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Energy Requirements - Reroofing

Code: 2015 NC Existing Building Code
Section: 610 & 707

Date: October 9, 2015

Code: 2012 NC Energy Conservation Code
Section: 101.4.3

Question:

How is reroofing addressed concerning energy requirements in the 2015 NC Existing Building Code and the 2012 NC Energy Conservation Code with respect to roofs that are a part of the building thermal envelope?

Answer:

The 2015 NC Existing Building Code defers to the 2012 NC Energy Conservation Code with respect to the energy conservation requirements for alterations and repairs. The general code section that identifies the requirements is contained in the 2012 NCECC, Section 101.4.3 “Additions, alterations, renovations, or repairs.” This section reads in part:

“101.4.3 Additions, alterations, renovations or repairs
*Additions, alterations, renovations or repairs to an existing building, building system, or portion thereof shall conform to the provisions of this code as they relate to new construction **without requiring the unaltered portion(s) of the existing building or building system to comply with this code. (Emphasis added)**”*

The general rule in applying Section 101.4.3 is that existing construction that is unaltered can remain and new work performed must meet current energy conservation code requirements.

The following are examples of commercial building reroofing project scenarios for existing buildings and interpretation of the energy conservation code for requirements:

Scenario 1: Remove existing roof membrane, install new roof membrane, existing insulation is not removed.

Solution 1: Existing insulation can remain in place; no upgrade to insulation is required for code compliance.

Scenario 2: Remove existing roof membrane, install new roof membrane, existing insulation not removed, and repair damaged insulation.

Solution 2: Existing insulation can remain in place; no upgrade to insulation is required for code compliance; repaired sections are allowed to be replaced as per the original design R-value requirements to match up to the existing roof.

Scenario 3: Remove existing roof membrane and roof insulation. Install new roof membrane and new roof insulation.

Solution 3: New insulation must meet current code requirements. Hardships will have to be addressed on a case by case basis. The requirement for adding new insulation is not intended to also cause extensive structural rework, i.e., having to raise windows in an adjoining wall or requiring extensive rework of through wall flashing drainage systems.

There are also a number of exceptions listed to Section 101.4.3. Exceptions are generally intended to identify lesser alternatives or exclusions to meeting the main paragraph requirements. Exceptions generally are not intended to identify new code requirements. In particular to reroofing projects, we have exception “e”. The following is provided as guidance for application of note “e”:

“Exceptions to section 101.4.3: The following need not comply provided the energy use of the building is not increased:

e. Reroofing for roofs where neither the sheathing nor insulation is exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.”

Interpretation of application of note “e”: Within the context of exception “e”, “exposed” means the removal of the roof structural sheathing and exposing the roof cavity below between structural framing members. If the structural sheathing is removed and the cavity contains no insulation, then insulation shall be added to meet minimum code requirements or to the extent feasible.

An example of this roof type would be a wood-rafter roof with a cavity between the shingle sheathing and sheathing or plaster ceiling/lathe on the bottom of the rafters that form a cavity as for a cathedral ceiling. This roof, if the cavity were exposed, would be required to have insulation fill the cavity, or, at the owner’s option, insulate above or below the cavity to provide at least equivalent insulating value.

Keywords: