2007 New York State Energy Conservation Construction Code

BASIC REQUIREMENTS GUIDE

Inside This Guide

Basic Requirements

The code specifies basic requirements that are mandatory for all buildings. Some of these requirements apply to the heating and cooling system (including ducts), hot water system, and electrical system. Other requirements apply to material and equipment identification and to sealing the building envelope. This guide discusses the code basic requirements, except for the insulation and window requirements (which are covered in other guides). Each requirement in this guide lists the corresponding code section number as a reference.

Figure 1 graphically illustrates several basic requirements. Refer to the *Summary of Basic Requirements* provided with this guide for a one-page listing of the requirements discussed below.

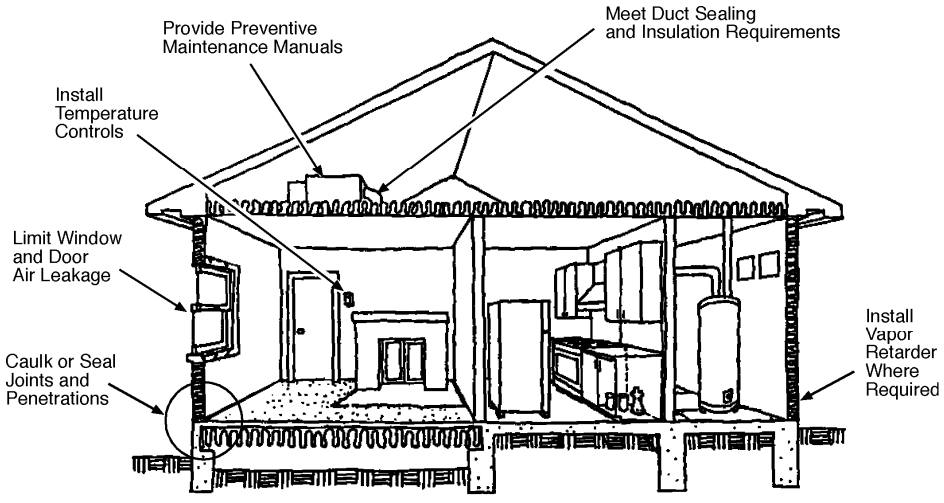

Figure 1. Some of the Basic Requirements

Air Leakage

(Section 402.4) 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 areas shall be caulked, gasketed, weatherstripped, or otherwise sealed with an air barrier material, suitable film or solid material :

- exterior joints around window and door frames

- between wall sole plates, floors, and exterior wall panels

- openings for plumbing, electricity, refrigerant, and gas lines in exterior walls, floors, and roofs

- openings in the attic floor (such as where ceiling panels meet interior and exterior walls and masonry fireplaces)

- openings for plumbing and gas lines in the subfloor and interior plates of kitchens and bathrooms
- all joints, seams and penetrations
- Site-built windows, doors and skylights
- Dropped ceilings or chases adjacent to the thermal envelope
- Knee walls
- Walls and ceilings separating a garage from conditioned spaces
- Behind tubs and showers on exterior walls
- Common walls between dwelling units
- Other sources of infiltration

Recessed lighting fixtures must be 1) IC-rated and labeled with enclosures that are sealed or gasketed to prevent air leakage to the ceiling cavity or unconditioned space; or 2) IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psi (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity; or 3) located inside an airtight sealed box with clearances of at least 0.5 inch (12.7 mm) from combustible material and 3 inches (76 mm) from insulation.

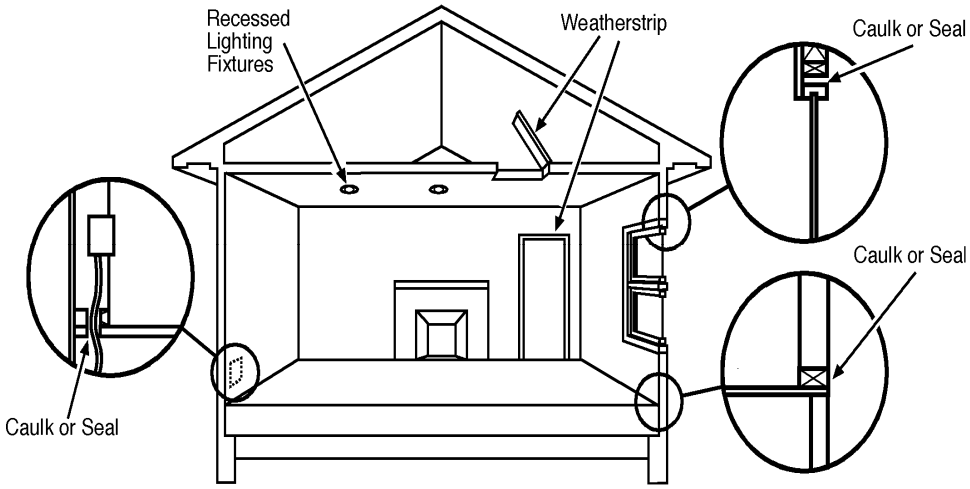

Figure 2. Typical Openings that Should be Sealed

Vapor Retarders

(Section 402.5) The building design shall not create conditions of accelerated deterioration from moisture condensation. Above-grade frame walls, floors and ceilings not ventilated to allow moisture to escape shall be provided with an approved vapor retarder. The vapor retarder shall be installed on the warm-in-winter side of the thermal insulation.

