



Affordable Housing with *SystemVision*[™] Program Standards₂₀₁₁

1. Air Tightness

- 1.1. There shall be a continuous, durable air barrier enclosing the conditioned space. This includes features such as chases, knee walls, soffits, garage interfaces, intersecting walls, tubs and showers and dropped ceilings. Also, sheetrock shall be sealed to top plate at all attic/wall interfaces using caulk, foam, or equivalent material.
- 1.2. Tightness shall be less than or equal to .30 CFM50 per square foot of conditioned envelope area. Among other areas, this will require attention to air sealing the sub-floor to bottom plate; holes under tubs; window and door rough openings; attic hatches and electrical, plumbing and mechanical penetrations.

2. Ventilation and Moisture Management

- 2.1. There shall be a filtered whole-house mechanical fresh air ventilation system in compliance with ASHRAE 62.2.
- 2.2. All bathrooms shall have a fan vented to the outside that exhausts 20 CFM continuously or 50 CFM intermittently. (For intermittent, requires a minimum fan rating of 70 CFM)
- 2.3. All kitchens shall have a fan vented to the outside that exhausts 100 CFM. (Requires a minimum fan rating of 120 CFM)
- 2.4. All ventilation ducts, excluding kitchen exhaust ducts, shall be insulated.
- 2.5. All ventilation ducts shall terminate at or beyond the exterior skin of the building.
- 2.6. All crawlspaces shall be closed in accordance with www.crawlspaces.org.

3. Insulation and Windows

- 3.1. Insulation shall be installed to manufacturer's specifications, with no substantial gaps, voids, compression or wind intrusion. Insulation and the air barrier shall be installed in physical contact with each other.
- 3.2. Insulation levels shall, at minimum, equal those required by the 2009 IECC.
- 3.3. Raised heel trusses, or equivalent, shall be used to ensure full insulation value over the top plate of the exterior wall.
- 3.4. Wall framing techniques that reduce thermal bridging shall be used. Acceptable options include:
 - Continuous rigid insulation sheathing ($\geq R-3$ in Climate Zones 1-4, $\geq R-5$ in Climate Zones 5-8); or
 - Structural Insulated Panels (SIPs); or
 - Insulated Concrete Forms (ICFs); or
 - Advanced framing including all of the below:
 - Corners insulated $\geq R-6$,
 - Header assemblies above windows and doors $\geq R-6$ in CZ 1-4 or $\geq R-8$ in CZ 5-8,
 - Framing limited at windows and doors to that which is structurally necessary,
 - Continuous insulation behind interior/exterior wall intersections using ladder blocking or a single partition stud,
 - In general, exterior wall framing limited to that which is structurally necessary.
- 3.5. Windows and glass doors shall have an overall solar heat gain co-efficient (SHGC) of .30 or less and an overall U-value of .35 or less.
- 3.6. Homes in Climate Zones 1-4 with more than 10 linear feet of ductwork in the attic shall have a radiant barrier in the attic.

4. HVAC Sizing and Installation

- 4.1. Heat pumps shall have a minimum SEER rating of 14 and a minimum HSPF of 8.2.
- 4.2. Heat pumps shall have an outdoor thermostat installed to prevent supplementary heater operation when the heat pump is capable of meeting the load.
- 4.3. Furnaces shall be 90% efficient and their cooling systems shall have a minimum SEER rating of 13.
- 4.4. All duct connections shall be sealed with a UL listed "bucket" mastic product.
- 4.5. Duct leakage, measured in cubic feet per minute at 25 Pascals, shall not exceed 3% of the conditioned square footage.
- 4.6. Mechanical systems shall be sized to within ½ ton of the ACCA Manual J. ACCA Manual J room-by-room load calculations, including all inputs, shall be submitted for each plan to verify sizing.
- 4.7. The measured airflow for each room shall be within +/- 10% of the ACCA Manual J calculation.
- 4.8. Refrigerant charge shall be installed per manufacturer's specifications.
- 4.9. Inert gas (nitrogen) shall be used during any brazing/soldering of refrigerant lines.
- 4.10. Indoor and outdoor system components shall be "matched" according to the Air Conditioning and Refrigeration Institute (ARI) directory.

5. Pressure Balancing

- 5.1. All rooms within the conditioned space – except baths and laundry – shall not exceed +/- 3 Pascals pressure differential with respect to the outside when interior doors are closed and the air handler is operating. Returns, transfer grilles or jump ducts shall be used to balance each room in addition to door undercuts.

6. Energy Star, Fixtures and Appliances

- 6.1. Home shall meet Energy Star® Home requirements.
- 6.2. Home shall have an Energy Star® labeled refrigerator, dishwasher or clothes washer if any is supplied to the home.
- 6.3. Home shall not have any incandescent lights.
- 6.4. Recessed lights, if used, shall be air tight and insulation contact (IC) rated.
- 6.5. Electric water heaters shall have an energy factor (EF) of at least .93. Gas water heaters shall have an EF of at least .61.
- 6.6. From the water heater, the first three feet of hot and cold pipes shall be insulated to \geq R-4.
- 6.7. Toilets shall be 1.3 GPF or less (including dual-flush models). Showerheads shall be 2.25 GPM or less. Kitchen faucets shall be 2.2 GPM or less. Bath faucets shall be 1.5 GPM or less.

7. Combustion Safety

- 7.1. Any combustion appliance inside the conditioned space, other than gas ranges and wood fireplaces, must be direct vent or power vented. Vent free gas logs are not allowed.
- 7.2. One hard-wired carbon monoxide (CO) detector shall be installed per 1,000 sq. feet of living space in homes which have any combustion appliance within the conditioned space or which have an attached garage. (minimum 1 per floor)