

2009 IECC

Residential Energy Code Check Off Worksheet

Building Requirements;

Building Thermal Envelope

The building thermal envelope shall be durably sealed to limit infiltration. The sealing methods between dissimilar Materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weather stripped or otherwise sealed with an air barrier material, suitable film or solid material:

1. All joints, seams and penetrations.
2. Site-built windows, doors and skylights.
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations.
5. Dropped ceilings or chases adjacent to the thermal envelope.
6. Knee walls.
7. Walls and ceilings separating a garage from conditioned spaces.
8. Behind tubs and showers on exterior walls.
9. Common walls between dwelling units.
10. Other sources of infiltration.

Table 402.4.2 Air Barrier and Insulation Inspection Component Criteria

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.
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.
Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
Windows and doors	Space between window/door jams and framing is sealed.
Rim joists	Rim joists are insulated and include air barrier.
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.
Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl space is covered with class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, knee walls, and flue shafts opening to exterior or unconditioned space are sealed.
Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.
Garage separation	Air sealing is provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures are airtight, IC rated, and sealed to drywall. Exception – fixtures in conditioned space.
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.
Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and air barrier separating them from the exterior wall.
Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.
Common wall	Air barrier is installed in common wall between dwelling units.
HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.
Fireplace	Fireplace walls include an air barrier.

Vapor Retarder:

- Vapor retarder is installed on the warm-in-winter side of all non-vented framed ceilings, walls, and floors; or it has been determined that moisture or its freezing will not damage the materials; or other approved means to avoid condensation are provided.

Comments: _____

Lighting Requirements

Recessed lighting

- Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces by being;
- IC-rated and labeled as meeting ASTM E 283.

Lighting Requirements:

- A minimum of 50 percent of the lamps in permanently installed lighting fixtures can be categorized as one of the following:
 - (a) Compact fluorescent
 - (b) T-8 or smaller diameter linear fluorescent
 - (c) 40 lumens per watt for lamp wattage ≤ 15
 - (d) 50 lumens per watt for lamp wattage > 15 and ≤ 40
 - (e) 60 lumens per watt for lamp wattage > 40

Materials Identification and Installation:

- Materials and equipment are installed in accordance with the manufacturer's installation instructions.
- Insulation is installed in substantial contact with the surface being insulated and in a manner that achieves the rated R-value.
- Materials and equipment are identified so that compliance can be determined.
- Manufacturer manuals for all installed heating and cooling equipment and service water heating equipment have been provided.
- Insulation R-values and glazing U-factors are clearly marked on the building plans or specifications.

Ducts

- Supply ducts in attics are insulated to a minimum of R-8. All other ducts in unconditioned spaces or outside the building envelope are insulated to at least R-6.

Duct Construction and Testing

- Building framing cavities are not used as supply ducts.
- All joints and seams of air ducts, air handlers, filter boxes, and building cavities used as return ducts are substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Tapes, mastics, and fasteners are rated UL 181A or UL 181B and are labeled according to the duct construction. Metal duct connections with equipment and/or fittings are mechanically fastened. Crimp joints for round metal ducts have a contact lap of at least 1 1/2 inches and are fastened with a minimum of three equally spaced sheet-metal screws.

Exceptions:

- Joint and seams covered with spray polyurethane foam.
- Where a partially inaccessible duct connection exists, mechanical fasteners can be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
- Continuously welded and locking-type longitudinal joints and seams on ducts operating at less than 2 in. w.g. (500 Pa).

- Duct tightness test has been performed and meets one of the following test criteria:

- (1) Post construction leakage to outdoors test: Less than or equal to 8 cfm per 100 ft² of conditioned floor area.
- (2) Post construction total leakage test (including air handler enclosure): Less than or equal to 12 cfm per 100 ft² pressure differential of 0.1 inches w.g.
- (3) Rough-in total leakage test with air handler installed: Less than or equal to 6 cfm per 100 ft² of conditioned floor area when tested at a pressure differential of 0.1 inches w.g.
- (4) Rough-in total leakage test without air handler installed: Less than or equal to 4 cfm per 100 ft² of conditioned floor area.

Exception: Ducts or portions thereof located completely inside the building thermal envelope.

- All ducts and air handlers are located within conditioned space.

Fire Place

- New wood burning fire places shall have gasketed doors and;
- Outdoor combustion air - Section 6005 780 CMR Massachusetts State Building Code

Heating and Cooling Equipment Sizing:

- Additional requirements for equipment sizing are included by an inspection for compliance with the International Residential Code.
- For systems serving multiple dwelling units documentation has been submitted demonstrating compliance with 2009 IECC Commercial Building Mechanical and/or Service Water Heating (Sections 503 and 504).

Circulating Service Hot Water Systems:

- Circulating service hot water pipes are insulated to R-2.
- Circulating service hot water systems include an automatic or accessible manual switch to turn off the circulating pump when the System is not in use.

Heating and Cooling Piping Insulation:

- HVAC piping conveying fluids above 105 degrees F or chilled fluids below 55 degrees F are insulated to R-3.

Swimming Pools:

- Heated swimming pools have an on/off heater switch.
- Pool heaters operating on natural gas or LPG have an electronic pilot light.
- Timer switches on pool heaters and pumps are present.

Exceptions:

Where public health standards require continuous pump operation.
 Where pumps operate within solar- and/or waste-heat-recovery systems.

- Heated swimming pools have a cover on or at the water surface. For pools heated over 90 degrees F (32 degrees C) the cover has a minimum insulation value of R-12.

Exceptions:

Covers are not required when 60% of the heating energy is from site-recovered energy or solar energy source.

Other Requirements:

- Snow- and ice-melting systems with energy supplied from the service to a building shall include automatic controls capable of shutting off the system when a) the pavement temperature is above 50 degrees F, b) no precipitation is falling, and c) the outdoor temperature is above 40 degrees F (a manual shutoff control is also permitted to satisfy requirement 'c').

Certificate:

- A permanent certificate is provided on or in the electrical distribution panel listing the predominant insulation R-values; window U-factors; type and efficiency of space-conditioning and water heating equipment. The certificate does not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels.

NOTES TO FIELD: (Building Department Use Only)

Inspector _____	Date _____
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Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2009 IECC.

Name -- Title _____ Signature _____ Date _____