Georgia State Supplements and Amendments to the International Energy Conservation Code

(2009 Edition)

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GEORGIA STATE MINIMUM STANDARD ENERGY CODE
(INTERNATIONAL ENERGY CONSERVATION CODE
WITH GEORGIA STATE SUPPLEMENTS AND AMENDMENTS)

The INTERNATIONAL ENERGY CONSERVATION CODE, 2009 Edition, published by the International Code Council, when used in conjunction with these Georgia State Supplements and Amendments, shall constitute the official *Georgia State Minimum Standard Energy Code.*

GEORGIA STATE SUPPLEMENTS AND AMENDMENTS

SCOPE:

Each chapter of these Georgia State Supplements and Amendments corresponds with a chapter of the *International Energy Conservation Code* (*IECC*).

- Chapter 1: Administration.
- Chapter 2: Definitions.
- Chapter 3: Climate Zones.
  - "Climate zones from Figure 301.1 or Table 301.1 shall be used in determining the applicable requirements from Chapters 4 and 5…"
- Chapter 4: Residential Energy Efficiency.
  - Compliance Pathways for Low-Rise Residential Construction:
    - Any of those delineated in this chapter; or
    - *REScheck*[1]
- Chapter 5: Commercial Energy Efficiency.
  - Compliance Pathways for Commercial and High-Rise Residential Construction:
    - Any of those delineated in this chapter; or
    - *COMcheck*[1]
- Chapter 6: Referenced Standards.
- Appendices A-D
  - Throughout the appendices there is information that may be helpful in meeting and understanding the *Georgia State Minimum Standard Energy Code.* In cases of conflict, refer to the *IECC* for clarification.

1. *REScheck* and *COMcheck* are computer programs developed by Pacific Northwest National Laboratories for the U.S. Department of Energy (D.O.E.) to assist in demonstration of compliance with the *IECC.* They may be obtained free of charge from the D.O.E. online at www.energycodes.gov. When following the *REScheck* compliance pathway, select the Georgia Version. When following the *COMcheck* compliance pathway, select the Georgia Version (based on *ASHRAE/IESNA Standard 90.1-2007* [with 2011 Georgia State Supplements and Amendments to the 2009 *IECC*]).

The ‘Mandatory’ requirements of the *IECC* apply to all compliance methods.

Where these Georgia State Supplements and Amendments conflict with either the *IECC* or *ASHRAE/IESNA Standard 90.1*, these Georgia State Supplements and Amendments shall take precedence.

Air infiltration accounts for substantial heat loss, heat gain and moisture migration in a building. Proper sealing around all doors, windows and other envelope penetrations through the walls, ceiling and foundation is as important to code compliance as are proper insulation R-values and component U-factors.

It is not the intention of this code to abridge safety or health. Where the *IECC* and these Georgia State Supplements and Amendments conflict with other mandatory *State Minimum Standard Codes*, the *IECC* and these Georgia State Supplements and Amendments shall be enforced as written; provided, safety, health or environmental requirements of other mandatory *State Minimum Standard Codes* are not abridged.

APPENDICES:

Appendices are not enforceable unless they are specifically referenced in the body of the code or adopted by the Department of Community Affairs or the authority having jurisdiction.

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Revise the International Energy Conservation Code, 2009 Edition, as follows:

CHAPTER 1
ADMINISTRATION

SECTION 101
SCOPE AND GENERAL REQUIREMENTS

*Delete SECTION 101.1, 'Title', without substitution.
(Effective January 1, 2011)

SECTION 103
CONSTRUCTION DOCUMENTS

*Delete SECTION 103, 'CONSTRUCTION DOCUMENTS', without substitution.
(Effective January 1, 2011)

SECTION 104
INSPECTIONS

*Delete SECTION 104, 'INSPECTIONS', without substitution.
(Effective January 1, 2011)

SECTION 107
FEES

*Delete SECTION 107, 'FEES', without substitution.
(Effective January 1, 2011)

SECTION 108
STOP WORK ORDER

*Delete SECTION 108, 'STOP WORK ORDER', without substitution.
(Effective January 1, 2011)

SECTION 109
BOARD OF APPEALS

*Delete SECTION 109, 'BOARD OF APPEALS', without substitution.
(Effective January 1, 2011)

CHAPTER 2
DEFINITIONS

*Add definition of 'ATTIC KNEEWALL' as follows:

ATTIC KNEEWALL. Any vertical or near-vertical wall in the building envelope that has conditioned space on one side and unconditioned attic space on the other side. If the envelope features the insulation installed along the sloped ceiling, the vertical wall is considered an interior wall and thus does not require insulation
(Effective January 1, 2011)

*Add definition of 'CERTIFIED DUCT AND ENVELOPE TIGHTNESS (DET) VERIFIER' as follows:

CERTIFIED DUCT AND ENVELOPE TIGHTNESS (DET) VERIFIER. A certified DET verifier shall be a certified Home Energy Rating Systems (HERS) rater, or be a certified Home Performance with ENERGY STAR contractor, or be a Building Performance Institute (BPI) Analyst, or successfully complete a certified DET verifier course that is approved by the Georgia Department of Community Affairs.
(Effective January 1, 2011)

*Delete definition of 'CONDITIONED SPACE' and substitute the following:

SPACE. An enclosed space within a building.

The classifications of spaces are as follows for the purpose of determining building envelope requirements:
(a) Conditioned space: a cooled space, heated space, or indirectly conditioned space is defined as follows:

(1) Cooled space: an enclosed space within a building that is cooled by a cooling system whose sensible output capacity exceeds 5 Btu/h·ft^2 of floor area.
(2) Heated space: an enclosed space within a building that is heated by a heating system whose output capacity relative to the floor area is greater than or equal to 5 Btu/h·ft^2.
(3) Indirectly conditioned space: an enclosed space within a building that is not a heated space or a cooled space, containing un-insulated ducts, or containing the heating equipment or which is heated or cooled indirectly by being connected to adjacent space(s), provided that air from heated or cooled spaces is transferred (naturally or mechanically) into the space. Unvented Attic Assemblies meeting the requirements of the IRC are an approved indirectly conditioned space.

(b) Semi-heated space: an enclosed space within a building that is heated by a heating system whose output capacity is greater than or equal to 3.4 Btu/h·ft^2 of floor area but is not a conditioned space.
(c) Unconditioned space: an enclosed space within a building that is not a conditioned space or a semi-heated space. Crawl spaces, attics, and parking garages with natural or mechanical ventilation are not considered enclosed spaces.
(Effective January 1, 2011)

CHAPTER 4
RESIDENTIAL ENERGY EFFICIENCY

SECTION 401
GENERAL

*Revise Section 401.3, 'Certificate', by revising first sentence and adding at end as follows:

401.3 Certificate. A permanent certificate shall be posted on or near the electrical distribution panel or air handler. The certificate shall be…
(Middle of section left unchanged.)
…water heating equipment. The certificate shall also list the calculated heating load, sensible cooling load, latent cooling load and cfm for space conditioning. The certificate shall also list the duct tightness and envelope tightness test results. Buildings classified as R-2 occupancy shall indicate that the visual inspection option was used or provide envelope tightness test results. (Remainder of section left unchanged)
(Effective January 1, 2011)

SECTION 402
BUILDING THERMAL ENVELOPE

*Delete Tables 402.1.1, 'INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]', and 402.1.3, 'EQUIVALENT *U*-FACTORS[a]', and substitute by adding new Table 402.1.1, 'INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]', as follows: (See next page for table)

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TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT *U*-FACTOR[b]	GLAZED FENESTRATION SHGC[b]	CEILING[c]	WOOD FRAME WALL[d]	ATTIC KNEEWALL[e]
2	0.50[l]	0.75	0.30	*R*-30 or *U*-0.030	*R*-13 or *U*-0.082	*R*-18 or *U*-0.065
3	0.50[l]	0.65	0.30	*R*-30 or *U*-0.030	*R*-13 or *U*-0.082	*R*-18 or *U*-0.065
4	0.35	0.60	0.30[*]	*R*-38 or *U*-0.025	*R*-13 or *U*-0.082	*R*-18 or *U*-0.065

CLIMATE ZONE	MASS WALL[f]	FLOOR[g]	BASEMENT WALL[h k]	SLAB[i]	CRAWL SPACE WALL[j k]
2	R-4/6 or *U*-0.165	*R*-13 or *U*-0.064	*R*-0 *U*-0.36	R-0	*R*-0 *U*-0.477
3	R-5/8 or *U*-0.141	*R*-19 or *U*-0.047	R-5/13 *U*-0.136	R-0	R-5/13 *U*-0.136
4	R-5/10 or *U*-0.141	*R*-19 or *U*-0.047	R-10/13 *U*-0.059	R-0	R-10/13 *U*-0.059

**** This requirement will take effect on July 1, 2011.***

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. *R*-19 shall be permitted to be compressed into a 2 × 6 cavity. Non-fenestration *U*-factors shall be obtained from measurement, calculation or an approved source.

b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration, including doors 50 percent or more glazed. One door or window (or up to 15 square feet [1.4 m^2] of glazed fenestration) may be exempt from meeting the *U*-factor and SHGC (Does not apply to attic access doors) See Section 402.2.3 'Fenestration access hatches and doors' of these Georgia State Supplements and Amendments.

c. Ends and sides of ceiling joist cavity shall be blocked with an approved air barrier. Flat ceiling insulation shall be in substantial contact with the ceiling. Ceiling areas without attic space in Climate Zone 4 may be *R*-30 (maximum of 20 percent of ceiling area or 500 square feet, whichever is less). For HVAC platform and floored access path areas, refer to Section 402.2.1 'Ceilings with attic spaces' of these Georgia State Supplements and Amendments.

d. All vertical air-permeable insulation shall be in substantial contact with an air barrier on all six (6) sides.
Exception: Unfinished basements and fireplaces (insulation shall be restrained to stay in place).

e. *R*-13 + *R*-5 insulated sheathing, *R*-15 + *R*-3 insulated sheathing, or *R*-19 compressed into a 2 × 6 cavity is deemed to meet *R*-18 minimum requirement. Attic side shall have a sealed air barrier.

f. The second R-value applies when more than half the insulation is on the interior side of the mass wall.

g. Floor insulation shall be installed to maintain continuous permanent contact with the underside of the subfloor decking, and insulation ends shall be blocked. Cantilevered floors shall be *R*-30 and band area above exterior wall shall be blocked.

h. *R*-5 and R-10 are continuous and *R*-13 is cavity and band. For basements with no direct conditioning, either the floor or all of the basement walls shall be insulated. For basements with direct conditioning, all of the basement walls shall be insulated.

i. Applies to unheated slabs. Heated slabs shall have exterior edge insulated to *R*-5 to a depth of 2 feet (610 mm). Insulation located below grade shall be in compliance with Section 402.2.7.

j. *R*-5 and R-10 are continuous and *R*-13 is cavity and band. See Section 402.2.9 'Crawl Space Walls' of these Georgia State Supplements and Amendments.

k. Consideration should be given for mold and moisture, and for termite inspection and treatment.

l. Where impact rated fenestration is required under Section R301.2.1.2 of the *International Residential Code* or Section 1609.1.2 of the *International Building Code*, the maximum *U*-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

Georgia is Climate Zone 3

Exceptions:

1. Climate Zone 2 Counties: Appling, Atkinson, Bacon, Baker, Berrien, Brantley, Brooks, Bryan, Camden, Charlton, Chatham, Clinch, Colquitt, Cook, Decatur, Echols, Effingham, Evans, Glynn, Grady, Jeff Davis, Lanier, Liberty, Long, Lowndes, McIntosh, Miller, Mitchell, Pierce, Seminole, Tattnall, Thomas, Toombs, Ware and Wayne.
2. Climate Zone 4 Counties: Banks, Catoosa, Chattooga, Dade, Dawson, Fannin, Floyd, Franklin, Gilmer, Gordon, Habersham, Hall, Lumpkin, Murray, Pickens, Rabun, Stephens, Towns, Union, Walker, White and Whitfield.

