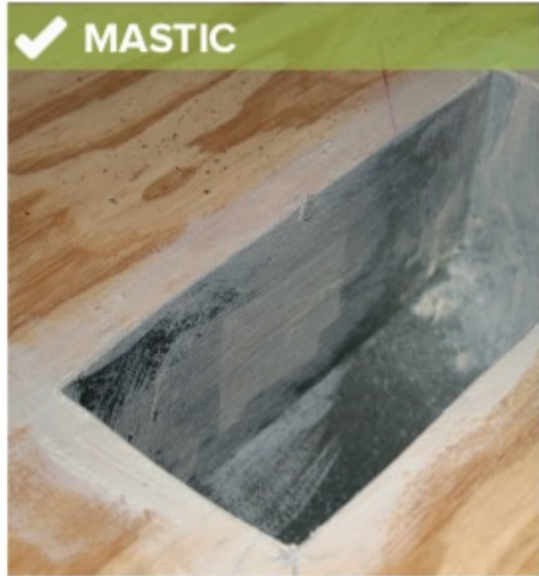




TECH TIPS:

HVAC Installation

1. Seal all duct terminations to adjacent drywall and/or subfloor. Seal all HVAC penetrations in the building envelope with foam, caulk, or mastic. Use fire-rated sealants where required. (R402.4.1.1 Installation (Mandatory) and elsewhere)



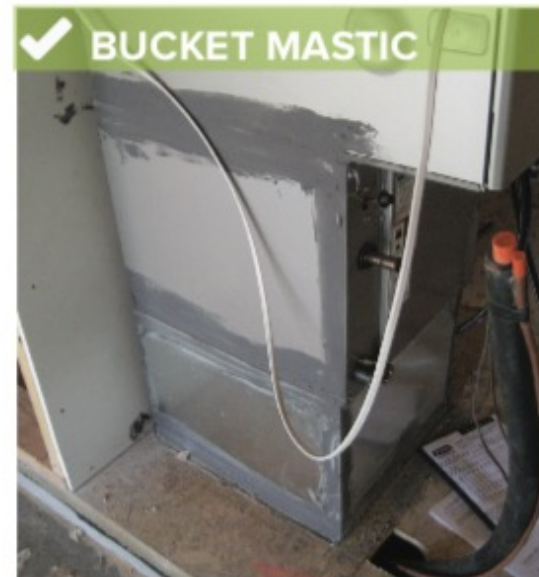


TECH TIPS:

HVAC Installation

2. Seal all HVAC components at all joints, seams, and corners. (R403.3.2 Sealing (Mandatory))

3. Mechanically fasten all metal duct work with screws. For flexible duct, attach the inner liner with plastic straps and tighten with a manufacturer-approved tool. (M1601.4 Installation)



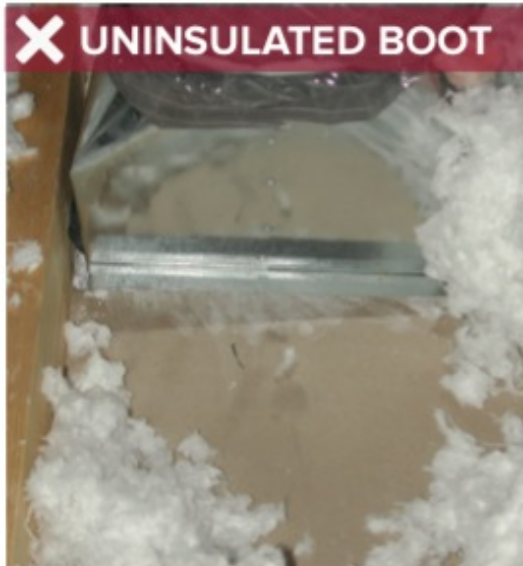


TECH TIPS:

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4. Insulate all ducts outside of conditioned space to at least R-8. (R403.3.1 Insulation (Prescriptive))

5. Do not compress insulated flexible ducts more than the thickness of the insulation. (Manufacturer's instructions)

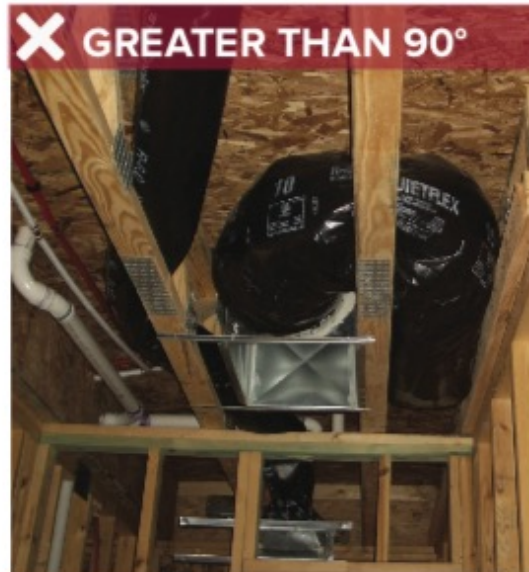
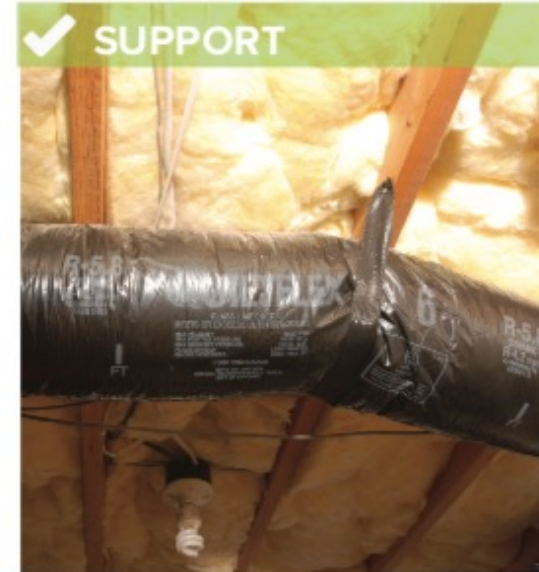




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- 6. Support flexible ducts (including those for ventilation) at least every 4 feet. Do not bend more than 90 degrees. (Manufacturer's instructions)

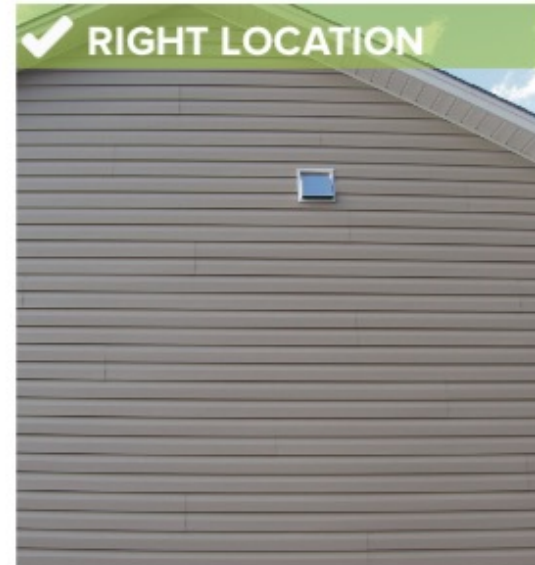


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7. Install outside air ventilation intakes at least 10 feet from any exhaust vent or stack. (M1504.3 Exhaust openings)

8. Coordinate bath fan exhaust duct direction with electrical contractor (or other fan installer) to ensure ductwork is as short and straight as possible.

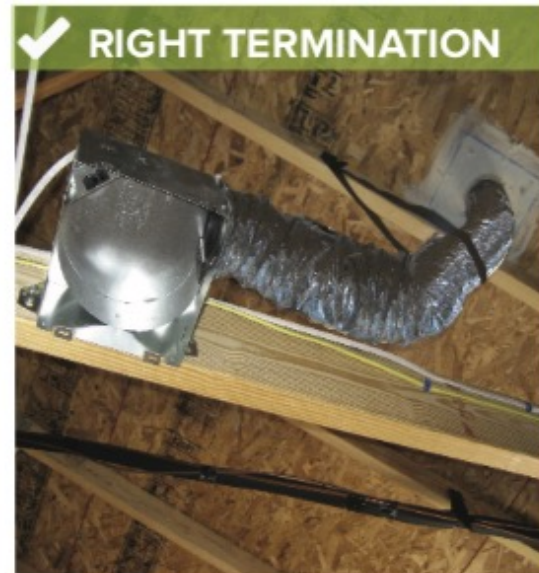




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9. Terminate exhaust ventilation duct work to the outside and install a screen over the termination.



