



Energy Guidelines

Smart Build

1. You will need to follow the guidelines listed below:

Attic Insulation	R-38	
Frame Wall Cavity Insulation	R-13	
Masonry Wall Insulation	R-13	
Frame Floor Insulation	R-19	
Slab Perimeter Insulation	R-5	(Only for Energy Star)

2. All homes shall have proper attic and crawlspace ventilation, unless enclosed crawlspace is used. Baffles shall be installed and blocked with (batt insulation or equivalent methods) to keep blown insulation out of the eaves.
3. Slabs shall have vapor barrier installed and crawlspaces shall have 100% ground cover installed.
4. All windows, doors and sole plates shall be caulked with a long-life caulking material.
5. All plumbing, wiring and other penetration shall be sealed with foam sealant where penetrations are into an unheated area. Also any holes or gaps to unheated areas should be sealed. Draft block any knee wall at ceiling/ floor joist or anytime attic air can get between ceiling of one level and floor of another level. Insulation does not stop air movement.
6. Bathroom exhaust fans shall be vented to the outside, not into attic or eaves.
7. Insulation shall be installed without compression, cut to fit around wiring, plumbing, and outlet and switch boxes. Floor insulation shall be supported with wire staves at least every 18 inches, so insulation is touching subfloor.
8. Attic access panels shall be insulated and weather stripped if located in conditioned area. Pull down stairs shall be weather stripped and insulated with an attic tent or equivalent site built insulated box. Knee wall access doors shall be insulated and weather stripped.
9. Any recessed lighting in an insulated ceiling shall be I/C Rated.
10. Heat Pump and A/C Unit requirements. (All min. SEER2 Shall be 15.2)
11. Manual J load calculations or alternative method that has been approved shall be provided by HVAC Contractor.
12. HVAC Contractor must complete heat pump installation checklist. (listed below)
 - a. Package and Split system air source heat pumps and air conditioners shall be matched per AHRI. Package HVAC Systems shall have 4 sided shroud between foundation opening and unit and be properly sealed. Outdoor equipment should be placed on level, one piece concrete pad or approved equal.
 - b. Duct design and installation shall be as recommended by ACCA Manual D, or the ASHRAE handbook, including proper sizing and support.
 - c. Airflow shall be a minimum of 400 CFM per ton of cooling equipment.
 - d. Long cross section dimension on rectangular duct shall not exceed 3 times the shorter dimension.
 - e. All duct joints, seams, fittings, and return air pans shall be sealed with approved mastic sealant. (see attached Approved Duct Joint Connectivity table)
 - f. Isolation connectors shall be installed as necessary in sheet metal ductwork.
 - g. Ductwork shall not contact the ground.
 - h. Duct hangers shall not be more than 10 feet apart for rectangle duct, 12 feet apart for round duct. Supporting straps shall be installed within 2 feet of boots.
 - i. Flexible duct may be used if listed a class one air duct. Supporting hangers shall not be less than 1 inch wide and suitable for use with flex duct.

- j. Minimum size branch supply ducts shall be 4 inches round or equivalent. Maximum size 8 inches round or equivalent.
 - k. System must be balanced with supplies located on the outside perimeter of the home when possible. Average face velocity of each supply register shall not exceed 700 FPM or less than 400 FPM.
 - l. A return air register shall be on each level of the home and be sized properly to provide balanced air circulation. Whenever possible, return should be located low and shall be sized for a maximum average face velocity of 500 FPM.
 - m. Branch duct take-offs shall not be made within a distance of 4 feet from the indoor supply side of the unit.
 - n. Average temperature difference between any spaces on the same floor shall not exceed 4 degrees.
 - o. Both supply and return ductwork shall be insulated if located in an unconditioned area.
 - p. All vapor barrier seams shall lap a minimum of 2 inches, be mechanically fastened and be sealed with foil or a high-grade tape. Duct liner shall be tabbed.
 - q. Split system refrigerant line sets must be insulated with a minimum 3/8-inch armaflex properly supported and not exceed 10 feet of excess length. Refrigerant piping installed below grade shall be encased in conduit of Schedule 40 PVC.
 - r. Compressor shall not exceed 20 feet in elevation above or below the indoor unit.
 - s. Condensate piping shall be 3/4-inch or larger if gravity type.
 - t. An auxiliary drain pan with a separate 3/4-inch drain line shall be installed in all cases where water damage could result if the main line becomes clogged (or install float switch).
 - u. Condensate shall not be permitted to drain into the crawlspace area.
 - v. Filters shall be installed in an easily accessible location.
 - w. Indoor thermostat shall be located on an interior partition in an area that is close to the return air temperature. Thermostats shall be mounted 4-1/2 to 5 feet above the floor and be free from the undue influence of vibration or heat from lighting, sun, fireplaces, supplies, etc.
 - x. Capacity of unit must be +/-10% of manufacturer's specifications.
 - y. Dryer vent must be located 4 feet or more away from outdoor HVAC unit.
 - z. All ductwork installed shall be insulated to meet local building codes.
14. Two Cat 6e or higher data lines to each dual jack (according to Fiber Optics Wiring Guidelines).
 15. At least 15 inches of Cat 6e should extend from the wall jack for connectors.
 16. All Cat 6e will be placed inside a new 14 1/2"W x 28"H Home Run Box with a 120V electrical outlet inside.
 17. All Cat 6e are home runs from the Home Run Box to the jack.
 18. Inside the Home Run Box, at least 36 inches or more of Cat 6e needs to be available for splicing.
 19. Two Cat 6e feed lines pulled from electric meter center area to Home Run Box in a one inch conduit in enclosed areas (according to Fiber Optics Wiring Guidelines).
 20. Cat 6e lines test with all pairs in good condition up to 325 feet.
 21. A one inch conduit path from the Home Run Box to the attic, crawl space and unfinished basement has been placed for future access.