(Effective January 1, 2011)

*Revise Section 402.1.4, 'Total UA alternative', to read as follows:

402.1.4 Total UA alternative. If the total… (Middle of section left unchanged.) The UA calculation shall be done using a method consistent with the *ASHRAE Handbook of Fundamentals* or *RESNET's Mortgage Industry National Home Energy Rating System Standards* and shall include the thermal bridging effects of framing materials. The minimum insulation R-values and maximum fenestration U-factors for thermal envelope components in projects complying under this section (Including the use of REScheck) shall be according to Table 402.1.4. (Remainder of section left unchanged)
(Effective January 1, 2011)

*Add new Table 402.1.4, 'When trade-offs are used' to read as follows:

TABLE 402.1.4
SUMMARY OF MINIMUM INSULATION R-VALUES AND MAXIMUM U-FACTORS FOR ENVELOPE COMPONENTS WHEN TRADE-OFFS ARE USED

ELEMENT[1]	**Minimum R-value or Maximum U-factor**	
Walls (Stud)	R-13	
Mass Walls[2]	Climate Zone: 2 R-4	Climate Zone: 3 & 4 R-5
Basement Walls	Climate Zone: 2 R-0	Climate Zone: 3 & 4 R-5
Attic Knee Walls[3]	R-18	
Ceilings with Attic Spaces	R-30	
Air-permeable Roofline Installed Insulation[4]	Climate Zone: 2&3 R-19 air-permeable +R-5 air-impermeable	Climate Zone: 4 R-19 air-permeable +R-15 air-impermeable
Air-impermeable Roofline Installed Insulation[4]	R-19	
Floor over unheated spaces	R-13	
Windows	U- 0.50 with max. SHGC 0.30*	

Note 1: Weather-stripped hinged vertical doors (minimum R-5 insulation or maximum U-0.20), weather-stripped hatches/scuttle hole covers (minimum R-19 insulation or maximum U-0.05), or weather-stripped. disappearing/pull-down stairs (minimum R-5 insulation or maximum U-0.20) shall be deemed to meet the minimum insulation R-values of any element.
Note 2: Any mass wall (masonry, CMU, etc.)
Note 3: Attic knee wall for purpose of this code is defined as any vertical or near vertical wall in the building envelope that has conditioned space on one side and attic space on the other side.
Exception: When the building roofline is insulated, the former kneewall is classified as an interior wall.
Note 4: Reference the 2010 Georgia Amendment to Section 806.4 'Unvented attic assemblies' of the 2006 International Residential Code for clarification. Examples of air-impermeable insulation include spray foam and rigid foam board. Examples of air-permeable insulation include fiberglass batts and cellulose. See 'Roofline Installed Insulation Options' in Appendix A, of these Georgia State Supplements and Amendments, for details.
*The 0.30 SHGC requirement shall take effect on July 1, 2011 for Climate Zone 4.

(Effective January 1, 2011)

*Revise Section 402.2.1, 'Ceilings with attic spaces', by adding at end as follows:

402.2.1 Ceilings with attic spaces. (Beginning of section left unchanged.) … in Section 402.1.4. For attic HVAC attic platforms, R-19 (maximum U-0.047) shall be deemed to meet the requirements of R-30/38 (maximum U-0.035/0.030) in the ceiling. R-19 is deemed acceptable for up to 32 square feet of attic decking per HVAC system. R-19 shall be deemed acceptable for a maximum 32 inch wide passage to the HVAC system as referenced under Section M1305.1.3 of the *International Residential Code*.
(Effective January 1, 2011)

*Add new Section 402.2.1.1, 'Wind wash baffle and air-permeable insulation dam' as follows:

402.2.1.1 Wind wash baffle and air-permeable insulation dam. For air permeable insulation in vented attics, baffles shall be installed adjacent to soffit and eave vents. A minimum of a 1-inch of space shall be provided between the insulation and the roof sheathing and at the location of the vent. The baffle shall extend over the top of the insulation inward until it is at least 4 inches vertically above the top of the insulation. Any solid material such as cardboard or thin insulating sheathing shall be permissible as the baffle. (See Appendix A for further clarification.)
(Effective January 1, 2011)

*Delete Section 402.2.3, 'Access hatches and doors', and substitute the following:

402.2.3 Fenestration access hatches and doors. Access doors from conditioned spaces to unconditioned spaces (e.g., attics, unconditioned basements and crawl spaces) shall be weather-stripped and insulated in accordance with the following insulation values:

1. Hinged vertical doors shall have a maximum U-Factor of U-0.20 (R-5 minimum);
2. Hatches/scuttle hole covers shall have a maximum U-Factor of U-0.05 (R-19 minimum); and
3. Pull down stairs shall have a maximum U-Factor of U-0.20 with a minimum of 75 percent of the panel area having (R-5 minimum) insulation.

Access shall be provided to all equipment which prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is installed, the purpose of which is to prevent the loose fill insulation from spilling into the living space when the attic access is opened, and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.
(Effective January 1, 2011)

*Revise Section 402.2.6, 'Floors', to read as follows:

402.2.6 Floors. Floor insulation shall be installed to maintain continuous permanent contact with the underside of the subfloor decking.
(Effective January 1, 2011)

*Revise Section 402.2.9, 'Crawl space walls', to read as follows:

402.2.9 Crawl space walls. As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to within 9 inches (229 mm) of the finished interior grade adjacent to the foundation wall. A 3-inch (76 mm) inspection/view strip immediately below the floor joists shall be provided to permit inspections for termites. Exposed earth in unvented crawl space foundations shall be covered with a continuous Class 1 vapor retarder in accordance with the *International Building Code*. All joints of the vapor retarder shall overlap by 6 inches (152 mm) and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches (228 mm) up the stem wall and shall be attached and sealed to the stem wall.
(Effective January 1, 2011)

*Revise Section 402.3.4, 'Opaque door exemption', to read as follows:

402.3.4 Opaque door exemption. One side-hinged opaque door assembly up to 24 square feet (2.22 m^2) in area is exempt from the U-factor requirement in Section 402.1.1. This exemption shall not apply to attic access doors or to the U-factor alternative approach in Section 402.1.3 and the Total UA alternative in Section 402.1.4.
(Effective January 1, 2011)

*Revise Section 402.4.1, 'Building thermal envelope', to add at end as follows:

402.4.1 Building thermal envelope. The *building thermal envelope* shall…
[Middle of section left unchanged]
12. Other sources of infiltration.

See Appendix A 'AIR SEALING KEY POINTS' of these Georgia State Supplements and Amendments for a graphical representation of the items listed above.
(Effective January 1, 2011)

*Revise Section 402.4.2, 'Air sealing and insulation', to read as follows:

402.4.2 Air sealing and insulation. Building envelope air tightness and insulation installation shall be demonstrated to comply with Section 402.4.2.1. Buildings classified as R-2 occupancy, shall demonstrate compliance with Section 402.4.2.2.
(Effective January 1, 2011)

*Re-name and Revise Section 402.4.2.1, 'Testing option', to read as follows:

402.4.2.1 Testing required. Building envelope tightness and insulation installation shall be considered acceptable when tested air leakage is less than seven air changes per hour (ACH_{50}) when tested with a blower door at a pressure of 50 Pascals (1.04 psf). The formula for calculating ACH_{50} and testing protocol is listed in Appendix B 'Building Envelope and Duct Tightness Testing Protocol'. Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances.

Exception: Building envelope tightness testing for additions, renovations, alterations or repairs shall only be conducted in the case of construction that affects all aspects of the building envelope.
(Effective January 1, 2011)

*Add new Section 402.4.2.1.1, 'Certified duct and envelope tightness (DET) verifier', to read as follows:

402.4.2.1.1 Certified duct and envelope tightness (DET) verifier. Testing for building envelope tightness shall be conducted by a certified DET verifier.
(Effective January 1, 2011)

*Delete Section 402.4.2.2, 'Visual inspection option', and substitute the following:

402.4.2.2 Low-rise multifamily testing protocol. Where a *residential building* is classified as R-2, envelope testing of less than 100 percent shall be acceptable if one of the following two testing protocols are applied.

1. Testing Protocol 1: A sampling of one in four of all dwelling units on each floor within each multifamily building shall be tested for envelope tightness. If any dwelling unit within the building fails to meet the performance testing goal, that dwelling unit shall be further sealed and retested until the unit passes the performance testing goal.

2. Testing Protocol 2: Use the sampling protocol as described in Chapter 6 of the 2006 *Mortgage Industry National Home Energy Rating Systems Standards.*

Exception: Building envelope tightness and insulation installation shall be considered acceptable when the items listed in Table 402.4.2 applicable to the method of construction, are field verified, for all dwelling units, by a third party ICC Certified Residential Energy Inspector/Plans Examiner or equivalent qualifications as *approved* by the *code official*.
(Effective January 1, 2011)

SECTION 403
SYSTEMS (Mandatory)

*Revise Section 403.2.2, 'Sealing (Mandatory)', to read as follows:

403.2.2 Sealing (Mandatory). All ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed. Joints and seams shall comply with section 403.2.4 of these Georgia State Supplements and Amendments. Duct tightness shall be verified by any of the following and comply with the testing protocol in Appendix B.

1. Post-construction test: Leakage to outdoors for each system shall be less than or equal to 8 cfm (226.5 L/min) per 100 ft^2 (9.29 m^2) of *conditioned floor area* assigned to that system or a total leakage for each system with the air handler installed of less than or equal to 12 cfm (339.8 L/min) per 100 ft^2 (9.29 m^2) of *conditioned floor area* assigned to

that system when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Conditioned floor area should be calculated using ANSI Z765, and should include all directly conditioned square footage, whether finished or not, that meets building code requirements for living space.

2. Rough-in test: Total leakage for each system with the air handler installed shall be less than or equal to 6 cfm (169.9 L/min) per 100 ft^2 (9.29 m^2) of *conditioned floor area* assigned to that system when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the roughed in system. All register boots shall be taped or otherwise sealed during testing.

Exceptions:

1. Duct tightness testing is not required if the air handler and all ducts are located within *conditioned space*.

2. Duct tightness testing is not required for existing duct systems unless more than 50% of the duct system is modified.

3. If the air handler, furnace or evaporator coil is replaced on an existing system, all joints, seams and connections from equipment to duct system and duct system connections to plenums shall meet the sealing requirements of this code and be verified by a visual inspection by the state licensed conditioned air contractor or by a DET Verifier.

