FAQ:
I am replacing the existing roof covering of a low-slope roof assembly that has existing rigid-insulation entirely above a cast-in-place concrete roof deck. Does the existing insulation now need to meet new 2018 IECC requirements for R- or U-value because the roof covering is being replaced?

Background:
Roofing work in the 2018 IBC and IECC is separated into multiple classes based on the extent of alterations work being proposed.

Changing the roof covering of an existing roof assembly which involves the removal of existing roof coverings is considered a roof replacement.

Roof replacement is defined under both IBC Section 202 and IECC Section 202 as follows (underline added for emphasis):

**ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

When such work is proposed, IBC Section 1511.3 requires the complete removal of the existing roof coverings. Such removal includes all existing layers of roof coverings to such an extent that the roof “deck” is exposed. This will ensure any new roof covering installation occurs on a structurally sound and appropriate surface otherwise known as the roof “substrate”. IBC Section 1511.3 reads:

1511.3 Roof replacement. Roof replacement shall include the removal of all existing layers of roof coverings down to the roof deck.

The intent of this section is to ensure that a new roof covering is not installed over existing roof coverings unless the subsections that follow IBC Section 1511.3, which specifically regulates roof covering work, are met. As such, for the purposes of IBC Section 1511.3 the Department considers roof replacement work compliant with this Section where such work removes existing roof coverings down to either a suitable undamaged “substrate” upon which to install the new roof covering or the structural “deck” that supports the entire roof assembly.

The “substrate” identified above may or may not be existing above-deck insulating system. Where such “substrate” is damaged during the process of removal of the existing roof covering then, as the definition of roof replacement states, repairs must be made to ensure adequate support of any new roof covering.

To ensure proper insulation is provided when a roof replacement occurs, IECC Section C503.1, which regulates alterations in general, and Section C503.3, which regulates roof replacements specifically, must be met. IECC Sections C503.1 and C503.3 read:

C503.1 General. […] Alterations shall be such that the existing building or structure is not less conforming to the provisions of this code than the existing building or structure was prior to the alteration. […]

C503.3.1 Roof replacement. Roof replacements shall comply with Section C402.1.3, C402.1.4, C402.1.5 or C407 where the existing roof assembly is part of the building thermal envelope and contains insulation entirely above the roof deck.

The definition of roof replacement and the Department’s interpretation of IBC Section 1511.3, as described above, therefore do not require the removal of existing undamaged substrate. As such, IECC Section C503.3.1 would only apply to work where during the removal process of the existing roof covering the substrate, which
consists of above-deck insulating system, is damaged and must be replaced. At which point the above-deck insulation must be replaced with fully compliant insulation per IECC Section C503.3.1

Answer:

No – existing above deck insulation systems that performs as the “substrate” upon which the new roof covering is to be installed can remain. However, if during the removal process of existing roof coverings such substrate is damaged, the existing substrate must be replaced with fully compliant substrate that meets the insulation requirements of the current IECC per Section C503.3.1.

Questions?

Call 311 or (215) 686-8686 (if outside Philadelphia) or submit a permit-related question online via https://form.jotform.com/81494420572154.

Disclaimer:

This interpretation, policy or code application is intended to provide guidance to staff for consistency of review and is subject to change without notice. Application of this interpretation, policy or code application to specific projects may vary. There may be other ways to comply with the Code. If so, you are not required to use this method. You may want to investigate other options, or consult with a professional identifying an equally code compliant solution.