



Town of Edinburgh

ADMINISTRATIVE OFFICES

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Owner/Builder/Applicant:

2023 Objective – Greater Compliance with the Energy Conservation Requirements

The new year is a good time to assess what is working well and what is not working well in the construction community of Edinburgh. One of the areas that is not doing as well as it should is compliance with the Energy Conservation requirements found in Chapter 11 – Energy Efficiency of the Indiana Residential Code (IRC). To better administer that process of compliance with the rules, the building permitting, plan review, inspection, and certification of occupancy functions will be modified to make sure that the structures constructed, added to, and altered are compliant with the regulations that have been in place for two years. From the IRC:

N1101.2 Intent. *This chapter shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This chapter is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This chapter is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.*

In addition to the permit application and set of construction documents, a worksheet documenting the design intent for compliance with Chapter 11 must be submitted for plan review and permitting. The worksheet will be available in the office of the Building Department and online very soon.

N1101.5 Construction documents. *Energy conservation construction documents shall be submitted for Class 2 structures as required by local ordinance.*

Town of Edinburgh Ordinance 150.03 AUTHORITY. *The Building Commissioner is hereby authorized and directed to administer and enforce all of the provisions of this code. Whenever, in this code, it is provided that anything must be done to the approval of or subject to the direction of the Building Commissioner or any other officer of the town, this shall be construed to give such officer only the discretion of determining whether this code has been complied with.*

Town of Edinburgh Ordinance 150.22 REVIEW OF APPLICATION. *Prior to the issuance of any building permit, the Building Commissioner shall: (A) Review all building permit applications to determine full compliance with the provisions of this code.*

I have pulled together a few excerpts from the IRC for your information concerning the general requirements as they relate to the inspection process. I will be using the information on the worksheet for the inspection(s) of the systems required in Chapter 11. As the owner/builder/permit applicant it will important that you assist in the inspection process by ensuring that materials and systems are those specified at permitting and that certifications are available at the project site.

N1101.10 Identification. *Materials, systems, and equipment shall be identified in a manner that will allow a determination of compliance with the applicable provisions of this code.*

N1101.10.1 Building thermal envelope insulation. *An R-value identification mark shall be applied by the manufacturer to each piece of building thermal envelope insulation that is 12 inches or greater in width. Alternatively, the insulation installers shall provide a certification that indicates the type, manufacturer and R-value of insulation installed in each element of the building thermal envelope. For blown-in or sprayed fiberglass and cellulose insulation, the initial installed thickness, settled thickness, settled R-value, installed density, coverage area and number of bags installed shall be indicated on the certification. For sprayed polyurethane foam (SPF) insulation, the installed thickness of the areas covered and the R-value of the installed thickness shall be indicated on the certification. For insulated siding, the R-value shall be on a label on the product's package and shall be indicated on the certification. The insulation installer shall sign, date and post the certification in a conspicuous location on the job site.*

N1101.10.1.1 Blown-in or sprayed roof and ceiling insulation. *The thickness of blown-in or sprayed fiberglass and cellulose roof and ceiling insulation shall be written in inches on markers that are installed at not less than one for every 300 square feet throughout the attic space. The markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness with numbers not less than 1 inch in height. Each marker shall face the attic access opening. The thickness and installed R-value of sprayed polyurethane foam insulation shall be indicated on the certification provided by the insulation installer.*

N1101.10.2 Insulation mark installation. *Insulating materials shall be installed such that the manufacturer's R-value mark is readily observable at inspection.*

It is important to remember that the materials, systems, and equipment must be installed in accordance with the manufacturer's written instructions. As an example of this I recommend that everyone responsible for insulation installation review those requirements and the installation instructions for batt insulation with a kraft paper vapor retarder. Going forward, the facing flanges (tabs) must be unfolded and placed over the interior face of the wall framing. Compressed insulation loses its ability to resist the transfer of heat. Gaps in the vapor barrier lead to moisture in the wall cavity, rot/structural damage, and mold/unhealthy conditions.