(Effective January 1, 2011)

*Revise Section 403.2.3, 'Building cavities (Mandatory)', to read as follows:

403.2.3 Building cavities (Mandatory). Building framing cavities shall not be used as supply or return ducts. All supply and return ducts must be lined with metal, flex duct, ductboard or other material approved in Section M1601 of the IRC.
(Effective January 1, 2011)

*Add new Section 403.2.4, 'Joints and seams', to read as follows:

403.2.4 Joints and seams. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Without exception all closure systems shall have mastic applied that is at least 0.08 inches (2 mm) thick. Closure systems used with rigid fibrous glass ducts shall comply with UL181A and shall be marked 181A-P for pressure-sensitive tape used with mastic, 181A-M for only mastic or 181 A-H for heat-sensitive tape used with mastic. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL181B and shall be marked 181B-FX for pressure-sensitive tape used with mastic or 181B-M for only mastic. Duct connections to flanges of air distribution system equipment or sheet metal fittings shall use mastic and be mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metal ducts shall have a contact lap of

at least 1-1/2 inches (38 mm) and shall use mastic and be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint. Closure systems used to seal metal ductwork shall be installed in accordance with the manufacturer's installation instructions.

Exceptions:

1. Application of spray polyurethane foam and mastic shall be permitted without additional joint seals.

2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect. Mastic must be applied on all accessible sides.

3. Continuously welded and locking type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500Pa) pressure classification shall not require additional closure systems.

(Effective January 1, 2011)

*Add new Section 403.6.1, 'Primary heat source', to read as follows:

403.6.1 Primary heat source. For new dwelling unit central HVAC systems, or replacement HVAC systems installed in dwelling units that were originally permitted after January 1, 1996, electric-resistance heat shall not be used as the primary heat source. Primary heat source is defined as the heat source for the original dwelling unit system.

Exception: Alterations or additions of 50% or less than the original conditioned floor area.
(Effective January 1, 2011)

*Add new Section 403.10, 'Power attic ventilators', to read as follows:

403.10 Power attic ventilators. In new construction, power attic ventilators shall not be connected to the electric grid. Power attic ventilators connected to a solar panel are allowed.
(Effective January 1, 2011)

*Revise Section 404.1, 'Lighting equipment (Prescriptive)', to read as follows:

404.1 Lighting equipment (Prescriptive). A minimum of 50 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps or be controlled with an occupancy/vacancy sensor or automated lighting control system.
(Effective January 1, 2011)

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CHAPTER 5
COMMERCIAL ENERGY EFFICIENCY

SECTION 502
BUILDING ENVELOPE REQUIREMENTS

*Add new Section 502.1.1.1, 'Permanently vegetative green roof', as follows:

502.1.1.1 Permanently vegetative green roof. When following the ASHRAE/IESNA Standard 90.1 compliance pathway, any portion of a roof that is a permanently vegetative green roof may use Table 5.5.3.1 'High Albedo Roof Insulation' of ASHRAE/IESNA Standard 90.1.
(Effective January 1, 2011)

*Revise Table 502.3, 'BUILDING ENVELOPE REQUIREMENTS: FENESTRATION', to read as follows:

Table 502.3
BUILDING ENVELOPE REQUIREMENTS: FENESTRATION

Climate Zone	2	3	4
Vertical fenestration (40% maximum of above-grade wall)			
***U*-factor**			
Framing materials other than metal with or without metal reinforcement or cladding			
U-factor	0.75	0.65	0.40
Metal framing with or without thermal break			
Curtain wall/storefront *U*-factor	0.70	0.60	0.50
Entrance door *U*-factor	1.10	0.90	0.85
All other *U*-factor[a]	0.75	0.65	0.40
SHGC-all frame types			
SHGC: PF < 0.25	0.25	0.25	0.40
SHGC: 0.25 ≤ PF < 0.5	0.33	0.33	0.40
SHGC: PF ≥ 0.5	0.40	0.40	0.40
Skylights (3% maximum)			
U-factor	0.75	0.65	0.60
SHGC	0.35	0.35	0.40

PF = Projection Factor (see Section 502.3.2)

a. All other includes operable windows, fixed windows and non-entrance doors.

(Effective January 1, 2011)

SECTION 503
BUILDING MECHANICAL SYSTEMS

*Revise Section 503.3.1, 'Economizers', to add exceptions as follows:

503.3.1 Economizers. Supply air economizers shall… (Beginning of section left unchanged)

Exceptions:

3. Computer Room Applications

4. Systems that serve spaces whose sensible cooling load at design conditions, excluding transmission and infiltration loads, is less than or equal to transmission and infiltration losses at an outdoor temperature of 60 degrees F.

5. Systems that operate less than 20 hours per week.

(Effective January 1, 2011)

*Revise Table 503.3.1(1), 'ECONOMIZER REQUIREMENTS', to read as follows:

Table 503.3.1(1)
ECONOMIZER REQUIREMENTS

CLIMATE ZONES	ECONOMIZER REQUIREMENT[a]
2A	No requirement
3A, 4A	Economizers on all cooling systems ≥ 65,000 Btu/h[b]

For SI: 1 British thermal unit per hour = 0.293 W.

a. For new construction:

1. Allowed Control Types: Fixed, Electronic, and Differential Enthalpy.
2. Economizer enthalpy Hi-Limit control settings shall not be greater than 10% below space design conditions.

b. The total capacity of all systems without economizers shall not exceed 480,000 Btu/h per building, or 20 percent of its air economizer capacity, whichever is greater.

(Effective January 1, 2011)

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CHAPTER 6
REFERENCED STANDARDS

*Revise referenced UL standards as follows (standards not listed to remain unchanged):

UL Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

Standard reference number	Title	Referenced in code section number
181—96	Factory-made Air Ducts and Air Connectors—with Revisions through May 2003	403.2.4
181A—98	Closure Systems for Use with Rigid Air Ducts and Air Connectors—with Revisions through December 1998.	403.2.4
181B—95	Closure Systems for Use with Flexible Air Ducts and Air Connectors—with Revisions through August 2003.	403.2.4

(Effective January 1, 2011)

APPENDICES

Throughout these appendices there is information that may be helpful in meeting and understanding the *Georgia State Minimum Standard Energy Code.* In cases of conflict, refer to the 2009 International Energy Conservation Code for clarification.

APPENDIX A

*Add new Appendix A, 'AIR SEALING KEY POINTS'.
(Effective January 1, 2011)

APPENDIX B

*Add new Appendix B, 'BUILDING ENVELOPE AND DUCT TIGHTNESS TESTING PROTOCOL'.
(Effective January 1, 2011)

APPENDIX C

*Add new Appendix C, 'THIRD PARTY VERIFICATION'.
(Effective January 1, 2011)

APPENDIX D

*****Add new Appendix D, 'SAMPLE COMPLIANCE CERTIFICATE'.
(Effective January 1, 2011)

End of Supplements and Amendments

APPENDIX A
AIR SEALING KEY POINTS

Air Barrier and Insulation Inspection Component Guide

NUMBER	COMPONENT	CRITERIA
1	Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.
2	Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
3	Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
4	Windows and doors	Space between window/door jambs and framing is sealed.
5	Rim joists	Rim joists are insulated and include an air barrier.
6	Floors (including above-garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.
7	Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.
8	Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.
9	Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.
10	Garage separation	Air sealing is provided between the garage and conditioned spaces.
11	Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space.
12	Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.
13	Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
14	Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.
15	Common wall	Air barrier is installed in common wall between dwelling units.
16	HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.
17	Fireplace	Fireplace walls include an air barrier.

Disclaimer:
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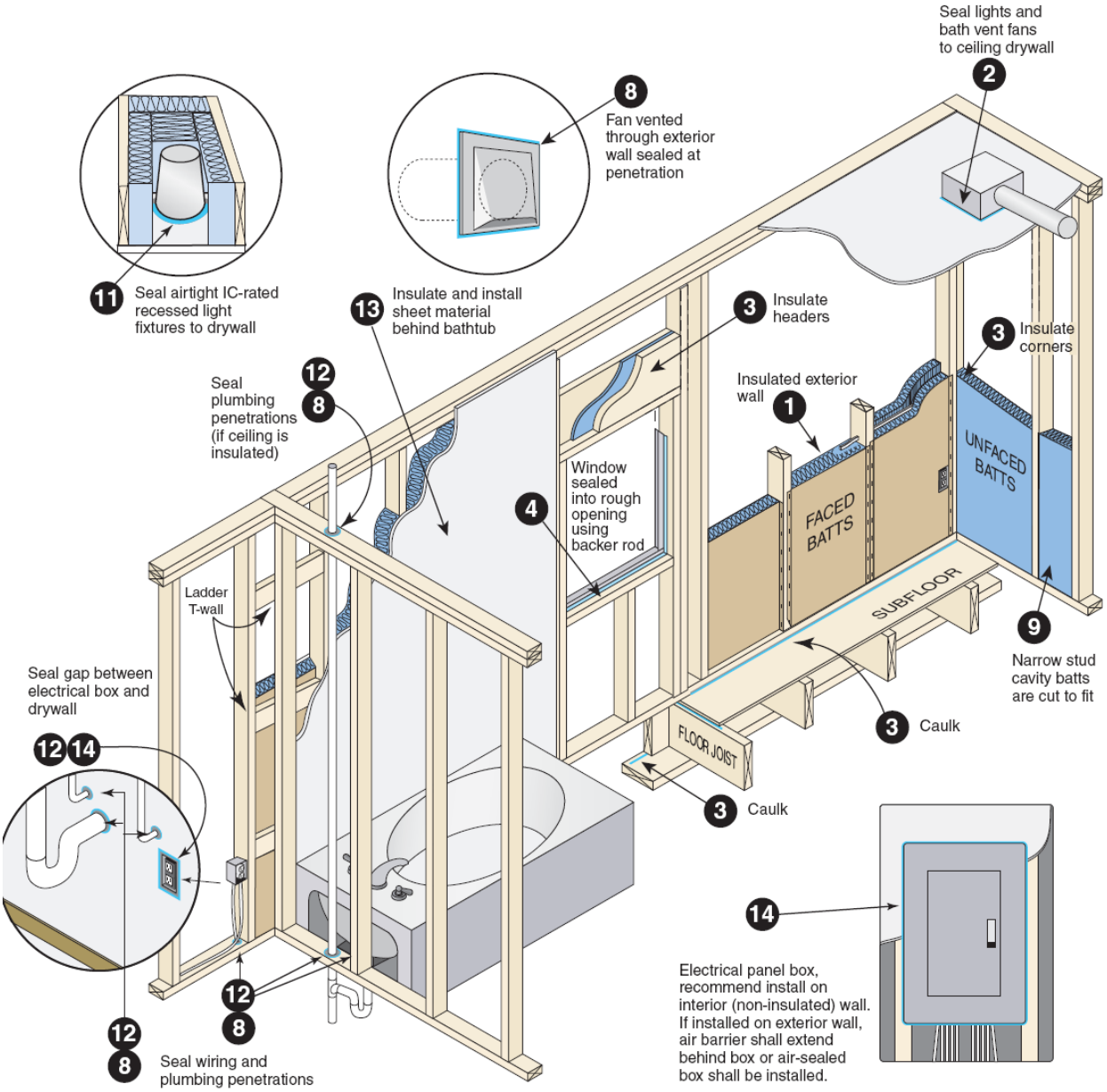
Air sealing key points



