Air Leakage Requirements of the ECCCNYS-2016 (R402.4)

The ECCCNYS-2016 (Energy Code) contains very critical requirements for the air sealing in low-rise (3 stories or less) Residential Construction. These requirements are covered in Section R402.4 of the Energy Code, and are replicated for easy reference below.

The General ground rules for the air leakage requirements begin here:

- **R402.4 Air leakage (Mandatory).** The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.4.
- **R402.4.1 Building thermal envelope.** The *building thermal envelope* shall comply with Sections R402.4.1.1 and R402.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

The Table referenced below details the requirements for air sealing and insulation installation, to provide a proper air and thermal boundary in the home. It also provides guidance for the construction and inspection of homes; a visual inspection is required, and you will find a useful checklist for use in both construction and inspection in this manual.

- **R402.4.1.1 Installation.** The components of the *building thermal envelope* as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the *code official*, an *approved* third party shall inspect all components and verify compliance.

Next are the Envelope Testing requirements, once a visual inspection is completed. It makes sense to do the visual inspection first, so that all air leakage sealing has occurred, lowering the chance that the test might not be passed, and the home would need to undergo additional air sealing testing and a second test.

- **R402.4.1.2 Testing.** The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 3 air changes per hour in NY Climate Zones 4 through 6. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). Where required by the *code official*, testing shall be conducted by an *approved* third party. For Low-Rise Multifamily Residences in New York State, the target not-to-exceed value shall be .3CFM @ 50 pascals per 100ft2 of building envelope. A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*. Testing shall be performed at any time after creation of all penetrations of the *building thermal envelope*.

  During testing:

  1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weather-stripping or other infiltration control measures;
  2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures;
  3. Interior doors, if installed at the time of the test, shall be open;
  4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
  5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and

6. Supply and return registers, if installed at the time of the test, shall be fully open.

Fireplaces, whether custom-built or manufactured

- **R402.4.2 Fireplaces.** New wood-burning fireplaces shall have tight-fitting flue dampers and outdoor combustion air.

Finally, all windows skylights and doors with glass must meet air leakage requirements as well. These tested values are found on the NFRC or AAMA labels found on those products, as listed below:

- **R402.4.3 Fenestration air leakage.** Windows, skylights and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m2), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and *listed* and *labeled* by the manufacturer.