History
Code Reference:
- 2006 International Residential Code (IRC) – Section R905.2.7.1
- 2006 International Residential Code (IRC) – Table R301.2 (1) footnote I

With adoption of the 2006 IRC Lenexa included the requirements for *Ice Shield Underlayment* as a requirement of Table R301.2.(1) based on the determination in the table footnote that the provision should be applied if there has been evidence of local damage from the effects of ice damming. Ice dam protection is required if the average January temperature is less than 25 degrees F. The average daily temperature in January for the Kansas City Metro area is 26.9 degrees Fahrenheit.

The primary cause of ice damming is inadequate insulation and inadequate ventilation of attic spaces. If the house is poorly insulated heat will readily be transferred to the attic. Inadequate ventilation will contribute to increased attic temperatures. When the attic temperature is above freezing any snow on the roof will start to melt even if the outside temperature is well below freezing. The snow provides an insulating effect between the attic and the colder outside air. As the snow melts water runs down the roof and refreezes when it contacts the roof eaves. The eaves remain below freezing since that area is not exposed to the warmer temperatures in the attic. As the ice freezes on the eaves it accumulates creating an ice dam. This dam holds back liquid water that may extend back over the attic. The retained water may then seep back up the roof via capillary action or through nail holes in the felt. Damage from ice damming can result in deterioration of the roof sheathing (rotting due to continual wet and dry cycles), sheetrock, and effectiveness of the insulation.

Damage from ice damming can be prevented by minimizing the heat loss between the house and the attic. This is accomplished by complying with the building energy and mechanical requirements of the 2006 IRC that require: adequate roof ventilation; roof/ceiling insulation to comply with the minimum energy code conditions for this area; venting bathroom exhausts directly to the exterior; sealing roof/ceiling penetrations with caulks and sealants to minimize leakage; insulating air distribution ducts in attics; and sealing air distribution duct joints as required by the mechanical code to minimize leakage.

Ice Shield Protection – Approved Alternate Methods

Ice Shield Protection is not required for roofs if the dwelling is constructed to meet the following specifications:
- Roof – Minimum R-38
- Cathedral Ceilings – Minimum R-30
- Floors over unheated spaces – Minimum R-19
- Wood framed walls – Minimum R-13
- HVAC supply ductwork in attic – Minimum R-5
- Windows – Maximum U-0.4
- Attic bathroom exhaust – vent directly to exterior
- Seal roof/ceiling penetrations for lights and ducts with approved caulking or gasketing
- Seal joints in attic HVAC supply ductwork shall be made substantially air tight by means of tapes, gasketing, or other approved closure systems per 2006 IRC Section M1601.3
- Provide attic ventilation per the 2006 IRC Section R806

To use this alternate method the applicants shall make a request in writing stating they will meet the above specifications in lieu of providing ice dam protection (a copy will be placed in the permit file), or revise the approved plans to show the above requirements as minimum standards for the house.

FOR MORE INFORMATION
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