N1101.11 Installation. *Materials, systems, and equipment shall be installed in accordance with the manufacturer's instructions and this code.*

N1101.12 Maintenance information. *Maintenance instructions shall be furnished for equipment and systems that require preventive maintenance. Required regular maintenance actions shall be clearly stated and incorporated on a readily accessible label. The label shall include the title or publication number for the operation and maintenance manual for that particular model and type of product.*

N1101.13 Compliance. *Projects shall comply with one of the following:*

- 1. Sections N1101.14 through N1104.*
- 2. Section N1105 and the provisions of Sections N1101.14 through N1104 indicated as "Mandatory."*
- 3. The energy rating index (ERI) approach in Section N1106.*

The following are several of the requirements (but not all) for energy conservation compliance in the IRC. Note that the PRESCRIPTIVE method of compliance is to simply apply the code requirements as stated. Elements that are identified as mandatory are requirements for all projects.

N1101.14 Certificate (Mandatory). *A permanent certificate shall be completed by the builder or other approved party and posted on a wall in the space where the furnace is located, a utility room or an approved location inside the building. Where located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The*

certificate shall indicate the predominant R-values of insulation installed in or on ceilings, roofs, walls, foundation components such as slabs, basement walls, crawl space walls and floors, and ducts outside conditioned spaces; U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration, and the results from any required duct system and building envelope air leakage testing performed on the building. Where there is more than one value for each component, the certificate shall indicate the value covering the largest area. The certificate shall indicate the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, the certificate shall indicate “gas-fired unvented room heater,” “electric furnace” or “baseboard electric heater,” as appropriate. An efficiency shall not be indicated for gas-fired unvented room heaters, electric furnaces and electric baseboard heaters.

N1102.1 General (Prescriptive). *The building thermal envelope shall comply with the requirements of Sections N1102.1.1 through N1102.1.5.*

Exceptions:

- 1. The following low-energy buildings, or portions thereof, separated from the remainder of the building by building thermal envelope assemblies complying with this section shall be exempt from the building thermal envelope provisions of Section N1102.
 - 1.1. Those with a peak design rate of energy usage less than 3.4 Btu/h • ft² (10.7 W/m²) or 1.0 watt/ft² of floor area for space-conditioning purposes.*
 - 1.2. Those that do not contain conditioned space.**
- 2. Log homes designed in accordance with ICC 400.*

N1102.1.1 Vapor retarder. *Wall assemblies in the building thermal envelope shall comply with the vapor retarder requirements of Section R702.7.*

N1102.1.2 Insulation and fenestration criteria. *The building thermal envelope shall meet the requirements of Table N1102.1.2 based on the climate zone specified in Section N1101.7.*

N1102.1.3 R-value computation. *Insulation material used in layers, such as framing cavity insulation or continuous insulation, shall be summed to compute the corresponding component R-value. The manufacturer’s settled R-value shall be used for blown-in insulation. Computed R-values shall not include an R-value for other building materials or air films. Where insulated siding is used for the purpose of complying with the continuous insulation requirements of Table N1102.1.2, the manufacturer’s labeled R-value for insulated siding shall be reduced by R-0.6.*

N1102.2 Specific insulation requirements (Prescriptive). *In addition to the requirements of Section N1102.1, insulation shall meet the specific requirements of Sections N1102.2.1 through N1102.2.13.*

N1102.2.1 Ceilings with attic spaces. *Where Section R1102.1.2 requires R-38 insulation in the ceiling, installing R-30 insulation over 100 percent of the ceiling area requiring insulation shall satisfy the requirement for R-38 insulation wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. Where Section N1102.1.2 requires R-49 insulation in the ceiling, installing R-38 insulation over 100 percent of the ceiling area requiring insulation shall satisfy the requirement for R-49 insulation wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the U-factor alternative approach in Section N1102.1.4 and the Total UA alternative in Section N1102.1.5.*

N1102.2.2 Ceilings without attic spaces. *Where Section N1102.1.2 requires insulation R-values greater than R-30 in the ceiling and the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation R-value for such roof/ceiling assemblies shall be R-30. Insulation shall extend over the top of the wall plate to the*

outer edge of such plate and shall not be compressed. This reduction of insulation from the requirements of Section N1102.1.2 shall be limited to 500 square feet (46 m²) or 20 percent of the total insulated ceiling area, whichever is less. This reduction shall not apply to the U-factor alternative approach in Section N1102.1.4 and the Total UA alternative in Section N1102.1.5.