10. For heat pumps, install a heat strip outdoor temperature lockout that prevents supplemental heat operation. Set it to an appropriate balance point based on local climate. (R403.1.2 Heat pump supplementary heat (Mandatory))





TECH TIPS:

HVAC Installation

Best practices for air-tight ductwork: Mastic

All duct leakage penalizes comfort, efficiency, durability, and moisture management.

Virginia code first established a numerical limit to duct leakage with the 2009 update and began requiring testing for ductwork outside of the building envelope with the 2015 update. The leakage limit is 4%.

Sealing ducts with bucket mastic and fabric mesh is widely considered the most reliable and durable method of minimizing duct leakage.

✓ MASTIC AIR HANDLER



✓ USE BUCKET MASTIC



✓ INSULATE COLLAR



✓ SEAL SEAMS

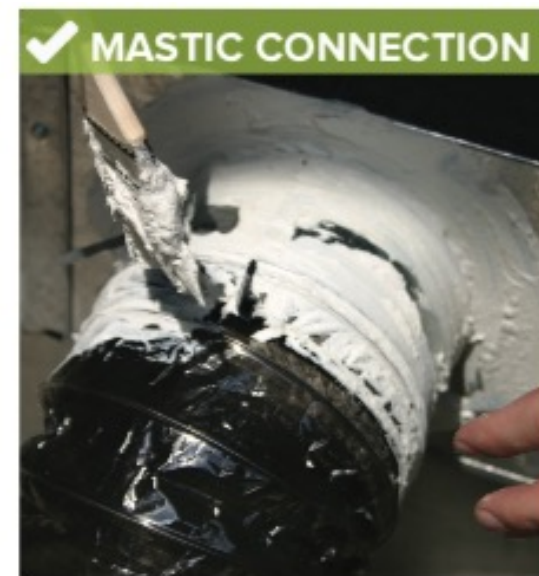




TECH TIPS:

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Best practices for air-tight ductwork: Mastic

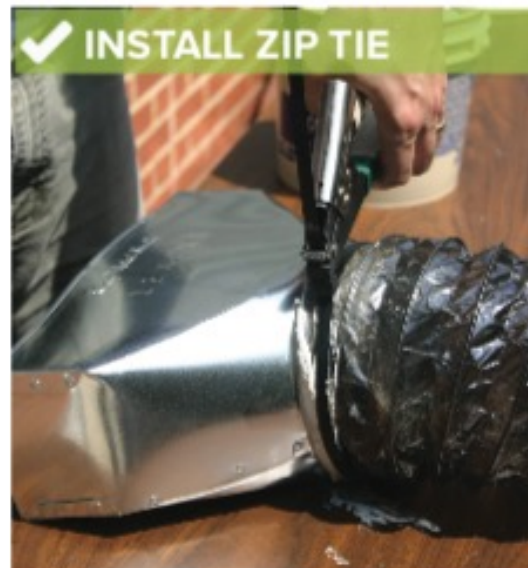
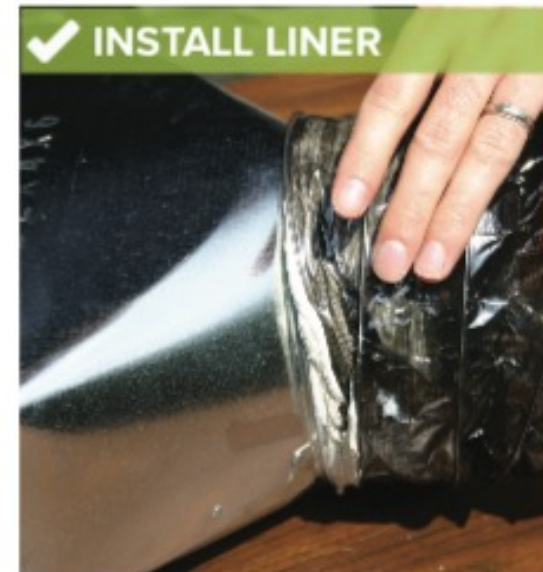




TECH TIPS:

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Best practices for air-tight ductwork: Mastic

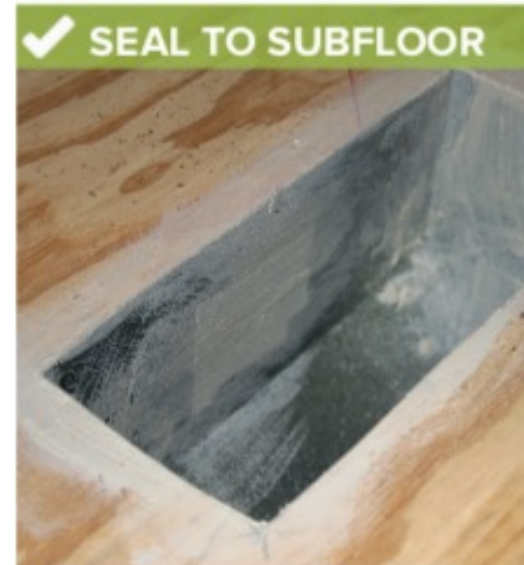




TECH TIPS:

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Best practices for air-tight ductwork: Mastic



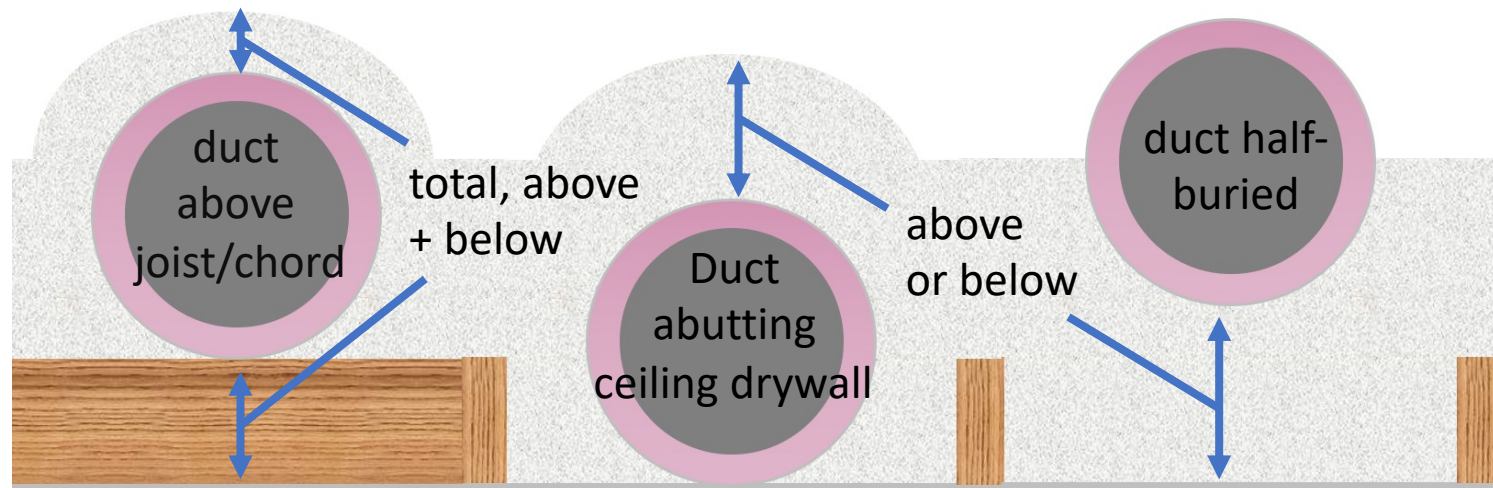
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Buried Ducts: “At all points along each duct, the sum of the ceiling insulation R-value against and above the top of the duct, and against and below the bottom of the duct, shall be not less than R-19, excluding the R-value of the duct insulation.” (R403.3.6 Ducts buried within ceiling insulation)

[basc.pnnl.gov/code-compliance/buried-ducts-within-ceiling-insulation-vented-attics-all-climate-zones-code](https://www.basc.pnnl.gov/code-compliance/buried-ducts-within-ceiling-insulation-vented-attics-all-climate-zones-code)

attic insulation: R-19 minimum, installed above, below, or as combined sum



code reference: R403.6 Ducts buried within ceiling insulation