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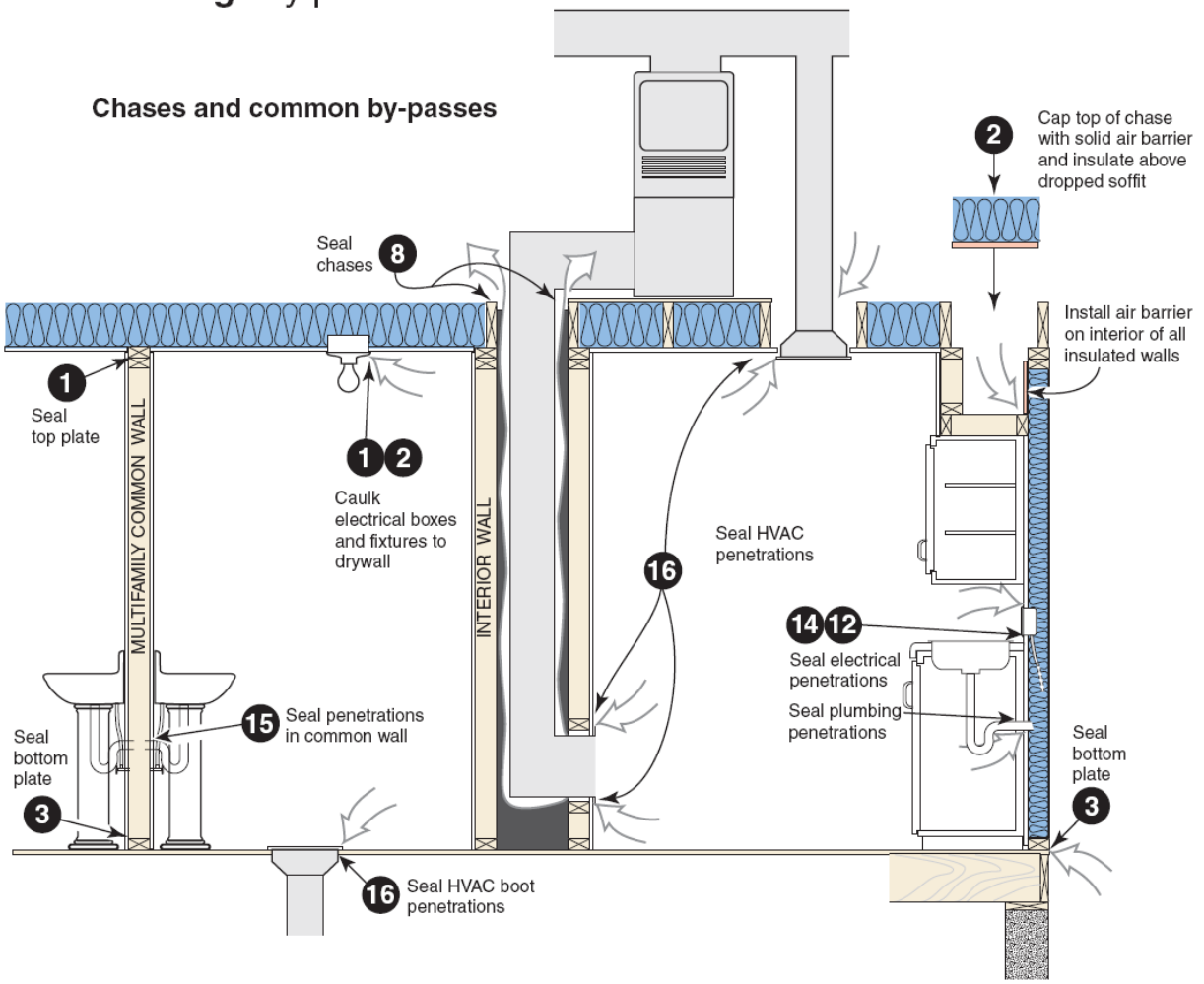
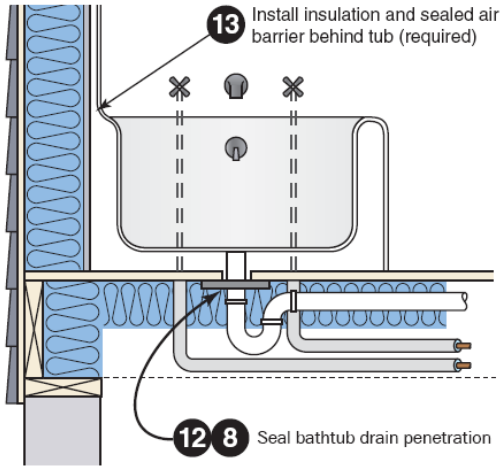
Air sealing key points *continued*

Chases and common by-passes



Shower/tub drain rough opening



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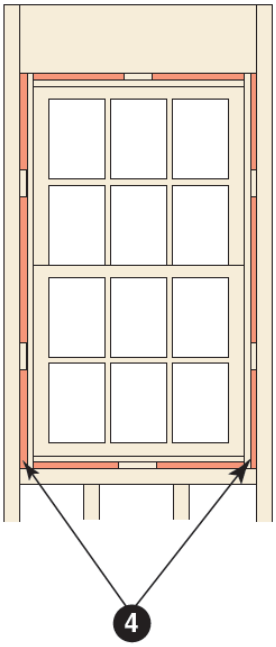
Air sealing key points *continued*

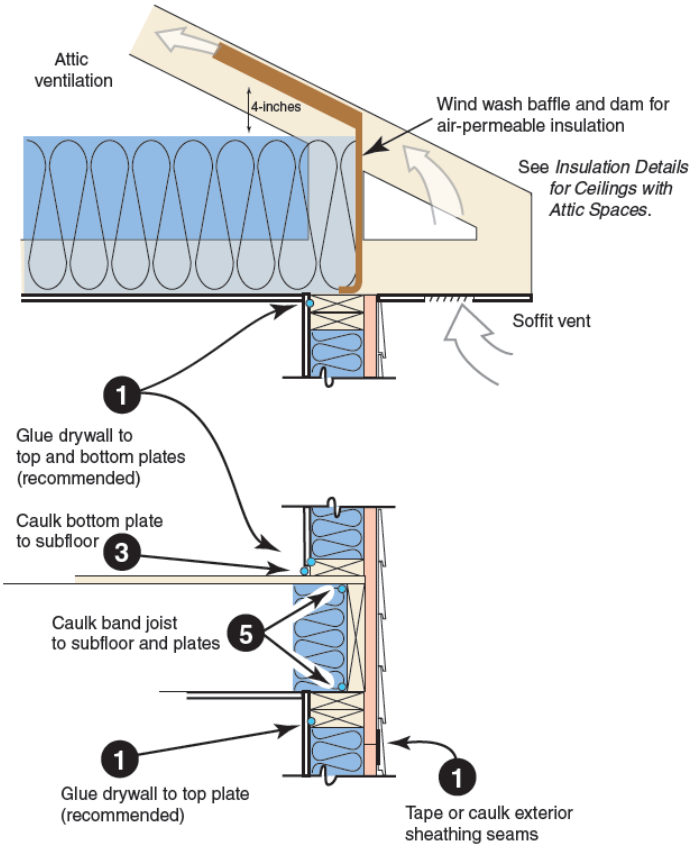
Window rough opening

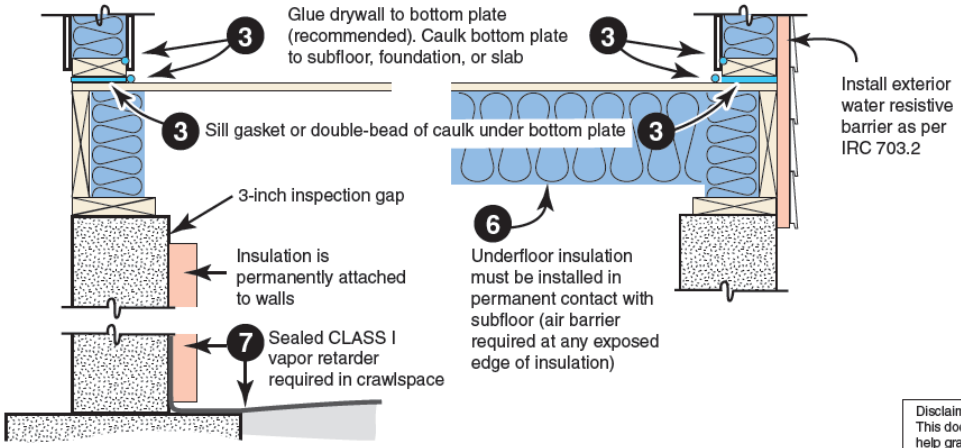


4

Use backer rod or spray foam (appropriate for windows) to fill gaps between window/door and rough opening

Wall cross-section





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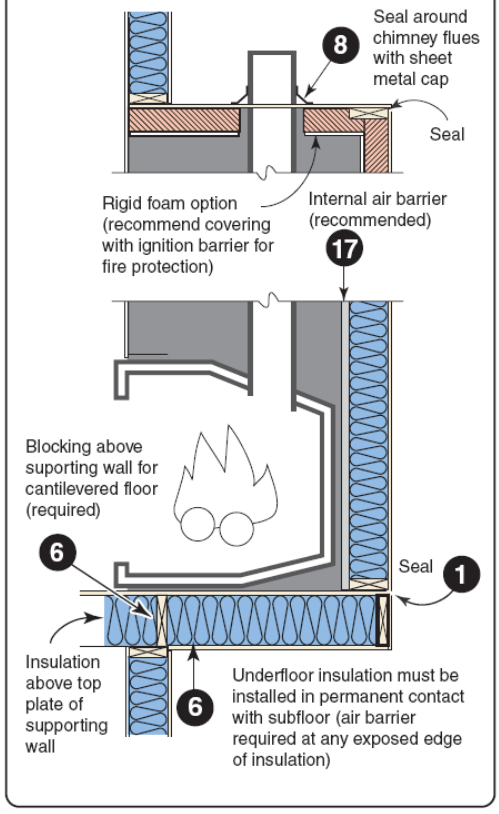
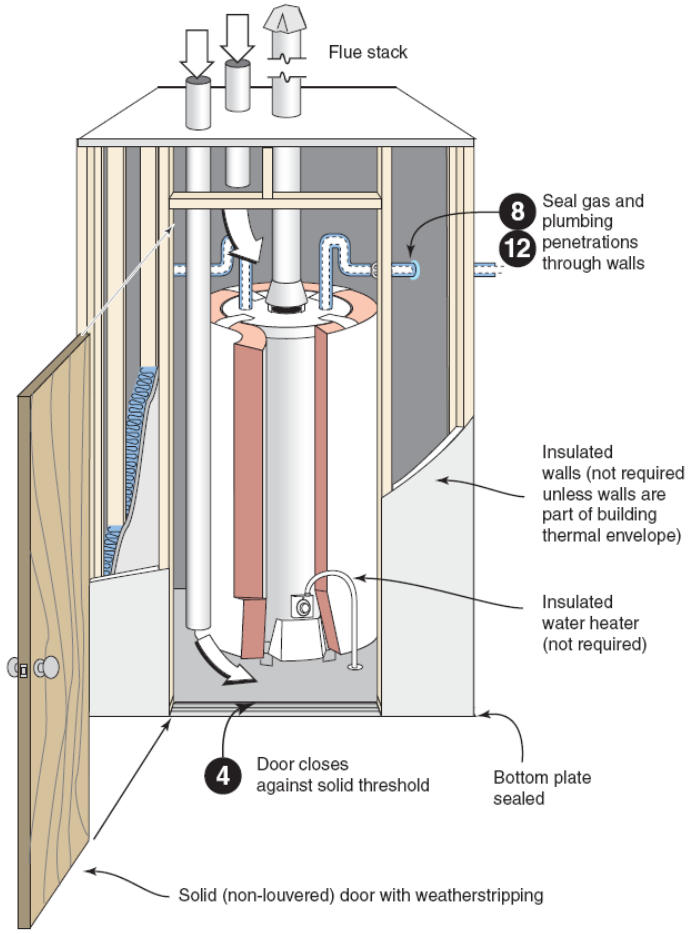
Air sealing key points *continued*