N1102.2.3 Eave baffle. For air-permeable insulations in vented attics, a baffle shall be installed adjacent to soffit and eave vents. Baffles shall maintain an opening equal or greater than the size of the vent. The baffle shall extend over the top of the attic insulation. The baffle shall be permitted to be any solid material. N1102.2.4 (R402.2.4) Access hatches and doors. Access doors from conditioned spaces to unconditioned spaces such as attics and crawl spaces shall be weather-stripped and insulated to a level equivalent to the insulation on the surrounding surfaces. Access that prevents damaging or compressing the insulation shall be provided to all equipment. Where loose-fill insulation is installed, a wood-framed or equivalent baffle or retainer shall be installed to prevent the loose-fill insulation from spilling into the living space when the attic access is opened. The baffle or retainer shall provide a permanent means of maintaining the installed R-value of the loose-fill insulation. Exception: Vertical doors providing access from conditioned spaces to unconditioned spaces that comply with the fenestration requirements of Table N1102.1.2 based on the applicable climate zone specified in Section N1101.7.

N1102.2.7 Walls with partial structural sheathing. Where Section N1102.1.2 requires continuous insulation on exterior walls and structural sheathing covers 40 percent or less of the gross area of all exterior walls, the required continuous insulation R-value shall be permitted to be reduced by an amount necessary, but not more than R-3, to result in a consistent total sheathing thickness on areas of the walls covered by structural sheathing. This reduction shall not apply to the U-factor alternative in Section N1102.1.4 and the Total UA alternative in Section N1102.1.5.

N1102.2.8 Floors. Floor framing-cavity insulation shall be installed to maintain permanent contact with the underside of the subfloor decking.

Exception: As an alternative, the floor framing-cavity insulation shall be in contact with the topside of sheathing or continuous insulation installed on the bottom side of floor framing where combined with insulation that meets or exceeds the minimum wood frame wall R-value in Table N1102.1.2 and that extends from the bottom to the top of all perimeter floor framing members.

N1102.2.9 Basement walls. Walls associated with conditioned basements shall be insulated from the top of the basement wall down to 10 feet (3048 mm) below grade or to the basement floor, whichever is less. Walls associated with unconditioned basements shall comply with this requirement except where the floor overhead is insulated in accordance with Sections N1102.1.2 and N1102.2.8.

N1102.2.10 Slab-on-grade floors. Slab-on-grade floors with a floor surface less than 12 inches below grade shall be insulated in accordance with Table N1102.1.2. The insulation shall extend downward from the top of the slab on the outside or inside of the foundation wall. Insulation located below grade shall be extended the distance provided in Table N1102.1.2 by any combination of vertical insulation, insulation extending under the slab or insulation extending out from the building. Insulation extending away from the building shall be protected by pavement or by not less than 10 inches of soil. The top edge of the insulation installed between the exterior wall and the edge of the interior slab shall be permitted to be cut at a 45-degree angle away from the exterior wall. Slab-edge insulation is not required in jurisdictions designated by the building official as having a very heavy termite infestation.

N1102.2.11 Crawl space walls. As an alternative to insulating floors over crawl spaces, crawl space walls shall be insulated provided that the crawl space is not vented to the outdoors. Crawl space wall insulation shall be permanently fastened to the wall and shall extend downward from the floor to the finished grade elevation and then vertically or horizontally for not less than an additional 24 inches (610 mm). Exposed earth in unvented crawl space foundations shall be

covered with a continuous Class I vapor retarder in accordance with this code. Joints of the vapor retarder shall overlap by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend not less than 6 inches up the stem walls and shall be attached to the stem walls.

N1102.4 Air leakage (Mandatory). *The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections N1102.4.1 through N1102.4.5.*

N1102.4.1 Building thermal envelope. *The building thermal envelope shall comply with Sections N1102.4.1.1 and N1102.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.*

N1102.4.1.1 Installation. *The components of the building thermal envelope as indicated in Table N1102.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria indicated in Table N1102.4.1.1, as applicable to the method of construction.*

N1102.4.1.2 Verification. *The building or dwelling unit shall be visually inspected for verification of compliance with Table N1102.4.1.1, or tested and verified as having an air leakage rate of not exceeding five air changes per hour. Testing shall be conducted in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inch w.g. Where required by the building official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the building official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.*

N1102.4.2 Fireplaces. *New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace.*

N1102.4.5 Recessed lighting. *Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. Recessed luminaires shall be IC-rated and labeled as having an air leakage rate of not greater than 2.0 cfm when tested in accordance with ASTM E283 at a pressure differential of 1.57 psf. Recessed luminaires shall be sealed with a gasket or caulked between the housing and the interior wall or ceiling covering.*

Sincerely,

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