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FORMAL INTERPRETATION 11-03

DOCUMENT: 2007 Kentucky Residential Code

SUBJECT: Building Thermal Envelope

QUESTION: The HVAC industry has designs and installations by which a single HVAC system serves a 2-story home. When this is done many designs run the ductwork up the outside wall to the second floor. In so doing, the required insulation necessary to achieve the required R-13 is reduced to as little as one inch foam board or removed completely to make room for the duct run through the outside wall cavity. Also the duct work can not be wrapped with R-6 insulation or it will bow the drywall thereby creating aesthetic problems.

Does the code allow the cavity wall and duct insulation to be removed or the R-value reduced to allow for duct installation in a confined exterior wall cavity space?

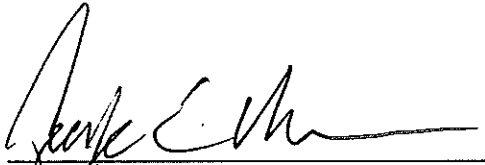
ANSWER: No.

COMMENTARY: The building thermal envelope consists of the exterior walls, floor, roof and any other building element that enclose condition space. The practice of removing the insulation within the cavity of the exterior wall breaks the integrity of that thermal envelope and subjects the interior of the home to a classification as an unconditioned space. There are no exceptions offered by the code that would allow for the removal of insulation or a reduction in R-value within the wall cavity to allow for the duct system to be run. This method of construction would constitute a violation of Chapter 11 Energy Efficiency of the Kentucky Residential Code.

There is also no alternative to eliminating or reducing the duct insulation as described. All duct work located outside the building

thermal envelope shall be insulated to an R-value specified by code. The design/installation as described places the duct outside the thermal envelope, therefore the duct installation is in violation of code for not having being insulated.

The design/installation described would also create serious cold spots in the room or rooms where the cavity wall insulation is removed or R-value is reduced. The effectiveness of the heating and cooling systems would be diminished by allowing the heated air to be cooled within the cavity space during our cold season and cold air to be heated during warm season.



George E. Mann
Deputy Commissioner

Oct 5, 2011
Date