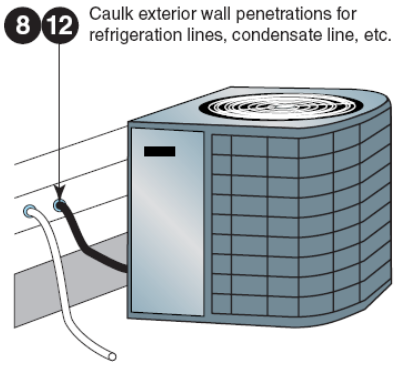
Combustion chase penetrations



Combustion closet



Exterior penetrations



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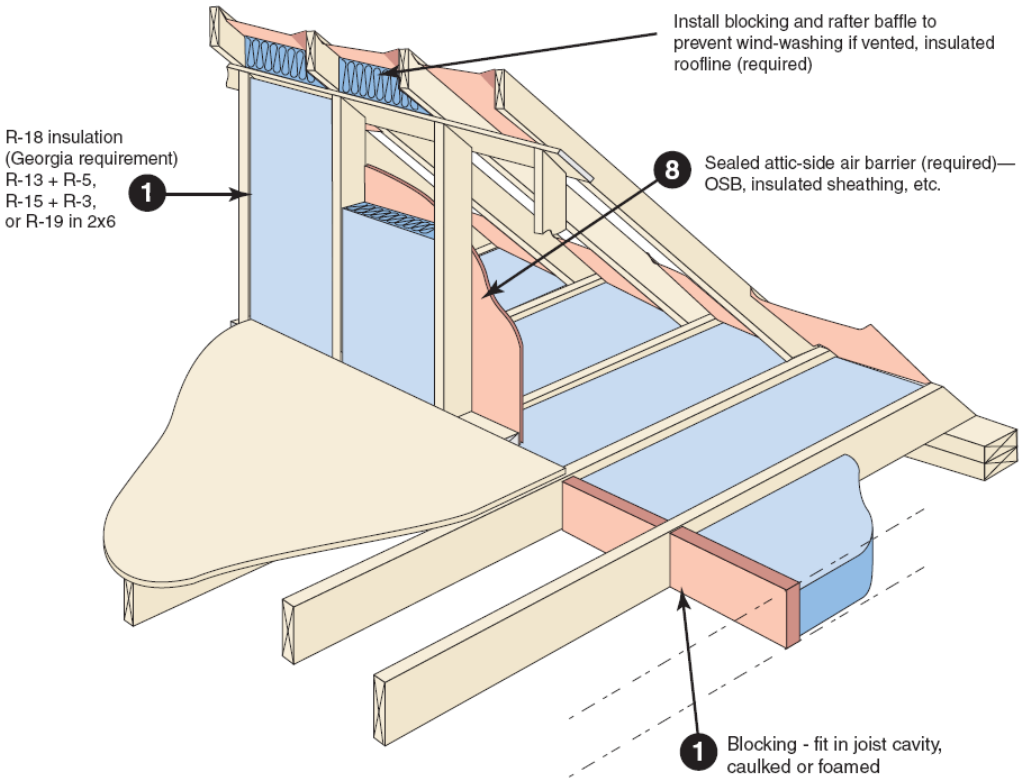
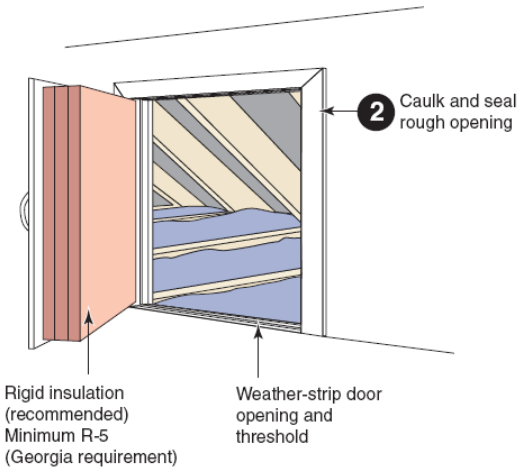
5

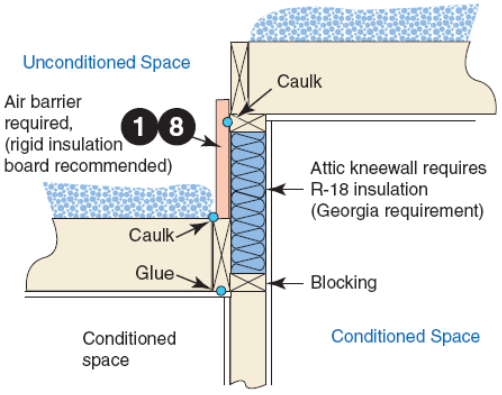
Air sealing key points *continued*



Attic knee-walls



Two-level attic



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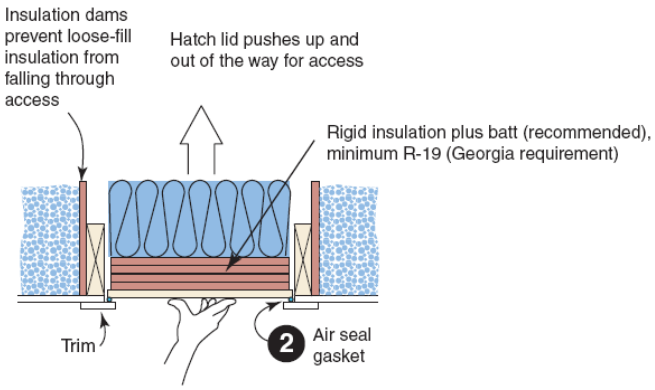
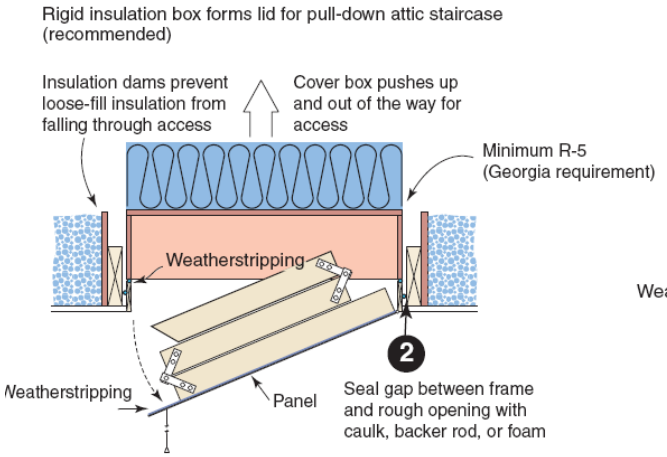
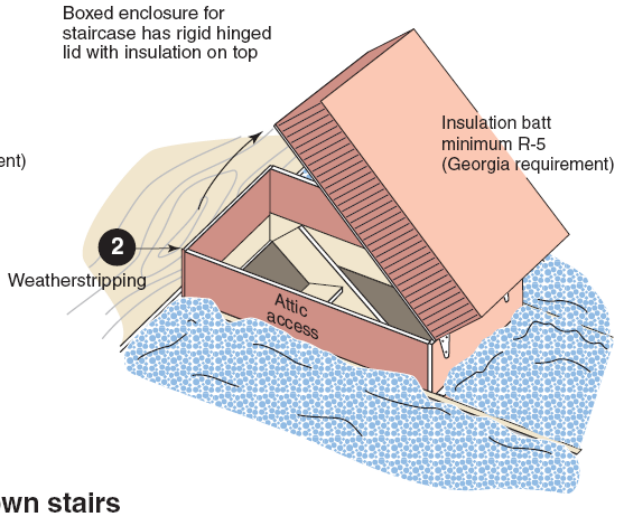
Air sealing key points *continued*

Attic scuttle

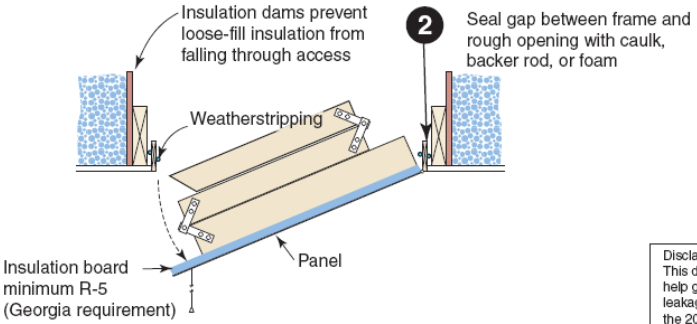


Attic pull-down stairs





Attic pull-down stairs



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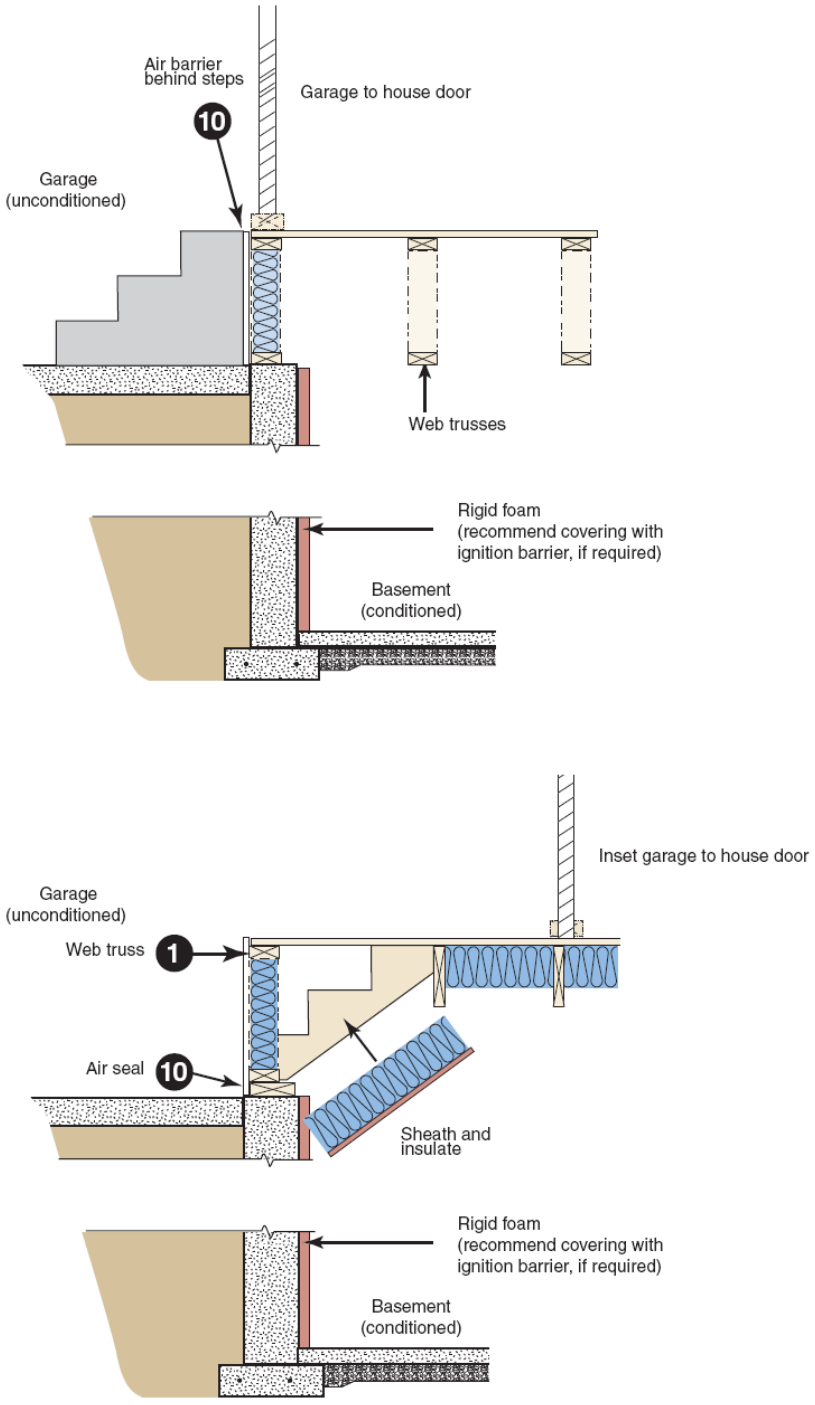
Air sealing key points *continued*



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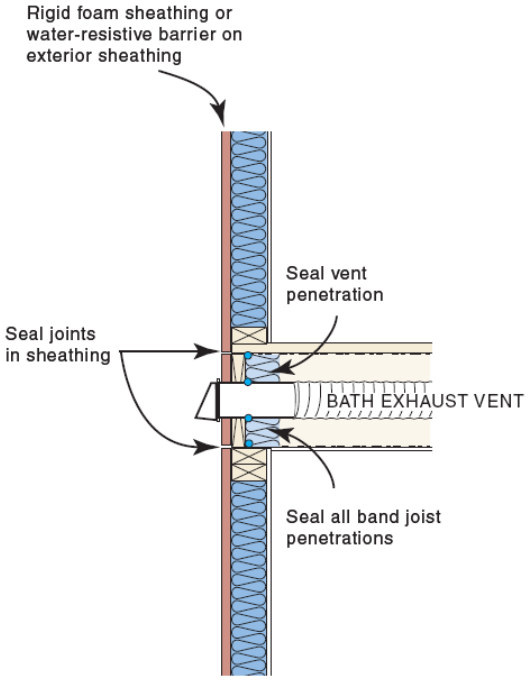
Air sealing key points *continued*
Multifamily

Additional Multifamily Air-sealing Keypoints

1. Cap and seal all chases including chases for grouped utility lines and radon vents
2. Seal penetrations in mechanical closet including penetrations for the:
   a. supply plenum
   b. outside air ventilation
   c. refrigerant line
   d. plumbing
   e. electrical
   f. gas fuel
3. Seal band area at exterior sheathing side and all penetrations through band
4. Air seal at drywall finishing for any wall adjacent to stairwell or elevator. Air seal this gap at every change in floor level
5. Seal miscellaneous clustered penetrations through building envelope (e.g. refrigerant lines)



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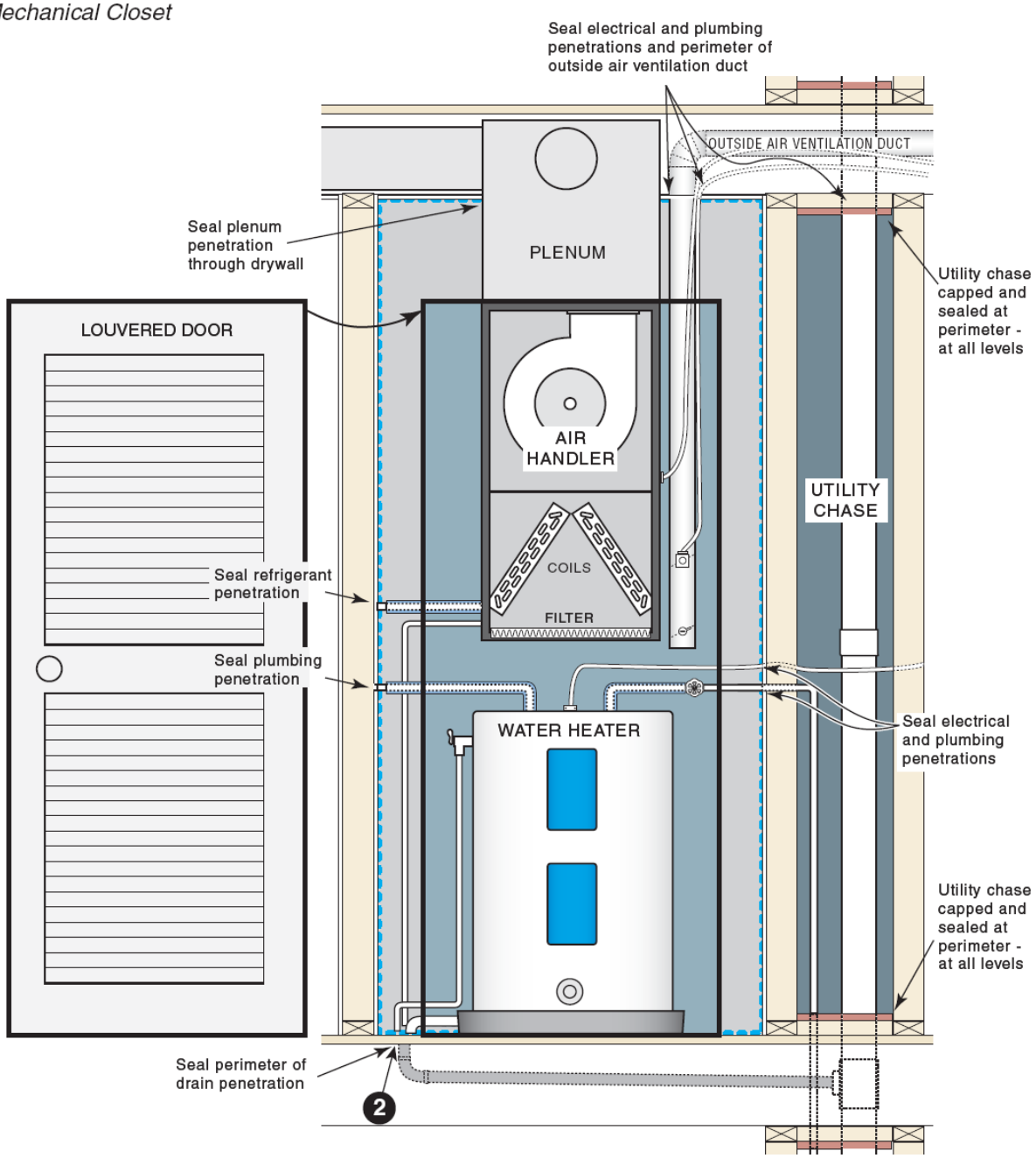
Air sealing key points *continued*

Mechanical Closet



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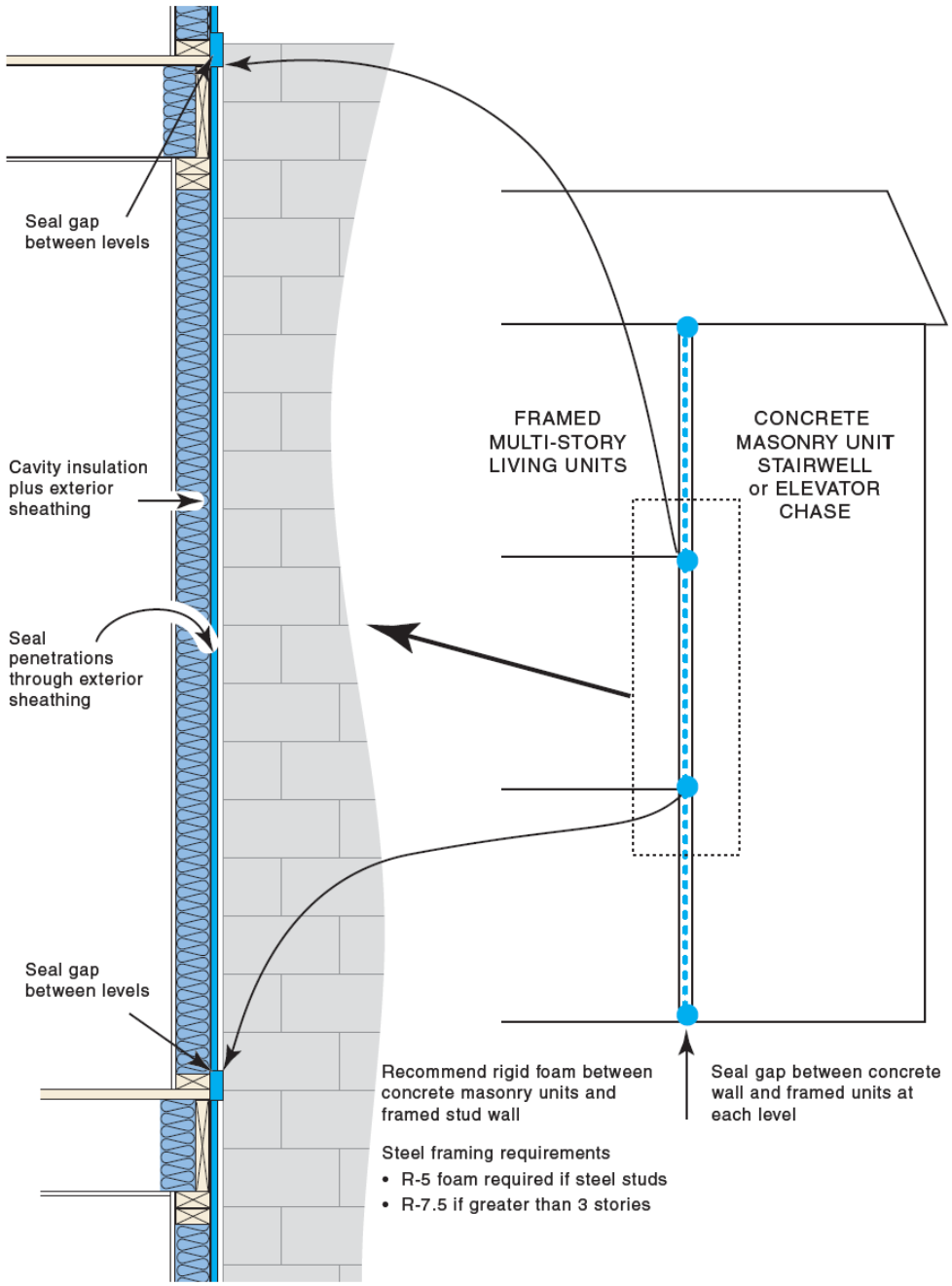
Air sealing key points *continued*

Multifamily



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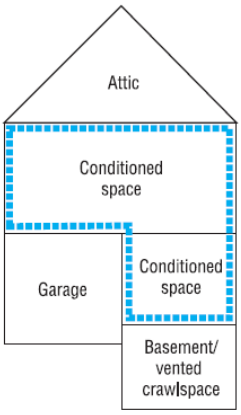
Building Thermal Envelope — The basement walls, exterior walls, floor, roof, and any other building element that enclose conditioned space. This boundary also includes the boundary between conditioned space and any exempt or unconditioned space. *—2009 IECC*

The *building thermal envelope* is the barrier that separates the conditioned space from the outside or unconditioned spaces. The building envelope consists of two parts - an air barrier and a thermal barrier that must be both continuous and contiguous (touching each other). In a typical residence, the building envelope consists of the roof, walls, windows, doors, and foundation. Examples of unconditioned spaces include attics, vented crawlspaces, garages, and basements with ceiling insulation and no HVAC supply registers.

Example 1

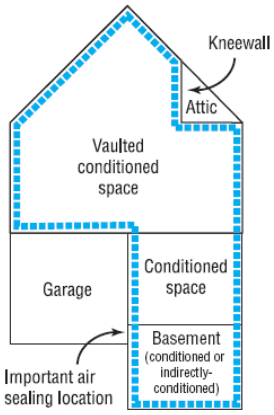


This is a conventional approach that likely locates all ductwork in unconditioned spaces.

Example R-values[1]

- ☐ Flat ceiling: R-30
- ☐ Exterior walls: R-13 + R-3 sheathing
- ☐ Floor over garage and basement/ crawl: R-19
- ☐ Ductwork sealed with mastic and insulated to R-8 in attic, R-6 in basement/crawlspace
- ☐ Garage[5], attic and basement/crawl are unconditioned spaces

Example 2

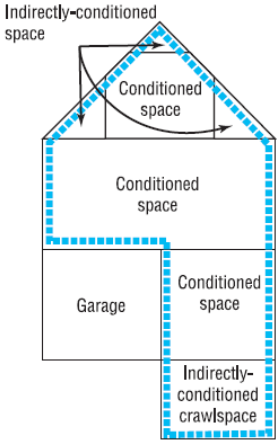


If supply registers deliver conditioned air to basement, it is considered conditioned. With no supply air, it is considered an indirectly-conditioned space.

Example R-values[1]

- ☐ Flat ceiling: R-38
- ☐ Kneewalls[2]: R-18 (required) (R-13+ R-5, R-15 + R-3, R-19 in 2x6)
- ☐ Vaulted ceiling[3]: R-19 air-permeable insulation plus R-5 rigid foam board
- ☐ Exterior walls: R-13
- ☐ Basement masonry walls: R-5
- ☐ Basement slab[4]: R-0
- ☐ Ductwork sealed with mastic and insulated to R-8 in attic, R-6 in basement
- ☐ Garage[5] and attic are unconditioned spaces

Example 3



The top conditioned floor functions as a vaulted ceiling with interior walls althought it appears to have kneewalls and a flat ceiling. An advantage of this approach is that all upstairs ductwork is located inside the building envelope.

The crawlspace walls are insulated and do not contain vents. The crawlspace ground is covered with concrete or 100% plastic and functions as a "mini-basement."

Example R-values[1]

- ☐ Vaulted ceiling[3]: R-19 air-impermeable foam insulation
- ☐ Exterior walls: R-13 + R-3 sheathing
- ☐ Crawlspace walls: R-5
- ☐ Ductwork sealed with mastic and insulated to R-6
- ☐ Garage[5] is unconditioned space

1 R-values shown are examples and not code requriements. Refer to table 402.1.1 for specific prescriptive insulation requirements.

2 An *attic kneewall* is any vertical wall that separates conditioned space from an unconditioned attic. In Georgia, kneewalls must be insulated to R-18. A sealed attic-side air barrier (OSB, foil-faced sheathing, etc.) is required when using air permeable insulation.

3 Requires trade-off (such as REScheck) since prescriptive ceiling requirement is R-30 / R-38, see roofline installed insulation options and section 806.4 of the 2006 IRC.

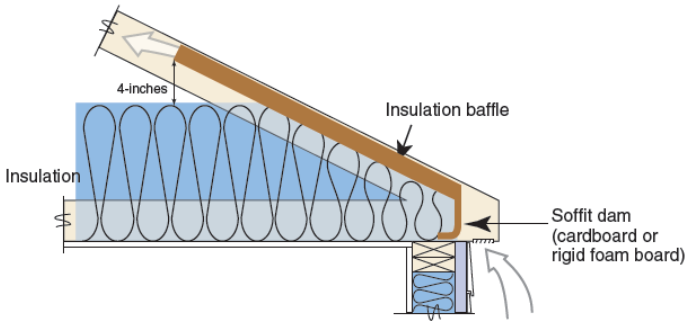
4 Slab insulation is not required in Georgia due to termite risk.

5 Although there is nothing to prevent the garage walls from being insulated, due to indoor air quality concerns, the garage should never be considered inside the building envelope.

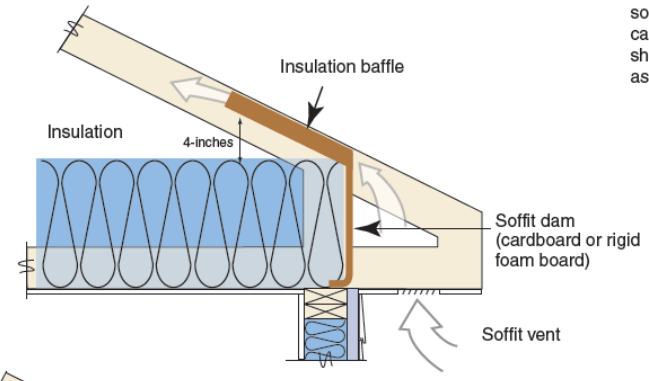
Insulation Details for Ceilings with Attic spaces

Rafter and Truss

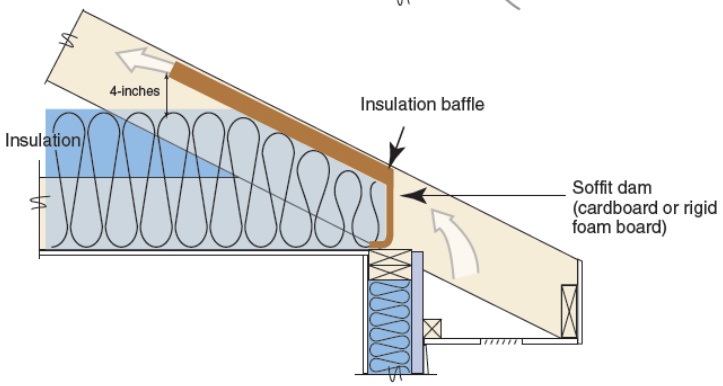
Standard Truss
with tapered
insulation depth



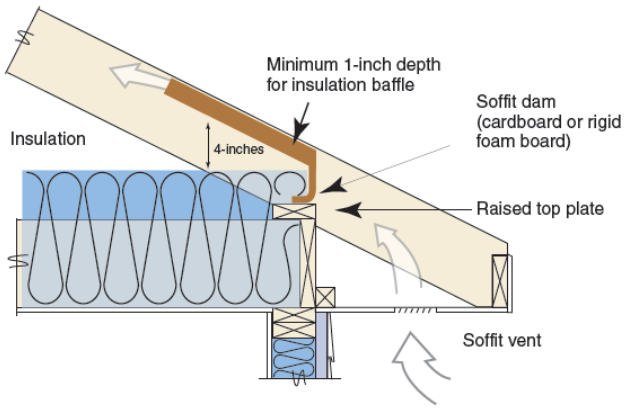
Energy Truss
with full height insulation
(recommended)



Standard rafter and top plate
with tapered
insulaton depth



Rafter on raised top plate
with full height insulation
(recommended)



Note: Wind wash baffle and air-permeable insulation dam. For air permeable insulation in vented attics, baffles shall be installed adjacent to soffit and eave vents. A minimum of a 1-inch of space shall be provided between the insulation and the roof sheathing and at the location of the vent. The baffle shall extend over the top of the insulation inward until it is at least 4 inches vertically above the top of the insulation. Any solid material such as cardboard or thin insulating sheathing shall be permissible as the baffle.

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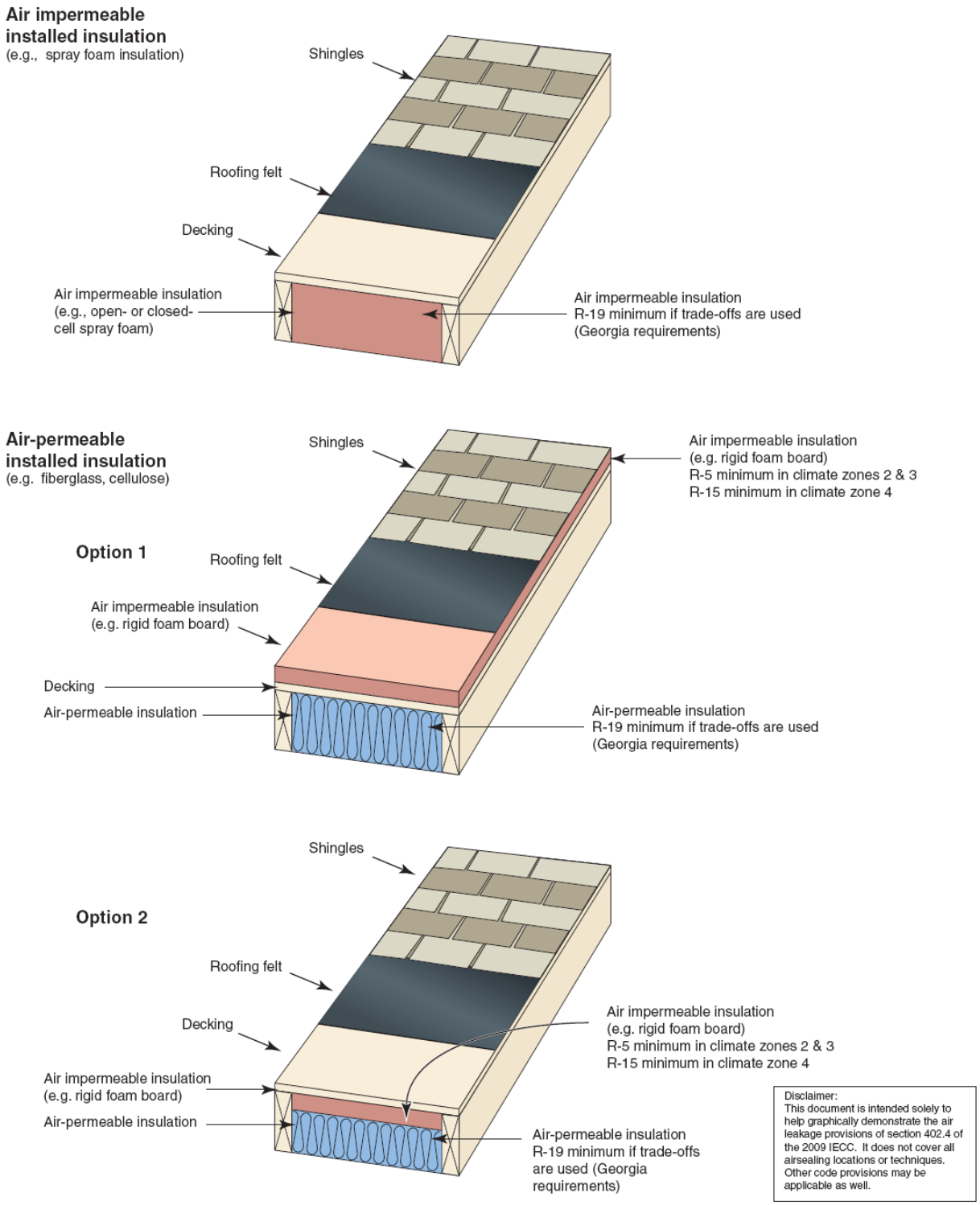
Roofline Installed Insulation Options

Reference Table 402.1.4 in Georgia amendments to the 2009 IECC and Section 806.4 "unvented attic assemblies" in the Georgia Amendments to the 2006 IRC



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APPENDIX B
BUILDING ENVELOPE AND DUCT TIGHTNESS TESTING PROTOCOL

Building Envelope Tightness Testing Protocol

Blower door manufacturer's testing protocol should be used in addition to the following:

1. Set combustion appliances to pilot that are inside the building thermal envelope.
2. Turn off the heating and cooling system(s).
3. Leave all supply registers and return grills open and uncovered. HVAC ducts shall not be temporarily sealed for this test.
4. Leave all bathroom and kitchen fans open, (i.e., in their normal operating condition) but turned off. Only a permanently installed back draft damper in its normal condition may impede the flow of air.
5. Leave any combustion air ducts or louvers to the exterior open. (If a homeowner or builder has sealed them off, open them for the test.)
6. Leave any make-up air ducts with in-line dampers (e.g., for large kitchen exhaust fans or combustion air) as-is (unsealed). Only a permanently installed back draft damper or motorized damper, in its normal condition may impede the flow of air.
7. Leave the dryer vent as-is, whether or not the dryer is in place during the test. Only a permanently installed back draft damper in its normal condition may impede the flow of air.
8. Leave open any outside air duct supplying fresh air for intermittent ventilation systems (including a central-fan-integrated distribution system)
9. Operable crawl-space vents, where present, are to be left in the open position.
10. Open all interior doors within the conditioned space, including doors to conditioned basements.
11. Leave louvered openings of a whole-house fan as is. (If there is a seasonal cover in place during the test, leave it in place.)
12. Close all doors to the exterior or unconditioned spaces; if any door to the exterior or unconditioned space lacks weather-stripping at testing time, it can be temporarily taped off.
13. Close and latch all windows.
14. Close chimney dampers.
15. Either seal or fill with water plumbing drains with p-traps that may be empty.
16. Seal off exterior duct openings to *continuously operating* fresh-air or exhaust-air ventilation systems (preferably at the exterior envelope).
17. Establish baseline pressure prior to conducting blower door test.

ACH_{50}= CFM_{50}*60/Total Volume
CFM_{50}= Fan Flow (cubic feet per minute) when house pressure difference with respect to the outside is 50 Pascals (1.04 psf)
Total Volume = Volume enclosed by building envelope in cubic feet

Duct Tightness Testing protocol

Duct Testing: A duct pressurization blower (e.g., duct blaster), a modified blower door subtraction method, or a computer automated multipoint blower door subtraction method shall be used to measure duct tightness. When using a duct pressurization blower (e.g., duct blaster), all

register boots shall be taped or otherwise sealed during the test. If using a blower door subtraction approach, all register boots shall be taped for one portion of the two-part test. For all tests, the blower door and duct blaster manufactures' testing protocol should be used in addition to following:

1. Set combustion appliances to pilot that are inside the building thermal envelope (if applicable).
2. Turn off the heating, cooling and ventilation system(s) ensuring all zone dampers are in the open position.
3. Do not tape over outside air duct supplying air for ventilation systems (including a central-fan-integrated distribution system), but do close the ventilation damper.
4. Do not add any additional temporary tape or air sealing to the HVAC system for testing purposes.

If using the duct pressurization blower (e.g., duct blaster), the duct system shall be pressurized or depressurized to 25 Pascals with reference to the outside and the cfm of duct leakage shall be measured at this test pressure (CFM_{25}).

If using the modified blower door subtraction method, follow procedures below:

Modified Blower Door Subtraction Procedures

Step 1: Conduct "Whole House" Blower Door Depressurization Test
- Set up the building for a standard Blower Door depressurization test.
- Depressurize the building by 50 Pa With Respect To (WRT) outside.
- Record Whole House CFM_{50}, and turn off the Blower Door.

Step 2: Conduct "Envelope Only" Blower Door Depressurization Test
- Seal off all supply and return registers.
- Depressurize the building to 50 Pa WRT outside with the Blower Door.
- Record Envelope Only CFM_{50}.

Step 3: Measure Pressure in Duct System with Registers Taped Off
- With the building still depressurized to 50 Pa WRT outside, measure the pressure in the taped off duct system WRT the building. This measurement can be taken at the return or supply plenum using a static pressure probe, or at a supply or return register by punching a small hole through the sealing tape and inserting a pressure tap or hose.

Step 4: Calculate Duct Leakage to the Outside
- Using the pressure measured in Step 3, look up the appropriate correction factor in the table below. This correction is needed to account for any underestimation of duct leakage due to connections between the duct system and the building.

Correction Table for Blower Door Subtraction

House to Duct Pressure (taped off)	Subtraction Correction Factor (SCF)	House to Duct Pressure (taped off)	Subtraction Correction Factor (SCF)
50	1	30	2.23
49	1.09	29	2.32
48	1.14	28	2.42
47	1.19	27	2.52
46	1.24	26	2.64
45	1.29	25	2.76
44	1.34	24	2.89
43	1.39	23	3.03
42	1.44	22	3.18
41	1.49	21	3.35
40	1.54	20	3.54
39	1.6	19	3.74
38	1.65	18	3.97
37	1.71	17	4.23
36	1.78	16	4.51
35	1.84	15	4.83
34	1.91	14	5.2
33	1.98	13	5.63
32	2.06	12	6.12
31	2.14	11	6.71

Calculate Duct Leakage to Outside at CFM_{25} =
0.64 x (Whole House CFM_{50} - Envelope Only CFM_{50}) x Subtraction Correction Factor (SCF)
(Effective January 1, 2011)

APPENDIX C
THIRD PARTY VERIFICATION

SECTION C101
GENERAL

C101.1 Scope. The provisions of this appendix govern the requirements for third-party verification of this code.

C101.2 Adoption. The authority having jurisdiction may adopt this appendix to utilize third-party verification of this code.

SECTION C102
DEFINITIONS

THIRD-PARTY VERIFIER. An independent person or firm responsible for conducting inspections and/or testing and plan review to verify a project's compliance with the provisions of this code.

SECTION C103
QUALIFICATIONS

C103.1 General. It shall be the responsibility of the permit holder to retain a qualified *third-party verifier*. The *third-party verifier* shall not be an employee of the owner or builder or have a financial interest in the project.

C103.2 Residential buildings. Third-party verifiers shall have one of the following minimum qualifications to conduct inspections or plan review for the energy efficiency provisions of *residential buildings* as defined by this code:

1. Accredited HERS Rater
2. ICC Residential Energy Inspector/Plans Examiner Certification
3. EarthCraft House Technical Advisor
4. Building Performance Institute (BPI) Analyst
5. Equivalent qualifications as approved by the local *code official*

Exception: Where the specific provisions of this code require additional qualifications.

C103.3 Commercial buildings. Third-party verifiers shall have one of the following minimum qualifications to conduct inspections or plan review for the energy efficiency provisions of *commercial buildings* as defined by this code:

1. ICC Commercial Energy Inspector and ICC Commercial Plans Examiner Certifications
2. Equivalent qualifications as approved by the local *code official*

Exception: Where the specific provisions of this code require additional qualifications.

SECTION C104
INSPECTIONS

C104.1 General. Construction or work, conducted under the provisions of this code, for which a permit is required shall be subject to inspection by a *third-party verifier*.

C104.2 Inspection requests. It shall be the duty of the permit holder or their duly authorized agent to notify the *third-party verifier* when work is ready for inspection and to provide access to and means for inspection of such work required by this code.

C104.3 Fees. The permit holder shall be responsible for all fees charged by the *third-party verifier*.

C104.4 Residential buildings. A minimum of two inspections shall be conducted for each residential building. The first inspection shall be conducted prior to the closing-up of building cavities; and shall include verification of compliance with the following: insulation, fenestration, air sealing and duct insulation and sealing. The second inspection shall be conducted after the building has been substantially completed and prior to issuance of a certificate of occupancy. The second inspection shall include verification of compliance with any portions of this code not verified during the first inspection.

C104.5 Commercial buildings. A minimum number of inspections as determined by the *third-party verifier* shall be conducted to ensure verification of compliance with the provisions of Chapter 5 of this code or ASHRAE 90.1.

C104.6 Re-inspection. A building shall be re-inspected when determined necessary by the *third-party verifier* or local *code official*.

C104.7 Approval report. Inspection and verification reports shall be submitted by the *third party verifier* to the local *code official*.
(Effective January 1, 2011)

APPENDIX D
SAMPLE COMPLIANCE CERTIFICATE

Georgia Residential Energy Code Compliance Certificate*

Builder/Design Professional: _____ Phone: _____

Envelope Summary:

- List the R-Value for the following components:

Flat ceiling/roof:	_____	Sloped/vault ceiling:	_____
Exterior wall:	_____	Above grade mass wall:	_____
Attic kneewall:	_____	Attic kneewall sheathing:	_____
Basement stud wall:	_____	Basement continuous:	_____
Crawlspace stud wall:	_____	Crawlspace continuous:	_____
Foundation slab:	_____	Floors over unconditioned space:	_____
Cantilevered Floor:	_____	Other insulation:	_____

- Fenestration Components:

Window U-factor:	_____	Window SHGC:	_____
Skylight U-factor:	_____	Skylight SHGC:	_____
Glazed Door U-factor:	_____	Opaque Door U-factor: (<50% glazed)	_____

- Building Envelope Tightness (BET):

BET test conducted by: _____ Phone: _____

Fan Flow at 50 Pascals= _____ CFM_{50} Total Conditioned Volume = _____ ft^3

ACH_{50} = CFM_{50} x 60 / Volume= _____ ACH_{50} (must be less than 7 ACH_{50})

Low Rise Multifamily Visual Inspection Option

(The visual inspection option may be conducted by a third-party instead of the BET test for R-2 buildings only.)

Visual inspection conducted by: _____ Phone: _____

Mechanical Summary:

Water Heater Energy Factor: _____ Ef Fuel type: ☐ Gas ☐ Electric ☐ Other

Number of Heating and Cooling Systems: _____

Heating System Type (choose one):

☐ Gas: _____ AFUE ☐ Air-Source Heat Pump: _____ HSPF

☐ Other: _____ Efficiency: _____

Cooling System Type (Standard DX, Heat Pump, Geothermal, etc.): _____

Cooling System Efficiency: _____ ☐ SEER ☐ EER ☐ Other

Heating/Cooling Load Calculations Performed by: _____ Phone: _____

Total Heating Load (Based on ACCA Man. J or other approved methodology): _____ Btu/h

Total Cooling Load (Based on ACCA Man. J or other approved methodology): _____ Btu/h

Cooling Sensible Load: _____ Btu/h Cooling Latent Load : _____ Btu/h

Total Air Handler CFM (based on design calculations): _____ CFM

Duct Tightness Test Conducted by: _____ Phone: _____

CFM_{25} per 100 ft^2 of conditioned floor area = CFM_{25} x 100 / Conditioned floor area served

If all ducts are not located within conditioned space, builder must verify that either the postconstruction duct leakage to outdoors (**PCO**) is ≤ 8 cfm/100 ft², the post construction total duct leakage (**PCT**) is ≤ 12 cfm/100 ft², or the rough-in test (**RIT**) with air handler installed is ≤ 6 cfm/100 ft². State which method was used to conduct the duct tightness test: duct blower (**DB**), modified blower door subtraction method (**MBDS**), or automated multipoint blower door (**AMBD**).

System	Method (DB, MBDS, AMBD)	Test (PCO, PCT, RIT)	CFM_{25}	Area served (ft^2)	Test Result
1					
2					
3					

*Note: This permanent certificate shall be posted on or in the electrical distribution panel. Certificate shall be completed by the builder or registered design professional. Where there is more than one value for each component, certificate shall list the value covering the largest area.