Exceptions: Vapor retarders are not required:

- Where moisture or its freezing will not damage the materials.
- In frame walls, floors and ceilings in jurisdictions in Zone 4. (Crawl space floor vapor retarders are not exempted.)
- If other approved means to avoid condensation and leakage of moisture are provided.

Exposed Foundation Insulation

(Section 102.2.1) Insulation applied to the exterior of basement walls, crawl-space walls and the perimeter of slab-on-grade floors shall have a rigid, opaque and weather-resistant protective covering to prevent the degradation of the insulation's thermal performance. The protective covering shall cover the exposed exterior insulation and extend a minimum of 6 inches (153 mm) below grade.

Materials and Equipment Information

(Section 102.2) All materials, systems and equipment shall be installed in accordance with the manufacturer's installation instructions.

(Section 104.2) Insulation R-values and glazing and door U-factors must be clearly marked on the building plans or specifications. If two or more different insulation levels exist for the same component, record each level separately on the plans or specifications. For example, if the walls adjacent to the garage have less insulation than the other walls, both insulation levels must be noted. If credit is taken for high-efficiency heating or cooling equipment, the equipment efficiency, make and model number must also be marked on the plans or specifications.

(Section 102.1) Materials, systems and equipment shall be identified in a manner that allows determination of compliance with the code. There are several ways to label materials and equipment to satisfy this requirement.

- Provide labels on all pertinent materials and equipment. For example, the R-value of the insulation is often pre-printed directly on the insulation or can be determined from a striping code. Window U-factors are often included on the manufacturer label posted directly on the window.
- Provide contractor statements certifying the products they have installed. For example, the insulation contractor should certify the R-value of the installed insulation.
- An optional *Energy Label* is included in Appendix D. Materials and equipment can be identified on this label which should then be posted in the residence (e.g., on the main fuse box, on a garage wall, in the utility room) to document the energy efficiency features of the building.

(Section 102.1.1.1) The thickness of blown in or sprayed roof/ceiling insulation shall be written in inches (mm) on markers that are installed at least one for every 300 ft^2 (28 m^2) throughout the attic space. The markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness with numbers a minimum of 1 inch (25 mm) in height. Each marker shall face the attic access opening.

(Section 102.2) Manufacturer manuals for all installed heating and cooling equipment and service water heating equipment must be provided to the homeowner.

Heating and Cooling

Heating and Cooling Equipment Efficiencies

The code defines heating and cooling equipment efficiency requirements. However, federal regulations have restricted manufactured equipment efficiency minimums to levels at or above these code requirements. Because new equipment efficiencies below the code requirements can no longer be manufactured, these requirements have been omitted from the RES*check* materials.

Duct Insulation

(Section 403.2.1) Supply and return ducts shall be insulated to a minimum of R-8. Ducts in floor trusses shall be insulated to a minimum of R-6.

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

Duct Construction

(Mechanical Code Section 603.9) Joints of duct systems shall be made substantially airtight by means of tapes, mastics, gasketing or other approved closure systems. Crimp joints for round metal ducts shall have a contact lap of at least 11/2 inches and shall be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint.

Ducts shall be supported every 10 feet or in accordance with the manufacturer's instructions. Cooling ducts with exterior insulation must be covered with a vapor retarder. Air filters are required in the return air system.

Duct with mastic

Temperature Controls

(Section 403.1) Each dwelling unit is considered a zone and must have at least one thermostat provided for each separate system (heating and cooling).

Each heating and cooling system must have a thermostat capable of being set:

- down to 55°F or lower when used to control heating
- up to 85°F or higher when used to control cooling
- with a temperature range or deadband of at least 5°F when used to control both heating and cooling.

Thermostat

HVAC Piping Insulation

(Section 403.3) All HVAC piping (such as in hydronic heating systems) installed in unconditioned spaces and conveying fluids at temperatures greater than 105°F or chilled fluids at less than 55°F must be insulated to R-2.

Exception: Heating piping located entirely within the building thermal envelope.

Service (Potable) Water Heating

Circulating Service Hot Water Systems

(Section 403.4) Circulating hot water systems must include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use.

Electrical

(Section 102.4) All dwelling units in must be equipped with separate electric meters.