Asphalt shingle application tolerances

by **Mark S. Graham**

In 1998, NRCA began working with the Asphalt Roofing Manufacturers Association (ARMA) and individual asphalt shingle manufacturers to develop quality-control guidelines for asphalt shingle application.

During the discussions, it became apparent that there is little consensus among roofing professionals regarding placement tolerances for nails used to attach asphalt shingles. Although this lack of consensus does not necessarily affect a majority of asphalt shingle roof systems, manufacturers increasingly are focusing on nail placement and deviations from their installation instructions in situations involving shingle problems or warranty claims.

For example, for three-tab strip shingles installed in a typical four-nail pattern, nails usually are intended to be positioned approximately 1 inch (25 mm) from each side edge and slightly above each cutout but not above a factory-applied sealant strip. (A sealant strip generally is intended to be ¾ inch [19 mm] or more above cutouts.)

Some manufacturers and ARMA's *Residential Asphalt Roofing Manual* are more specific and indicate nails should be in a line ⅝ inch (16 mm) above cutouts. The lack of consensus in the industry involves how far and how many nails can deviate from these exacting locations before affecting asphalt shingle roof system performance.

Published tolerances

Currently, the only published guidelines for nail-placement tolerances for asphalt shingles are in ARMA's *Guidelines for the Application of 3-in-1 Strip Shingles in the Manufactured Housing Industry*. This document applies specifically to manufactured housing, which typically is constructed in controlled, in-plant conditions.

The guidelines stipulate nails should be placed 1 inch (25 mm) from each side edge of a shingle, plus or minus a ½-inch (13-mm) tolerance. Over the cutouts, a tolerance of plus or minus 1 inch (25 mm) from the left to right of the cutouts is prescribed.

For vertical-placement tolerances, the guidelines state nails should be located as specified by manufacturers; generally, this is between the top of cutouts and a tab sealant strip's bottom. Placing fasteners in a tab sealant strip should be avoided. If, because of variations in tab sealant strip locations, it is not possible to place nails below a tab sealant strip, nails can be placed no more than ½ inch (13 mm) above the tab sealant strip, provided the nails penetrate the underlying shingle course by no less than ¼ inch (6 mm).

It is not possible to achieve consistent nail placement according to manufacturers' exacting recommendations.

Is this practical?

Experienced asphalt shingle installers generally agree it is not possible to achieve consistent nail placement according to manufacturers' exacting recommendations. Similarly, nail placement within the tolerances described in ARMA's manufactured-housing document is not realistic in typical field-application situations.

During a recent meeting with asphalt shingle manufacturers, NRCA suggested asphalt shingles be imprinted with a manufacturer's intended nail locations. Such imprints should provide guides for vertical and horizontal positioning of nails. Imprints also could define tolerances for nail positioning.

Although several manufacturers provide a horizontal nail line or several lines on their shingles, none has implemented specific nail-placement guides that account for vertical and horizontal positioning as suggested by NRCA.

Several manufacturers have indicated that imprinting shingles with such vertical and horizontal markings would not be feasible because their in-plant manufacturing tolerances for such imprints are larger than what they allow during application for nail placement.

Closing thoughts

NRCA will continue working with asphalt shingle manufacturers, ARMA and other interested parties to develop a consensus on practical guidelines for asphalt shingle roof system application. Until such guidelines are available, roofing contractors are encouraged to request specific written guidelines, including reasonable nail-placement tolerances, from manufacturers.

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